Which formula for corporate risk-taking around the world? Exploring happiness as the “black box”

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Abstract

Purpose – This paper examines how the degree of happiness affects corporate risk-taking and the moderating influence of family ownership of firms on this relationship.

Design/methodology/approach – The authors use an international sample of 17,654 firm-year observations from 24 countries around the world from 2008 to 2016.

Findings – Using the happiness index from the World Happiness Report developed by the United Nations Sustainable Development Solutions Network, the authors show that a country’s overall happiness is negatively correlated with risk-taking behavior by firms. The findings are robust to an alternative measure of risk-taking by firms. Further analyses document that the negative influence of happiness on firm risk-taking is more pronounced for family-owned firms.

Practical implications – The paper is consistent with the notion that happier people are likely to be more risk-averse in making financial decisions, which, in turn, reduces corporate risk-taking.

Originality/value – This study contributes to the broad literature on the determinants of corporate risk-taking and the growing literature on the role of sentiment on investment decisions. The authors contribute to the current debate about family-owned firms by demonstrating that the presence of family trust strengthens the negative influence of happiness on corporate risk-taking, a topic that has been unexplored in previous studies.

Keywords Happiness, Risk-taking, Family firms

1. Introduction

Corporate risk-taking is the amount of volatility associated with expected outcomes and cash flows as a result of new investments (Wright et al., 1996). Corporate risk-taking has significant implications for firm growth, performance, and survival (Bromiley, 1991). An extensive body of literature has investigated the determinants of corporate risk-taking decisions. Most of this research has concentrated on explaining risk-taking behavior from a firm-level perspective. However, relatively little is known about how country-level factors such as happiness shape corporate risk-taking. We fill this gap in the current literature by investigating whether and how happiness in a given country affects firms’ risk-taking.

Emerging studies show that local characteristics (e.g. culture, religiosity, societal trust) play a crucial role in shaping firm behavior (Chen et al., 2015; Dudley and Zhang, 2016). Because an individual’s decision-making is often influenced by the behavior of a local peer...
community, decisions are susceptible to the impact of the local environment and culture (Chuluun and Graham, 2016). Prior research on managerial risk-taking behavior confirms that managerial risk-taking propensities vary depending on affective states (Loewenstein, 2000; Kirchsteiger et al., 2006; Card and Dahl, 2011). We investigate the impact of local happiness on corporate risk-taking. Since mood and affect, as well as overall well-being, influence decision-making, the emotional state of company decision-makers can have an effect on corporate decisions. In the corporate finance setting, it has been documented that certain biases and characteristics of managers, such as optimism and overconfidence, influence risk-taking by firms (Malmendier and Tate, 2008; Galasso and Simcoe, 2011; Kim et al., 2016). Chuluun and Graham (2016) show from US data that local happiness encourages research and development activity. The commonality of these previous studies is that they were conducted in single-country settings. As such, they do not enable us to identify the country-level drivers of corporate risk-taking or explain from where the observed cross-country variations in the level of corporate risk-taking could stem. We extend these studies by examining international evidence on the impact of happiness on corporate risk-taking in 24 countries worldwide.

Using five indexes of happiness from survey data published in the World Happiness Report, we conduct a principal component analysis and retrieve the first component, which captures the largest variation of the five original indexes that measure the level of happiness. Using a sample of 17,654 firm-years from 3,254 firms incorporated in 24 countries, we find that firms in happier countries engage in less risk-taking. Second, our results also reveal that the negative effect of happiness on corporate risk-taking is more pronounced for family-owned firms, which is consistent with the view that family trust strengthens managers’ emotion on investment decisions.

This study contributes to the broad literature on the determinants of corporate risk-taking (Nguyen, 2011b; Huang and Wang, 2015; Gupta and Krishnamurti, 2018; Chatjuthamard et al., 2020) and the growing literature on the role of sentiment in investment decisions (Guven and Hoxha, 2015; Kaplanski et al., 2015; Lane, 2017). Heo et al. (2018) examined the influence of happiness on investment decisions, as measured by capital expenditures and spending on research and development. Guven and Hoxha (2015) used shine as a measure for investors’ happiness and documented that happier people are likely to be more risk-averse in financial decisions and that they tend to choose safer investments to reduce risk. However, these authors employed survey data of individuals; extensive evidence on whether the level of happiness mitigates or exacerbates risk exposure at the firm-level in the nonfinancial sector does not yet exist. Going beyond existing studies, ours is the first paper documenting international evidence on the relationship between corporate risk-taking and the level of happiness at the country-level in a sample of 24 countries from around the world. We explore the “black box” of happiness as an effective vehicle to reduce risk-taking by firms around the world.

We also contribute to the current debate on the effect of ownership structure, family ownership in particular, on corporate policies. Existing studies reveal the benefit of family firms in improving investment efficiency via the lower cost of debt (Anderson et al., 2003). Others suggest that family ownership may harm shareholder value because family-owned firms exhibit higher agency costs (Eugster and Isakov, 2019), bear a higher interest rate on loans (Chiu and Wang, 2019), or face financial restrictions (Murro and Peruzzi, 2019). We explore the crucial role of family trust in reducing firm risk-taking by introducing the interactions between happiness and family ownership. In this setting, we contribute to the current debate about the role of family-owned firms by demonstrating that the presence of family trust strengthens the negative influence of happiness and firm risk-taking, which are unexplored in prior studies.

The rest of the paper is organized as follows. Section 2 reviews the literature and develops hypotheses. Section 3 explains the data selection and methodology. Section 4 reports the
empirical results and a cross-sectional analysis. Section 5 conducts robustness checks. Section 6 gives a conclusion.

2. Literature review and hypothesis development

2.1 Happiness and corporate risk-taking

Happiness is defined as the state of the experience of joy, contentment, or positive well-being, combined with a sense that one’s life is good, meaningful, and worthwhile. The feeling of happiness also relates to what one expects about the future. Many research in the psychology literature demonstrate that happiness influences human behavioral decisions (Iaffaldano and Muchinsky, 1985; Kahneman and Krueger, 2006; Clark et al., 2008). In terms of economic works, Kaplanski et al. (2015) suggest that an individual feeling well because they can expect to receive high payoffs in the future may spend more money on consumption or allocate more money toward investments rather than savings. In contrast, others look forward to living longer and presumably have stronger incentives to allocate money to savings accounts, rather than investing in risky assets (Guven and Hoxha, 2015). Thus, the question whether different happiness levels may be correlated, on average, to more or less risk-taking remains unanswered.

In recent years, the economics of happiness, particularly the role of national happiness indicators, has been a growing concern of researchers. Within organizational scholarship, happiness should be explored and examined in corporate studies for two reasons. Firstly, happiness has been recently measured by different approaches with a variety of key variables (see Tofallis, 2020 for a review of national happiness) that represent a synergistic effect on national happiness rather than acting as independent indicators. Thus, some researchers point to the limitations of GDP or GNP per capital to understand macroeconomic conditions, and they suggest considering Gross National Happiness as an alternative measure (Dixon, 2006; Bates, 2009). Secondly, happiness should be considered as a societal outcome of social support, public health, and economics. There may be a linkage between national happiness and corporate activities (Chan et al., 2000; Chia et al., 2020) because happiness, as conceptualized in psychological science, may affect stakeholders and managerial behavior in ways that strongly relate to corporate performance as well as corporate decisions.

There are conflicting studies addressing the impact of emotions on financial risk tolerance. There is evidence that people who are experiencing happy emotions are less risk tolerant, presumably to prevent prospective losses and to safeguard their high mood states, according to the ‘mood maintenance’ theory (Isen and Patrick, 1983; Isen et al., 1988). Isen and Patrick (1983) discovered that individuals’ responses to risk stimuli vary depending on the stakes of the gamble: when presented with high stakes, persons in a positive state are more risk-averse in order to prevent huge losses. On the other hand, consistent with the affect infusion model, mood plays a more essential part in making assessments in extremely unclear situations and/or in the absence of a trustworthy source of information (Forgas, 1995). Johnson and Tversky (1983) indicate that affect impacts probability judgments in such a way that negative emotions elicit pessimistic risk assessments, resulting in reduced risk tolerance, and good emotions elicit optimistic risk assessments, resulting in increased risk taking. Kuhnen and Knutson (2011) also provide robust evidence that positive emotions such as excitement motivate people to take more risks while negative emotions such as anxiety discourage it.

Prior studies document two contrasting hypotheses to interpret the relation between happiness and corporate risk-taking. On the one hand, happier people are more likely to engage in risky projects than less happy people. Nygren et al. (1996) found that optimistic people tend to overestimate the chances of winning compared to those of losing, thereby
allocating more resources to risky assets, resulting in higher risk-taking. Recently, Ferris et al. (2017) have found that CEOs in social capital areas increase the riskiness of specific corporate investment and financial policies. Specifically, they invest in highly risky projects such as R&D activity, corporate diversification, financial leverage, and asset liquidity, which, in turn, create higher volatility in future stock returns and earnings.

On the other hand, other studies support the negative impact of happiness on firm risk-taking. From an executive’s perspective, managers in highly happy countries take fewer risks because they want to keep their “quiet life” longer and wish to reduce the cost of mistakes that may disrupt the status quo. Guven and Hoxha (2015) document that people in happier regions tend to hold life insurance, savings accounts, and operating assets instead of stocks or bonds. From a corporate perspective, our argument is hinged on the view that happier countries are characterized by higher connectedness and higher societal trust, which lessen agency issues. Under the presence of severe agency conflicts, a firm’s managers tend to act in their own interests, leading to high risks and harm to enterprise growth (Wu, 2005). Therefore, the efficiency of corporate investment tends to be worse in terms of the long-term sustainability of productivity, resulting in a higher probability of risk. Happiness may increase the connections between managers and shareholders, making firms less likely to take risks. Cao et al. (2016) found evidence that societal trust reduces stock price crash risk because managers have fewer incentives to hide bad news. From the perspective of both executives and the business environment, we hypothesize that happiness and corporate risk-taking are negatively correlated. We therefore propose our first hypothesis as follows:

H1. Happiness is negatively associated with corporate risk-taking.

2.2 The moderating effect of family ownership
Ownership structure plays a crucial role as a corporate governance mechanism that helps to minimize agency costs arising from the separation of principal and agent (Jensen and Meckling, 1976; Shleifer and Vishny, 1986). Agency conflicts occur when managers’ goals, preferences, and interests are not aligned with those of the firm’s owners. Consequently, an agency problem directly affects a firm’s decisions, which, in turn, affects firm risk significantly. The high concentration of family ownership of firms around the world (La Porta et al., 1999) allows firms to mitigate agency conflicts through alignment of management incentives. If a founder has a strong desire to involve other family members, family trust creates better connections and firm performance in the long-run, such that family-owned firms are less likely to engage in risk-taking. We expect that the negative effect of happiness on corporate risk-taking is more pronounced for family-owned firms.

A few studies show evidence that family ownership may lessen risk-taking by firms (Jiang et al., 2015; Boubaker et al., 2016; Lee et al., 2018). Boubaker et al. (2016) argue that French family firms with a large controlling shareholder take less corporate risk. Morck and Yeung (2003) conclude that family owners may behave in a risk-averse manner because they hold an undiversified portfolio, resulting in firms avoiding riskier projects. Poletti-Hughes and Williams (2019) stress that perpetuating the family entity could persuade owners to make conservative strategic decisions regarding risk that belie value maximization principles. Consequently, family controllers prefer to avoid potential losses and accept fewer risks. Based on the above argument, our second hypothesis posits a moderating role for family ownership in the relationship between happiness and corporate risk-taking as follows:

H2. The negative effect of happiness on corporate risk-taking is more pronounced for family-owned firms.
3. Methodology

3.1 Sample section

We collect accounting data for the period between 2008 and 2016 from the *Orbis* database owned by Bureau van Dijk. The data on the happiness index are from the World Happiness Report [1]. Macroeconomic variables are retrieved from the World Bank’s World Development Indicators. We processed the sample by: (1) excluding financial and utility firms (SIC codes 6000–6999 and 4900–4999) because these firms are typically regulated, which limits the role of their directors in influencing risk-taking (Gopalan et al., 2021); (2) excluding enterprises with incomplete indicators and information; and (3) winsorizing all continuous firm-level variables at the 2nd and 98th percentiles to lessen outliers. The final sample includes 17,654 firm-year observations (3,254 unique firms) from 24 countries during 2008–2016.

3.2 Measurement of happiness

Our main independent variable is the happiness index across countries. Following Tofallis (2020) and Heo et al. (2018), we first use five indicators of the happiness index from the World Happiness Report as measures of happiness, namely, *LIFE LADDER*, *SOCIAL SUPPORT*, *FREEDOM DECISIONS*, *GENEROSITY*, and *CORRUPTION PERCEPTIONS*. A higher score for these variables (except *CORRUPTION PERCEPTIONS*) indicates higher perceived happiness for people in the host country. For consistence, we multiple the original index of *CORRUPTION PERCEPTIONS* by $-1$. By this way, higher values of these indexes denote higher perceived happiness. A detailed description of these indicators is provided in Appendix. In addition, we also conduct a principal component analysis (PCA) to construct an aggregate index that represents the overall level of happiness. Specifically, we use the first principal component as the single linear combination of the happiness indicators that explains most of the variations we see in these indicators.

Table 1 shows the PCA for the happiness index. As shown in Panel A, the eigenvalue of the first component is 2.818, greater than the cut-off value of 1. This factor explains 56% of the sample variance. We then create an index of happiness level using the weights in Panels B and C of Table 1 assigned to the first principal component. The calculation is as follows:

$$Happiness\ Index(H\_INDEX) = \sum_{i=1}^{n} w_{ij} * X_{i}$$

where $w_{ij}$ are the component loadings or weights, and $X_{i}$ are the original variables. In other words, the $H\_INDEX$ is as follows:

$$H\_INDEX = 0.5383 \times \text{LIFE LADDER} + 0.4569 \times \text{SOCIAL SUPPORT}$$
$$+ 0.4553 \times \text{FREEDOM DECISIONS} + 0.3075 \times \text{GENEROSITY}$$
$$+ 0.4469 \times \text{CORRUPTION PERCEPTIONS}$$

3.3 Model

To reduce the bias due to potential endogeneity problems, we employ the two-step system generalized method of moments (GMM) estimator of Blundell and Bond (1998) to estimate all specifications. Specifically, we estimate a panel regression as follows:

$$R\&D_{i,j,t} = \alpha + \beta_{1} R\&D_{i,j,t-1} + \beta_{2} Happiness_{j,t} + \eta Firms_{i,j,t} + \rho Country_{i,j,t}$$
$$+ Country\ FE_{t} + Year\ FE_{t} + \epsilon_{i,j,t}$$

Formula for corporate risk-taking
where $i, j, t$ represent firm, country, and year, respectively. R&D, the ratio of research and development expenditures to total assets, is a measure of risk-taking (Coles et al., 2006; Bargeron et al., 2010). Higher R&D is associated with higher risk-taking by firms. \(Happiness_{j,t}\) captures six measures of the happiness level, including \(H\_INDEX, LIFE\_LADDER, SOCIAL\_SUPPORT, FREEDOM\_DECISIONS, GENEROSITY,\) and \(CORRUPTION\_PERCEPTIONS.\)

\(Firm_{i,j,t}\) consists of a set of firm-level control variables, including \(SIZE, FIRM\_AGE, CAPEX, SALES\_GROWTH, LEVERAGE, R&D,\) and \(FIXED.\) We include the natural logarithm of total assets \((SIZE)\) and the natural logarithm of the number of years since incorporation \((FIRM\_AGE)\) to capture information asymmetry and systematic variation in a firm’s risk related to its life cycle (Guay, 1999; Coles et al., 2006; Houston et al., 2010). We include \(CAPEX,\) which is capital expenditure net of sales of property, plant, and equipment, scaled by assets. Coles et al. (2006) indicate that higher \(CAPEX\) is associated with lower firm risk. Faccio et al. (2011) indicate that firms with high growth options are more likely to engage in risky projects. We introduce \(SALES\_GROWTH\) as the growth rate of sales. Highly leveraged firms are more likely to be risk-takers (Huang and Wang, 2015; Gande and Kalpathy, 2017). We add \(LEVERAGE,\) which is the proportion of total long-term debt scaled by total assets. Nguyen (2011b) indicates that firms with higher fixed assets have higher relative idiosyncratic risk. We include \(FIXED,\) which is the ratio of net property, plant, and equipment to total assets.

\(Country_{j,t}\) refers to macroeconomic control variables. We include a rule-of-law index \((RL)\) to control for changes in the quality of the legal environment over time (Porta et al., 1998). We also include a shareholder protection index \((SP)\) to capture national governance quality.

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**Table 1. Principal component analysis**

| Panel A. Factor analysis | Component | Eigenvalue | Difference | Proportion | Cumulative |
|--------------------------|-----------|------------|------------|------------|------------|
| Comp1                    | 2.81823   | 1.86278    | 0.5636     | 0.5636     | 0.5636     |
| Comp2                    | 0.955457  | 0.293719   | 0.1911     | 0.7547     |
| Comp3                    | 0.661738  | 0.222629   | 0.1323     | 0.8871     |
| Comp4                    | 0.439109  | 0.313648   | 0.0878     | 0.9749     |
| Comp5                    | 0.125461  | 0.0251     |            | 1.0000     |

| Panel B. Factors matrix | Variable             | Comp1     | Comp2     | Comp3     | Comp4     | Comp5     |
|-------------------------|----------------------|-----------|-----------|-----------|-----------|-----------|
| \(LIFE\_LADDER\)        | 0.5383               | 0.1380    |            |            |           |           |
| \(SOCIAL\_SUPPORT\)     | 0.4569               | 0.5582    | 0.1426    |            |           |           |
| \(FREEDOM\_DECISIONS\)  | 0.4553               | 0.2073    |            | 0.7489    |           | 0.1054    |
| \(GENEROSITY\)          | 0.3075               | 0.2087    | 0.4177    | 0.7336    |           | 0.1274    |
| \(CORRUPTION\_PERCEPTIONS\) | 0.4469             | 0.7249    | 0.3546    | 0.3611    |           |           |

| Panel C. Rotated factor loadings | Variable             | Comp1     | Unexplained |
|----------------------------------|----------------------|-----------|-------------|
| \(LIFE\_LADDER\)                | 0.5383               | 0.1834    |
| \(SOCIAL\_SUPPORT\)             | 0.4569               | 0.4117    |
| \(FREEDOM\_DECISIONS\)          | 0.4553               | 0.4159    |
| \(GENEROSITY\)                  | 0.3075               | 0.7336    |
| \(CORRUPTION\_PERCEPTIONS\)     | 0.4469               | 0.4372    |

**Note(s):** Panel A: This panel shows how much of total variations can be explained by each principal component. Panel C: A pattern matrix offers a clearer picture of the relevance of each variable in the factors.
because John et al. (2008) found that better shareholder protection is positively associated with risk-taking by firms. In addition, we use the inflation rate (INFLATION) as a proxy for monetary uncertainty and GDP per capita (CAPITA) as a proxy for fluctuations in economic outcomes. Country FE s and Year FE s are a set of country and time dummies to control for country and time fixed effects. Detailed definitions of the variables are reported in the Appendix.

Our main coefficient of interest is $\beta_2$, which reflects the influence of happiness on risk-taking by firms. If higher happiness leads to firms taking less risk, we conjecture that $\beta_2$ becomes negative and significant.

4. Empirical results

4.1 Descriptive statistics

Table 2 reports the summary statistics for happiness measurement, firm risk-taking, and family ownership of firms across countries in our sample. Overall, Norway is the happiest country, whereas India exhibits the lowest happiness index ($H_{INDEX}$) score. In addition, we observe that firms in Australia and Canada have the highest R&D investment, whereas firms in Vietnam and the Philippines are less likely to invest in R&D activity. In terms of ownership structure, we find that 67.5% of firms in South Korea are defined as family-owned firms. In contrast, family firms account for a small proportion in Canada, the UK, and Norway.

Table 3 shows descriptive statistics for all variables in our regressions. We find that the mean of R&D is 2.5%. The mean of the standard deviation of ROE using a rolling three-year window is 0.228. Regarding the happiness index, we find that the mean of LIFE LADDER is 6.099 out of 10, with a standard deviation of 0.638. In terms of control variables, the mean of Size for the whole sample is approximately 10.65. The mean and standard deviation of Firm Age are 3.077 and 0.601, respectively. Capital expenditures account for 15.5% of total assets. The growth in sales over the period is about 15.1% per year. Firms in our sample have an average leverage ratio of 11.9%. For country-level variables, this sample reveals that the mean value of the annual inflation rate is 2.3%, calculated by the GDP deflator, while the countries’ average GDP per capita after taking the natural logarithm is 10.19.

Pairwise correlation values between variables are provided in Table 4. The correlation between $H_{INDEX}$ and R&D is negative and statistically significant at the conventional level, indicating a negative effect between happiness and firm risk-taking. It is easy to find that the correlations between the happiness indexes are high. To reduce multicollinearity problems, we include these indexes in our regressions separately. Notably, we observe that the correlation between independent variables is low, indicating that potential collinearity is not a major problem in our model.

4.2 Baseline results

Table 5 reports our regression results to test Hypothesis 1. We regress six specifications separately for the six indicators of happiness. These models show that the coefficients of the lag of the dependent variable (R&D$_{t-1}$) are positive and significant at the 1% level in all specifications. This finding explains the persistence of firm risk-taking and justifies the use of dynamic panel analysis in this study. We find that the coefficients on the dimensions of happiness are negative and statistically significant at the conventional level. As suggested in Model 1, the coefficient of $H_{INDEX}$ is $-0.001$ and the $t$-statistic = $-3.296$, indicating that increasing $H_{INDEX}$ by one unit leads to an increase of 1.8% in R&D. Similarly, the coefficients on the other dimensions of happiness are also positive and significant at the conventional statistical level. This result is in line with studies that find that people and firms
| Country          | H_INDEX | LIFE LADDER | SOCIAL SUPPORT | FREEDOM DECISIONS | GENEROSITY | CORRUPTION PERCEPTIONS | R&D | FM20 |
|------------------|---------|-------------|----------------|--------------------|------------|------------------------|-----|------|
| Norway           | 4.829   | 7.575       | 0.950          | 0.952              | 0.166      | -0.373                 | 0.048 | 0.063 |
| Sweden           | 4.763   | 7.396       | 0.930          | 0.932              | 0.163      | -0.262                 | 0.039 | 0.126 |
| Netherlands      | 4.745   | 7.446       | 0.924          | 0.909              | 0.300      | -0.139                 | 0.026 | 0.090 |
| Australia        | 4.730   | 7.343       | 0.947          | 0.933              | 0.306      | -0.239                 | 0.056 | 0.254 |
| Canada           | 4.724   | 7.405       | 0.932          | 0.927              | 0.253      | -0.421                 | 0.047 | 0.000 |
| United Kingdom   | 4.392   | 6.840       | 0.944          | 0.865              | 0.336      | -0.489                 | 0.034 | 0.000 |
| United States    | 4.339   | 7.059       | 0.912          | 0.825              | 0.210      | -0.711                 | 0.045 | 0.196 |
| Germany          | 4.293   | 6.847       | 0.930          | 0.887              | 0.094      | -0.561                 | 0.028 | 0.409 |
| Singapore        | 4.273   | 6.533       | 0.861          | 0.847              | 0.091      | -0.113                 | 0.031 | 0.367 |
| France           | 4.043   | 6.626       | 0.910          | 0.840              | -0.117     | -0.639                 | 0.014 | 0.150 |
| Thailand         | 3.935   | 6.323       | 0.899          | 0.877              | 0.420      | -0.912                 | 0.022 | 0.454 |
| Spain            | 3.784   | 6.330       | 0.944          | 0.767              | -0.080     | -0.848                 | 0.018 | 0.151 |
| Japan            | 3.677   | 6.005       | 0.911          | 0.819              | -0.122     | -0.687                 | 0.034 | 0.295 |
| Taiwan           | 3.664   | 6.163       | 0.845          | 0.697              | 0.014      | -0.807                 | 0.031 | 0.224 |
| Slovenia         | 3.620   | 5.915       | 0.921          | 0.897              | 0.007      | -0.885                 | 0.014 | 0.375 |
| Slovakia         | 3.526   | 6.022       | 0.927          | 0.642              | -0.077     | -0.914                 | 0.022 | 0.146 |
| Malaysia         | 3.506   | 5.774       | 0.821          | 0.808              | 0.094      | -0.836                 | 0.018 | 0.488 |
| Italy            | 3.501   | 6.016       | 0.900          | 0.600              | -0.036     | -0.920                 | 0.013 | 0.480 |
| South Korea      | 3.356   | 5.748       | 0.765          | 0.608              | -0.028     | -0.797                 | 0.032 | 0.675 |
| Vietnam          | 3.297   | 5.352       | 0.817          | 0.833              | 0.000      | -0.784                 | 0.006 | 0.183 |
| Indonesia        | 3.242   | 5.269       | 0.807          | 0.764              | 0.369      | -0.949                 | 0.011 | 0.052 |
| Philippines      | 3.172   | 5.089       | 0.814          | 0.886              | 0.010      | -0.875                 | 0.003 | 0.124 |
| Turkey           | 3.100   | 5.321       | 0.797          | 0.553              | -0.143     | -0.751                 | 0.018 | 0.355 |
| India            | 2.681   | 4.502       | 0.597          | 0.776              | 0.003      | -0.828                 | 0.019 | 0.307 |
| Mean             | 3.689   | 6.099       | 0.862          | 0.755              | 0.018      | -0.755                 | 0.025 | 0.306 |

Note(s): This table provides the summary statistics of happiness variables, firm-level risk-taking and family ownership by country for the sample of 17,654 firm-year observations from 2008–2016. All variables are defined in Appendix.
in happier countries appear to be more risk-averse both in financial decisions as well as in general life decisions. Consequently, they are more likely to choose safer investments. Guven and Hoxha (2015) document that happy people prefer riskless assets to risky ones. For example, people in Germany and the Netherlands tend to own life insurance, savings accounts, and operating assets but are less likely to hold stocks or bonds. The authors further indicate that happy people are more optimistic and expect to live longer; therefore, they take less risk at present they expect better opportunities in the future. Overall, our finding supports Hypothesis 1, indicating that happiness is negatively correlated with corporate risk-taking.

In terms of the control variables, our findings are consistent with prior studies in the literature on risk-taking. For example, larger or more mature firms are associated with less risk-taking, which is consistent with Guay (1999). In contrast, firms with higher capital expenditures, higher sales growth, and higher fixed assets are more likely to take risks. These results are quantitatively similar to those of previous studies (Nenova et al., 2000; Chen et al., 2015; Vural-Yavaş, 2020). Although we expected that firms with high leverage ratios would tend to be risk-taking, we found an insignificant relation between leverage and corporate risk-taking. Consistent with John et al. (2008), we document that firms in countries with better rule of law and shareholder protection tend to take more risk.

4.3 The role of family ownership

We now investigate the moderating influence of ownership structure (Hypothesis 2) on the linkage between happiness and corporate risk-taking. To test this hypothesis, we regress the following model:

| Risk-taking variables | N   | Mean | St. dev. | P25  | Median | P75  |
|-----------------------|-----|------|----------|------|--------|------|
| R&D                   | 17,654 | 0.025 | 0.043 | 0.000 | 0.005 | 0.239 |
| σ (ROE)               | 17,654 | 0.228 | 0.013 | 0.225 | 0.226 | 0.232 |

| Happiness variables  | N   | Mean | St. dev. | P25  | Median | P75  |
|----------------------|-----|------|----------|------|--------|------|
| H_INDEX              | 17,654 | 3.689 | 0.438 | 3.43 | 3.666 | 3.919 |
| LIFE LAIDER          | 17,654 | 6.099 | 0.638 | 5.801 | 6.126 | 6.467 |
| SOCIAL SUPPORT       | 17,654 | 0.862 | 0.075 | 0.817 | 0.879 | 0.921 |
| FREEDOM DECISIONS    | 17,654 | 0.755 | 0.119 | 0.677 | 0.779 | 0.850 |
| GENEROSITY           | 17,654 | 0.018 | 0.164 | -0.099 | -0.024 | 0.072 |
| CORRUPTION PERCEPTIONS | 17,654 | -0.755 | 0.169 | -0.862 | -0.789 | -0.647 |

| Control variables    | N   | Mean | St. dev. | P25  | Median | P75  |
|----------------------|-----|------|----------|------|--------|------|
| SIZE                 | 17,654 | 10.65 | 1.168 | 9.850 | 10.65 | 11.49 |
| FIRMAGE              | 17,654 | 3.077 | 0.601 | 2.639 | 3.001 | 3.526 |
| CAPEX                | 17,654 | 0.155 | 0.156 | 0.043 | 0.008 | 0.198 |
| SALES GROWTH         | 17,654 | 0.151 | 0.358 | -0.111 | 0.005 | 0.145 |
| LEVERAGE             | 17,654 | 0.119 | 0.279 | 0.000 | 0.015 | 0.105 |
| FIXED                | 17,654 | 0.380 | 0.672 | 0.065 | 0.189 | 0.436 |
| RL                   | 17,654 | 0.859 | 0.716 | -0.928 | 0.788 | 2.043 |
| SP                   | 17,654 | 4.351 | 2.870 | 1.500 | 3.500 | 6.000 |
| INFLATION            | 17,654 | 0.023 | 0.033 | 0.008 | 0.013 | 0.028 |
| CAPITA               | 17,654 | 10.19 | 0.700 | 10.13 | 10.47 | 10.54 |

| Other variables      | N   | Mean | St. dev. | P25  | Median | P75  |
|----------------------|-----|------|----------|------|--------|------|
| FM20                 | 17,654 | 0.306 | 0.461 | 0.000 | 0.000 | 1.000 |

Note(s): This table shows a summary statistic of all variables. The sample includes 17,654 firm-year observations in 24 countries, covering the period from 2008 to 2016. All variables are defined in Appendix Table 3. Summary statistics
| Variables          | (1) | (2)   | (3)   | (4)   | (5)   | (6)   | (7)   | (8)   | (9)   | (10)  | (11)  | (12)  | (13)  | (14)  | (15)  | (16)  | (17)  |
|--------------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| R&D                | 1.00|       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| LIFE               | -0.04*** | 1.00 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| LADDER             | -0.10*** | 0.71*** | 1.00 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| SOCIAL SUPPORT     | 0.01 | 0.43*** | 0.45*** | 1.00 |       |       |       |       |       |       |       |       |       |       |       |       |       |
| FREEDOM DECREMENTS | 0.00*** | 0.33*** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| GENEROSITY         | 0.00*** | 0.41*** | -0.16*** | -0.29*** | 0.11*** |       |       |       |       |       |       |       |       |       |       |       |       |
| CORRUPTION         | -0.02*** | 0.97*** | 0.71*** | 0.31*** | 0.15*** | -0.48*** | 1.00 |       |       |       |       |       |       |       |       |       |       |
| H_INDEX            | -0.09*** | -0.04*** | 0.12*** | -0.04*** | -0.08*** | 0.10*** | -0.05*** | 1.00 |       |       |       |       |       |       |       |       |       |
| SIZE               | -0.15*** | 0.01 | 0.06*** | 0.03*** | -0.17*** | -0.10*** | 0.01 | 0.18*** | 1.00 |       |       |       |       |       |       |       |       |
| CAPEX              | 0.17*** | -0.01 | 0.01 | 0.05*** | -0.06*** | -0.09*** | 0.01 | 0.03*** | 0.01 | 1.00 |       |       |       |       |       |       |       |
| SALES              | 0.02** | -0.01 | -0.01* | 0.01 | 0.03*** | 0.04*** | -0.01 | 0.00 | -0.11*** | 0.04*** | 1.00 |       |       |       |       |       |       |
| GROWTH             | -0.05*** | -0.03*** | 0.02*** | 0.01 | 0.03*** | 0.05*** | -0.03*** | 0.33*** | 0.02*** | -0.05*** | 0.00 | 1.00 |       |       |       |       |       |
| LEVERAGE           | -0.05*** | 0.06*** | 0.12*** | 0.00 | -0.01* | 0.00 | 0.06*** | 0.39*** | 0.08*** | -0.05*** | -0.05*** | 0.46*** | 1.00 |       |       |       |       |
| FIXED              | 0.02*** | 0.44*** | 0.28*** | 0.16*** | -0.45*** | -0.30*** | 0.39*** | 0.06*** | 0.07*** | 0.13*** | -0.07*** | -0.03*** | 0.05*** | 1.00 |       |       |       |
| RL                 | 0.02** | 0.15*** | 0.17*** | -0.25*** | -0.51*** | -0.15*** | 0.06*** | 0.24*** | 0.09*** | 0.04*** | -0.08*** | 0.06*** | 0.14*** | 0.45*** | 1.00 |       |       |
| SP                 | 0.08*** | -0.24*** | -0.29*** | -0.06*** | 0.25*** | 0.08*** | -0.19*** | -0.13*** | -0.10*** | -0.06*** | 0.07*** | -0.03*** | -0.11*** | -0.37*** | -0.39*** | 1.00 |       |
| INFLATION          | -0.08*** | 0.42*** | 0.56*** | 0.02*** | -0.30*** | -0.38*** | 0.45*** | -0.03*** | 0.10*** | 0.12*** | -0.05*** | -0.04*** | 0.06*** | 0.39*** | 0.28*** | -0.31*** | 1.00 |       |

**Note(s):** This table provides the correlation coefficient matrix of the main independent variables. The sample includes 17,654 firm-year observations over the period 2008–2016. All variables are defined in Appendix. ***, **, and * indicate significance levels of 1, 5, and 10%, respectively.
### Dependent variable: R&D

|                  | (1)          | (2)          | (3)          | (4)          | (5)          | (6)          |
|------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| R&D_{t-1}        | 0.933*** (42.035) | 0.621*** (6.870) | 0.967*** (38.130) | 0.294*** (26.757) | 0.920*** (39.983) | 0.945*** (32.378) |
| H_INDEX          | -0.001*** (-3.296) | -0.003* (-1.675) | -0.008** (-1.990) | -0.008*** (-2.919) | -0.003** (-2.140) | -0.001** (-2.194) |
| LIFE LADDER      | 0.001*** (3.296) | 0.003* (1.675) | 0.008** (1.990) | 0.008*** (2.919) | 0.003** (2.140) | 0.001** (2.194) |
| SOCIAL SUPPORT   | 0.003*** (2.494) | 0.005 (1.375) | 0.008*** (3.356) | 0.008*** (2.795) | 0.008*** (3.941) | 0.007*** (3.325) |
| GENEROSITY       | 0.001*** (3.419) | 0.012 (1.375) | 0.015*** (3.356) | 0.015*** (2.795) | 0.015*** (3.941) | 0.015*** (3.325) |
| FREDOM DECISIONS | -0.010** (-2.237) | -0.005** (-1.765) | -0.001** (-2.175) | -0.009*** (-7.728) | -0.001*** (-2.730) | -0.001* (-1.728) |
| CORRUPTION       | -0.001* (-1.651) | -0.020*** (-2.352) | 0.013*** (12.974) | 0.013* (1.946) | 0.010*** (3.316) | 0.010*** (3.316) |
| SIZE             | 0.001*** (3.419) | 0.012 (1.375) | 0.008*** (3.356) | 0.008*** (2.795) | 0.008*** (3.941) | 0.007*** (3.325) |
| FIRMAGE          | 0.001*** (1.841) | 0.001*** (2.120) | 0.001*** (3.487) | 0.001*** (2.437) | 0.001*** (3.006) | 0.001*** (3.006) |
| CAPEX            | -0.014*** (3.356) | 0.001*** (2.143) | 0.001*** (3.487) | 0.001*** (2.437) | 0.001*** (3.006) | 0.001*** (3.006) |
| LEVERAGE         | 0.000*** (1.709) | 0.020*** (4.278) | 0.015*** (3.450) | 0.015*** (3.450) | 0.015*** (1.991) | -0.000* (-0.208) |
| FIXED            | 0.000*** (1.841) | 0.001*** (2.120) | 0.001*** (3.487) | 0.001*** (2.437) | 0.001*** (1.991) | -0.000* (-0.208) |
| RL               | 0.001*** (3.356) | 0.001*** (2.143) | 0.001*** (3.487) | 0.001*** (2.437) | 0.001*** (3.006) | 0.001*** (3.006) |
| SP               | 0.000*** (1.709) | 0.020*** (4.278) | 0.015*** (3.450) | 0.015*** (3.450) | 0.015*** (1.991) | -0.000* (-0.208) |
| INFLATION        | -0.000 (0.986) | 0.002 (1.425) | -0.001** (-2.480) | -0.002*** (-3.965) | -0.001* (-1.732) | -0.001* (-1.732) |
| CAPITA           | -0.005*** (0.631) | 0.000 (0.282) | 0.007 (0.986) | 0.142*** (11.896) | 0.012* (1.728) | 0.008 (0.972) |

Country fixed effects: Yes
Year fixed effects: Yes
p-value for AR(2) test: 0.123
p-value for Hansen test: 0.488
Observations: 17,654

Note(s): This table reports the results of the influence of happiness on firm risk-taking, estimated by GMM. R&D is the dependent variable for all specifications. All variables are defined in Appendix. The values of the t-statistics are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.
In Eqn. (4), we introduce interaction terms between Happiness and FM20, which is a dummy variable that takes a value of 1 if a firm is family-owned using the threshold of 20%, as suggested in prior studies (Nguyen, 2011a; Doan et al., 2020). We also include the same vector of control variables as in the baseline regression. We show the regression results in Table 6. Consistent with our conjecture, we find that all coefficients on the interaction terms are negative and statistically significant at the conventional level. For instance, the coefficient on $H_{INDEX} \times FM20$ is $-0.002$ and significant 1% ($t$-statistics $= -3.580$). In terms of economic significance, family-owned firms with a one percent point increase in happiness are associated with an approximately 0.002% lower degree of risk, compared to nonfamily-owned firms. These results are consistent with Eugster and Isakov (2019), who document that family trust may benefit firms in enhancing corporate governance by minimizing agency problems, thereby lowering risk-taking. This finding supports Hypothesis 2, strongly indicating that the negative effect of happiness on firm risk-taking is more pronounced for family-owned firms.

5. Robustness checks
In this section, we confirm our previous findings by using an alternative measure of risk-taking. Following Guay (1999) and Panta (2020), we use the standard deviation of return on equity using a three-year rolling window $\sigma (ROE)$ as an alternative measure of risk-taking. Higher $\sigma (ROE)$ denotes higher firm risk-taking. Table 7 shows the robustness test for happiness and firm risk-taking. The moderating influence of family ownership on the relationship between happiness and firm risk can be seen in the results provided in Table 8. We observe that the coefficients on six measures of happiness load negatively and significantly. The coefficients vary from $-0.003$ to $-0.019$. This implies that happiness is negatively associated with corporate risk-taking, consistent with previous findings.

Turning to Table 8, we investigate the moderating role of family ownership in happiness–risk-taking linkage. We show that the coefficients on the interaction terms between family ownership and happiness are negative and significant at the conventional level. The effect also economically significant. The coefficients on the interaction terms range between $-0.003$ and $-0.092$. We again confirm this negative effect of happiness on corporate risk-taking is more pronounced for firms with a higher proportion of family ownership.

6. Conclusion
The influence of country-level factors on corporate policies and performance has increasingly gained attention in financial research. Using five different measurements of happiness level from the World Happiness Report, this paper investigates the association between happiness and firm risk-taking in an international sample of 17,654 firm-year observations in 24 countries. Our empirical results indicate that happiness in a given country has a significant negative impact on risk-taking by businesses. In addition, cross-sectional tests show that the presence of family ownership strengthens the influence of happiness on corporate risk-taking, which is consistent with the notion that family trust may benefit firms by reducing agency problems and thereby generating lower risk.

Our paper is the first to study the relationship between country-level happiness and corporate risk-taking. The implications from this paper may not only benefit managers in...
### Table 6.
Interaction of happiness and family firms

| Dependent variables: R&D | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------|-----|-----|-----|-----|-----|-----|
| **R&D** -1              | 0.922*** (36.443) | 0.634*** (7.488) | 0.997*** (38.157) | 0.276*** (24.606) | 0.880*** (34.121) | 1.450*** (54.433) |
| **FM20**                 | -0.012 (−1.194) | -0.065 (−1.287) | -0.016 (−0.318) | -0.012*** (−4.906) | -0.022*** (−2.639) | -0.017 (−1.175) |
| **H_INDEX** (A)          | -0.002* (−1.909) | -0.003 (−0.655) | -0.008 (−0.731) | -0.015*** (−2.756) | -0.011** (−2.454) | -0.017*** (−2.781) |
| **LIFE LADDER** (B)      | -0.006 (−0.318) | -0.006 (−0.732) | 0.144*** (11.142) | 0.003*** (4.161) | -0.066*** (−4.675) | 0.004 (0.774) |
| **SOCIAL SUPPORT** (C)  | 0.006 (0.752) | 0.006 (0.732) | 0.006 (0.732) | 0.017*** (3.923) | 0.003*** (1.975) | -0.007** (−2.104) |
| **GENEROSITY** (D)       | 0.002*** (4.948) | 0.001 (0.155) | 0.002*** (2.890) | 0.004*** (3.327) | 0.001 (1.566) | 0.005*** (4.679) |
| **FREEDOM DECISIONS** (E) | 0.007*** (4.380) | 0.000 (0.058) | 0.005*** (2.682) | 0.012*** (3.739) | 0.030*** (5.860) | 0.000 (1.288) |
| **CORRUPTION PERCEPTIONS** (F) | 0.048*** (4.389) | 0.026 (0.804) | 0.053*** (4.638) | 0.142*** (5.149) | 0.005 (0.387) | 0.144*** (7.348) |
| **SIZE**                 | -0.006 (−0.440) | -0.004 (−0.651) | 0.001 (1.131) | -0.009*** (−6.968) | -0.000 (−0.844) | 0.003** (2.339) |
| **FIRMAGE**              | 0.003*** (2.809) | 0.002*** (2.653) | 0.003*** (2.641) | -0.014*** (−7.198) | 0.001 (0.912) | 0.013*** (6.330) |
| **CASH**                 | 0.028*** (3.522) | -0.045 (−0.774) | -0.066 (−0.732) | 0.144*** (11.142) | 0.033*** (4.161) | -0.066*** (−4.675) |
| **SALES GROWTH**         | 0.012*** (4.986) | 0.005 (0.482) | 0.003*** (3.626) | 0.005** (1.677) | 0.011*** (4.681) | 0.004 (0.901) |
| **LEVERAGE**             | -0.004 (−0.695) | -0.012 (−0.453) | 0.001 (0.210) | 0.008 (0.748) | -0.005 (−0.949) | -0.017 (−1.464) |
| **FIXED**                | 0.001 (0.322) | 0.020 (1.068) | -0.002 (−0.964) | 0.017*** (3.923) | 0.003*** (1.975) | -0.007** (−2.104) |
| **RL**                   | 0.003*** (4.948) | 0.001 (0.155) | 0.002*** (2.890) | 0.004*** (3.327) | 0.001 (1.566) | 0.005*** (4.679) |
| **SP**                   | 0.007*** (4.380) | 0.000 (0.058) | 0.005*** (2.682) | 0.012*** (3.739) | 0.030*** (5.860) | 0.000 (1.288) |
| **INFLATION**            | 0.048*** (4.389) | 0.026 (0.804) | 0.053*** (4.638) | 0.142*** (5.149) | 0.005 (0.387) | 0.144*** (7.348) |
| **CAPITA**               | -0.002*** (−3.143) | 0.002* (1.833) | -0.001 (−1.300) | -0.012*** (−4.326) | -0.001 (−1.249) | 0.001* (1.716) |
| **CONSTANT**             | -0.001 (−0.101) | 0.000 (1.283) | -0.018 (−1.327) | 0.140*** (8.900) | -0.007 (−0.904) | -0.103*** (−6.088) |

Country fixed effects: Yes
Year fixed effects: Yes
*p-value for AR(2) test* | 0.293 | 0.100 | 0.923 | 0.237 | 0.111 | 0.101
*p-value for Hansen test* | 0.391 | 0.381 | 0.102 | 0.410 | 0.637 | 0.482
Observations: 17,654

Note(s): This table reports the impact of happiness and firm risk-taking conditional on the family ownership, estimated by GMM. R&D is the dependent variable in all specifications. All variables are defined in Appendix. The values of the *t*-statistics are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.
### Table 7. Robustness checks 1

|                      | (1)                          | (2)                          | (3)                          | (4)                          | (5)                          | (6)                          |
|----------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| **σ (ROE)_{t-1}**    | 1.347*** (68.207)            | 1.349*** (68.187)            | 0.332*** (33.019)            | 1.342*** (68.534)            | 0.328*** (32.370)            | 0.953*** (41.603)            |
| **H_INDEX**          | −0.003*** (−2.933)           | −0.003*** (−2.933)           |                              |                              |                              |                              |
| **LIFE LADDER**      |                              |                              | −0.019*** (−2.775)           |                              | −0.006* (−1.749)            | −0.005** (−2.037)            |
| **SOCIAL SUPPORT**   |                              |                              |                              |                              |                              | −0.003* (−1.791)            |
| **GENEROSITY**       |                              |                              |                              |                              |                              |                              |
| **FREEDOM DECISIONS**|                              |                              |                              |                              |                              |                              |
| **CORRUPTION**       |                              |                              |                              |                              |                              |                              |
| **SIZE**             | 0.002 (1.374)                | 0.002* (1.774)               | −0.002*** (−2.358)           | 0.001 (1.035)                | −0.005*** (−5.169)           | 0.001 (1.230)                |
| **FIRMAGE**          | 0.010*** (6.035)             | 0.010*** (5.811)             | −0.014*** (−9.333)           | 0.010*** (6.208)             | −0.016*** (−10.254)          | 0.001 (0.830)                |
| **CASH**             | −0.019*** (−4.199)           | −0.021*** (−4.671)           | 0.045*** (9.974)             | −0.017*** (−3.412)           | 0.046*** (10.026)            | 0.000 (0.039)                |
| **SALES GROWTH**     | 0.009*** (2.511)             | 0.009*** (2.563)             | −0.008*** (−4.120)           | 0.009*** (2.677)             | −0.004 (−1.603)             | 0.010*** (4.87)             |
| **LEVERAGE**         | 0.001 (0.995)                | 0.000 (0.032)                | −0.032*** (−4.233)           | 0.003 (0.306)                | −0.007 (−0.850)             | 0.006 (1.135)                |
| **FIXED**            | −0.005* (−1.796)             | −0.006*** (−2.037)           | 0.013*** (4.839)             | −0.005* (−1.848)             | 0.012*** (4.710)            | −0.002 (−1.577)             |
| **RL**               | 0.005*** (4.603)             | 0.005*** (4.248)             | 0.003*** (2.729)             | 0.005*** (5.068)             | 0.003*** (3.006)            | 0.001*** (2.344)             |
| **SP**               | 0.003 (1.150)                | 0.000 (1.003)                | 0.009*** (6.365)             | 0.000 (1.270)                | −0.011*** (−6.489)          | 0.004*** (2.787)            |
| **INFLATION**        | −0.118*** (−6.038)           | −0.122*** (−6.270)           | 0.118*** (5.571)             | −0.120*** (−6.184)           | 0.126*** (5.290)            | −0.048*** (−4.672)          |
| **CAPITA**           | 0.001 (1.472)                | 0.002*** (2.158)             | −0.000 (−0.210)              | −0.000 (−0.494)              | −0.001*** (−2.939)          | −0.001 (−1.152)             |
| **CONSTANT**         | −0.057*** (−4.307)           | −0.061*** (−4.608)           | 0.101*** (10.009)            | −0.049*** (−3.464)           | 0.133*** (11.703)           | −0.003 (−0.348)             |
| Country fixed effects | Yes                          | Yes                          | Yes                          | Yes                          | Yes                          | Yes                          |
| Year fixed effects   | Yes                          | Yes                          | Yes                          | Yes                          | Yes                          | Yes                          |
| p-value for AR(2) test | 0.291                      | 0.116                       | 0.102                       | 0.140                       | 0.474                       | 0.193                       |
| p-value for Hansen test | 0.384                     | 0.723                       | 0.111                       | 0.777                       | 0.293                       | 0.118                       |
| Observations         | 12,308                      | 12,308                      | 12,308                      | 12,308                      | 12,308                      | 12,308                      |

**Note(s):** This table reports the effect of happiness on firm risk-taking, estimated by GMM. \( \sigma (ROE) \) is the dependent variable in all specifications. All variables are defined in Appendix. The values of the t-statistics are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.
|                      | Column 1   | Column 2   | Column 3   | Column 4   | Column 5   | Column 6   |
|----------------------|------------|------------|------------|------------|------------|------------|
| \( \sigma (ROE)_{t-1} \) | 0.931*** (44.829) | 0.933*** (45.138) | 0.986*** (43.660) | 0.287*** (25.937) | 0.926*** (41.486) | 1.396*** (66.114) |
| \( FM20 \)           | -0.032*** (-4.035) | -0.039*** (-3.603) | -0.004 (-0.227) | -0.005** (-2.044) | -0.020** (-2.495) | -0.012 (-0.893) |
| \( H\_INDEX \) (A)   | -0.004*** (-3.837) |                       |                       |                       |                       |                       |
| \( LIFE \_LADDER \) (B) |                       |                       | -0.002*** (-2.843) |                       |                       |                       |
| \( SOCIAL \_SUPPORT \) (C) |                       |                       |                       | -0.006 (-0.584) |                       |                       |
| \( GENEROSITY \) (D) |                       |                       |                       |                       | -0.020*** (-3.781) | -0.008* (-1.903) |
| \( FREEDOM \_DECISIONS \) (E) |                       |                       |                       |                       |                       | -0.012** (-2.066) |
| \( PERCEPTIONS \) (F) |                       |                       |                       |                       |                       |                       |
| \( FM20 \times A \)   | -0.010*** (-3.906) |                       |                       |                       |                       |                       |
| \( FM20 \times B \)   |                       | -0.006*** (-3.506) |                       |                       |                       |                       |
| \( FM20 \times C \)   |                       |                       | -0.003*** (-3.152) |                       |                       |                       |
| \( FM20 \times D \)   |                       |                       |                       | -0.092*** (-5.971) |                       |                       |
| \( FM20 \times E \)   |                       |                       |                       |                       | -0.024** (-2.144) |                       |
| \( FM20 \times F \)   |                       |                       |                       |                       |                       | -0.011** (-2.129) |
| \( SIZE \)            | 0.001* (1.906) | 0.001 (1.348) | 0.001 (0.966) | -0.007*** (-6.021) | -0.000 (-0.742) | 0.003** (2.134) |
| \( FIRMAGE \)         | 0.001 (0.864) | 0.001 (1.149) | 0.000*** (2.699) | -0.019*** (-10.691) | 0.001 (0.820) | 0.014*** (7.027) |
| \( CASH \)            | 0.006*** (2.346) | 0.005*** (1.961) | 0.000 (0.180) | 0.044*** (8.244) | 0.008*** (2.585) | -0.022*** (-4.272) |
| \( SALES\_GROWTH \)   | 0.000*** (5.041) | 0.016*** (4.716) | 0.010*** (4.512) | -0.007** (-2.088) | 0.004*** (3.126) | 0.011*** (3.173) |
| \( LEVERAGE \)        | -0.001 (-0.143) | 0.002 (0.296) | 0.002 (0.263) | -0.003 (-0.265) | -0.008 (-1.594) | -0.013 (-1.257) |
| \( FIXED \)           | -0.001 (-0.833) | -0.001 (-0.874) | -0.002 (-0.779) | 0.013*** (4.813) | 0.002 (1.316) | -0.005 (-1.324) |
| \( RL \)              | 0.001** (2.003) | 0.001* (1.858) | 0.002*** (2.809) | 0.004*** (3.527) | 0.001 (1.566) | 0.005*** (4.679) |
| \( SP \)              | 0.003*** (3.975) | 0.022*** (3.862) | 0.001*** (2.682) | 0.004*** (3.739) | 0.009*** (5.809) | 0.000 (1.288) |
| \( INFLATION \)       | -0.005 (-0.416) | -0.008 (-0.701) | -0.051*** (-4.554) | 0.118*** (4.480) | -0.006 (-0.452) | -0.131*** (-7.412) |
| \( CAPITA \)          | -0.000 (-0.883) | -0.000 (-0.327) | -0.001 (-1.375) | -0.002*** (-3.551) | -0.000 (-0.771) | 0.000 (0.491) |
| \( CONSTANT \)        | -0.026** (-3.040) | -0.025** (-2.687) | -0.015 (-1.137) | 0.168*** (11.747) | -0.003 (-0.400) | -0.005*** (-4.013) |

Country fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
Year fixed effects   | Yes | Yes | Yes | Yes | Yes | Yes |
\( p\)-value for AR(2) test | 0.221 | 0.197 | 0.110 | 0.139 | 0.931 | 0.183 |
\( p\)-value for Hansen test | 0.392 | 0.819 | 0.371 | 0.453 | 0.102 | 0.219 |
Observations         | 12,308 | 12,308 | 12,308 | 12,308 | 12,308 | 12,308 |

Note(s): This table reports the impact of happiness and firm risk-taking conditional on family ownership, estimated by GMM. \( \sigma (ROE) \) is the dependent variable in all specifications. All variables are defined in Appendix. The values of the \( t \)-statistics are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.
making investment decisions but also provide international evidence about the role of country-level factors in explaining corporate risk-taking. We give robust evidence why policymakers and business leaders should consider happiness as a causal factor in reducing firm risk because we show that happiness can reduce firm risk-taking. We also make important contributions in helping shareholders better understand various determinants of risk-taking behavior. However, it is undeniable that our study still has several limitations. First, we mainly focus on the relation between happiness and corporate risk-taking. Additionally, it is important to show that board of director’s characteristics may also affect corporate decisions. Scholars can take into account how other firm-level characteristics (e.g. managerial ability, board diversity) affect the happiness – risk-taking nexus. Second, in our setting, we do not account for the moderating role of institutional development on the relation between happiness and corporate risk-taking. It would be interesting to investigate whether institutional characteristics (e.g. corruption) play a pivotal role in shaping external governance mechanisms that contribute to firm risk-taking behavior.

Note
1. The United Nations Sustainable Development Solutions Network publishes this index yearly and gives special attention to global and regional charts showing the distribution of answers from roughly 3,000 respondents in more than 150 countries. The data are available at <https://worldhappiness.report/ed/2020/>.

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Formula for corporate risk-taking
### Appendix

| Variables       | Definition                                                                 | Sources                                                                 |
|-----------------|---------------------------------------------------------------------------|------------------------------------------------------------------------|
| **R&D**         | The ratio of research and development expenditures to total assets        | Authors' calculation based on Orbis                                    |
| **H_INDEX**     | Principal component factor from the five happiness measures in the World Happiness Report, namely, life-ladder, social support, freedom to make life choices, generosity, and perceptions of corruption | Authors' calculation based on World Happiness Report 2017               |
| **LIFE LADDER** | Life-ladder is measured by answers to the Cantril ladder question: “Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?” | As above                                                               |
| **SOCIAL SUPPORT** | Social support is the national average of the binary responses (either 0 or 1) to the Gallup World Poll (GWP) question “If you were in trouble, do you have relatives or Social support is the national average of the binary responses” (either 0 or 1) to the Gallup World Poll (GWP) question “If you were in trouble, do you have relatives or not?” | As above                                                               |
| **FREEDOM DECISIONS** | Freedom to make life choices is the national average of binary responses to the GWP question “Are you satisfied or dissatisfied with your freedom to choose what you do with your life?” | As above                                                               |
| **GENEROSITY** | Generosity is the residual of regressing the national average of GWP responses to the question “Have you donated money to a charity in the past month?” on GDP per capita | As above                                                               |
| **CORRUPTION PERCEPTIONS** | Perceptions of corruption are the average of binary answers to two GWP questions: “Is corruption widespread throughout the government or not?” and “Is corruption widespread within businesses or not?” Where data for government corruption are missing, the perception of business corruption is used as the overall corruption perception measure | As above                                                               |
| **SIZE**        | Natural logarithm of total assets                                         | Authors' calculation based on Orbis                                    |
| **FIRM AGE**    | Natural logarithm of number of years since incorporation                   | As above                                                               |
| **SALES GROWTH**| The percentage change in sales                                            | As above                                                               |
| **LEVERAGE**    | Leverage ratio as the sum of debt in current liabilities and total long-term debt, divided by total assets | As above                                                               |
| **FIXED CAPEX** | The ratio of fixed assets to total asset                                  | As above                                                               |
| **RL**          | Rule of law index, varies from −2.5 to 2.5, a higher score exhibits better institutional development | World Governance Indicators                                           |

Table A1. Variables definitions (continued)
| Variables | Definition | Sources |
|-----------|------------|---------|
| **SP** | Shareholder Protection index which measures the degree of protection of minority shareholder rights according to a list of ten basic legal provisions (e.g. prohibition of multiple voting rights, feasibility of directors’ dismissal, mandatory disclosure of major share ownership). This index ranges between 0 and 10, a higher value denotes better protection. | Guillén and Capron (2016) |
| **INFLATION** | The inflation rate based on the GDP deflator index for each country | World Bank Indicator |
| **CAPITA** | The natural logarithm of GDP per capita | As above |
| **FM20** | A dummy variable that takes a value of one if the percentage of a firm owned by family block shareholders is above the threshold of 20%, and zero otherwise | Authors’ calculation based on Orbis |
| **σ(ROE)** | Standard deviations of returns on equity using a 3-year rolling window | Authors’ calculation based on Orbis |

Table A1.

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