

The relationship between firm growth, firm cash flow volatility,  
entrepreneurship and values \*

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# The relationship between firm growth, firm cash flow volatility, entrepreneurship and values

## **Abstract**

Using a sample of forty five countries, we find a statistically significant and economically important positive relationship between firm level cash flow volatility and sales growth. We investigate if average country level cash flow volatility is affected by country level attitudes toward entrepreneurship and values. We find no evidence that attitudes toward entrepreneurship affect average country level firm cash flow volatility, but strong evidence that societal attitudes toward trust and fulfillment through work positively explain average country level firm cash flow volatility.

Keywords: Cash Flow Volatility, Growth, Entrepreneurship, Values

JEL Classification Codes: G32–Financing Policy, C23–Panel Data, D21–Firm Behavior

# 1 Introduction

In this paper, we address three questions. First, what is the relationship between firm operating cash flow volatility and revenue growth? Second, what is the relationship between country-level attitudes toward entrepreneurship and average firm country-level operating cash flow volatility? Third, what is the relationship between country-level values and average firm country-level operating cash flow volatility?

Most of the existing literature uses measures of cash flow volatility over a number of years, implying these measures do not capture the dynamic relationships between revenue growth and cash flow volatility. To address the limitations of rolling measures, we follow De Veirman and Levin (2011) and De Veirman and Levin (2012) and construct a conditional operating cash flow volatility measure. Using this conditional cash flow volatility measure, we test for the relationship between conditional cash flow volatility and revenue growth.

We implicitly consider cash flow volatility a measure of risk. For a firm to engage in high operating cash flow volatile projects, firm management must accept higher probabilities of cash flow realizations that deviate (either positively or negatively) from expected cash flow realizations. We show through a simple model that, *ceteris paribus*, contemporaneous and lagged cash flow volatility positively explains sales growth. Using a sample of firms from forty five countries, we find strong empirical support that both previous and contemporaneous volatility is positively related to sales growth. This result holds for both entire sample and sub-sample countries such as Japan, China, Germany, Korea, Taiwan, and the United Kingdom. These results suggest that firm sales growth increases with the inclination of management to pursue projects with high cash flow volatility.

Given the evidence of a positive relationship between firm level growth and cash flow volatility, we next address the reasons why firm level cash flow volatility differs between countries. We develop two hypotheses regarding the causes of differing country level cash flow volatility. First, we posit that favorable attitudes toward entrepreneurship positively influence firm cash flow volatility. Second, we posit that country level values toward work and trust influence average firm country level cash flow volatility. To our knowledge, these relationships are unaddressed in the literature.

Relative to the first question, Antoncic and Hisrich (2001) includes new business venturing, innovativeness, and proactiveness as all attributes of ‘intrapreneurship.’ Clearly, these ‘intrapreneurship’ attributes are positively associated with cash flow volatility, but whether these attributes spillover from entrepreneurial firms to the broader economy is an open question. To analyze the influence of entrepreneurial spillover, we use six survey questions from the (GEM) Global Entrepreneurship Monitor survey to construct two underlying factors for forty five countries. We find no evidence that either factor (entrepreneurial activity or entrepreneurial attitudes) explain the country means of firm level operating cash flow volatility.

In our second hypothesis, we test the influence of country values on the country means of firm cash flow volatility. Our second question represents an extension of the literature regarding the relationship between values and economic growth.<sup>1</sup> Using the World Values Survey for thirty three countries, we construct two factors from seven survey questions. Our empirical tests point to an important relationship between country level values and firm cash flow volatility. First, we find a negative relationship between the first factor (desire for income and wealth) and cash flow volatility. This result has a natural interpretation - in countries where people work to survive they are less likely to take risks on projects with risky cash flow outcomes. Second, we find a positive relationship between the second factor (trust and fulfillment through work) and cash flow volatility. Once again this result has a natural interpretation - managers pursue more volatile cash flow projects in countries with high levels of trust and where people pursue jobs for fulfillment.<sup>2</sup> Lastly, these factors (along with contemporaneous sales growth) explain 69% in the mean country level firm volatility. The high explanatory power suggest values have a first order effect on the willingness of management to pursue projects with uncertain (or less certain) cash flows.

This paper is complementary to the work of John, Litov, and Yeung (2008), who investigate the relationship between risk taking and corporate governance. They define risk using several measures of cash flow volatility and show that mean country level firm risk taking is positively related to investor protections. John, Litov, and Yeung (2008) further that risk taking is positively associated with firm revenue and GDP growth. We extend their study by showing the

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<sup>1</sup>For examples, see Schwartz (1999), Knack and Keefer (1997), Zak and Knack (2001), Stulz and Williamson (2003), and Guiso, Sapienza, and Zingales (2006)

<sup>2</sup>Interestingly, our evidence is consistent with managers pursuing high growth (and volatile projects) as a means for job fulfillment and not simply for wealth maximization.

relationship between conditional cash flow volatility and firm growth in a dynamic setting and then demonstrating the connection between country level values and firm cash flow volatility.

To develop our predictions and evidence, we proceed as follows. Section 2 develops the hypotheses. Section 3 discusses the sample and variable construction. Section 4 reviews univariate statistics. Section 5 discusses the testing strategy and provides empirical results. Section 6 provides insight into the puzzle of Japan's recent low economic growth. Section 7 concludes.

## 2 Hypotheses development

We develop a simple model to motivate our hypothesis regarding the relationship between cash flow volatility and growth. Consider  $N$  divisible firms each of which chooses at  $t = 0$  between two mutually exclusive projects – a high cash flow volatile project  $H$  or a low cash flow volatile project  $L$ . In addition, we assume the systematic risk associated with project  $H$  is higher than that associated with project  $L$ .<sup>3</sup> Cash flows are revealed at  $t = 1$  and  $t = 2$ . At  $t = 2$  the project ends and the firm is liquidated. Denote the expected revenue associated with project  $L$  as  $E[\tilde{R}^L] = R^L$  and project  $H$  as  $E[\tilde{R}^H] = R^H$ . Let cash flow be proportional to revenue so that expected cash flows are  $E[\gamma\tilde{R}^H]$  and  $E[\gamma\tilde{R}^L]$ , respectively for  $\gamma \in (0, 1)$ . Assume the net present value of both projects is zero and that each project requires an identical investment  $I_0$ . The project NPV's are

$$NPV^L = -I_0 + \frac{E[\gamma\tilde{R}^L]}{(1+r^L)} + \frac{E[\gamma\tilde{R}^L]}{(1+r^L)^2} = 0 \text{ and} \quad (1)$$

$$NPV^H = -I_0 + \frac{E[\gamma\tilde{R}^H]}{(1+r^H)} + \frac{E[\gamma\tilde{R}^H]}{(1+r^H)^2} = 0, \quad (2)$$

which implies

$$\frac{\gamma E[\tilde{R}^L]}{(1+r^L)} + \frac{\gamma E[\tilde{R}^L]}{(1+r^L)^2} = \frac{\gamma E[\tilde{R}^H]}{(1+r^H)} + \frac{\gamma E[\tilde{R}^H]}{(1+r^H)^2}. \quad (3)$$

Because the systematic risk of project  $H$  is greater than project  $L$ , the discount rate of project  $H$  is higher than project  $L$  or  $r^H > r^L$ . Due to the equality condition in Equation (3) the expected return of the low volatility project must be less than the expected return of the high volatility project or  $E[\tilde{R}^L] < E[\tilde{R}^H]$ .

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<sup>3</sup>In the CAPM, if  $\rho_{H,M} = \rho_{L,M}$  and  $\sigma_H > \sigma_L$  then  $\beta_H > \beta_L$ .

Since  $E[\tilde{R}^L] < E[\tilde{R}^H]$ , we let  $E[\tilde{R}^H] = E[\lambda\tilde{R}^L]$  where  $\lambda > 1$ .<sup>4</sup> Let  $\alpha$  represent the number of firms that choose project  $H$ . We normalize the number of firms  $N$  to one so that  $\alpha$  represents the percentage of firms that choose the higher volatile project. Therefore, the expected aggregate return at  $t = 1$  and  $t = 2$  is

$$\begin{aligned} E[\tilde{R}] &= (1 - \alpha)E[\tilde{R}^L] + \alpha E[\tilde{R}^H] \\ &= (1 - \alpha)R^L + \alpha\lambda R^L \\ &= R^L(1 + \alpha(\lambda - 1)). \end{aligned} \tag{4}$$

Since the  $\frac{\partial E[\tilde{R}]}{\partial \alpha} = (\lambda - 1)R^L > 0$ , an increase in the percentage of firms that choose the high volatility project increases the mean firm expected revenue.

Likewise, the variance of firm revenue at  $t = 1$  and  $t = 2$  is

$$\begin{aligned} Var[\tilde{R}] &= Var[(1 - \alpha)\tilde{R}^L + \alpha\tilde{R}^H] \\ &= Var[(1 - \alpha)\tilde{R}^L + \alpha\lambda\tilde{R}^L] \\ &= (1 + \alpha(\lambda - 1))^2 Var[\tilde{R}^L] \end{aligned} \tag{5}$$

Since the  $\frac{\partial Var[\tilde{R}]}{\partial \alpha} = 2(1 + \alpha(\lambda - 1))(\lambda - 1)Var[\tilde{R}^L] > 0$ , an increase in the percentage of firms that choose the high volatility project increases average cash flow volatility. Thus, an increase in the percentage of firms that choose the high volatile project  $\alpha$  increases both the expected mean and variance at  $t = 1$  and  $t = 2$ . This positive relationship motivates our first hypothesis.

**Hypothesis 1.** *Prior and contemporaneous cash flow volatility is positively related to revenue growth.*

Because the NPV of both projects are equal, a manager should be indifferent between choosing either the high or low volatility project. However, managerial attitudes and values may influence project choice. From this perspective,  $\alpha$  becomes a measure of the propensity of a manager to choose the project with higher volatility. For example, suppose a manager needs to choose either an extension of an existing product (low volatile project) or a new product (high volatile project). It seems quite plausible that a manager concerned about project failure

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<sup>4</sup>Any monotonic transformation can be used.

is more likely to choose the low volatile project. In contrast, a manager, who pursues projects for stimulation, may choose the high volatility project. Thus, if a country's values tend to reinforce fulfillment through work (rather than risk avoidance), that countries would exhibit a higher  $\alpha$ .

Bosma, Wennekers, and Amoros (2012) advance the idea that employees with entrepreneurial characteristics initiate ambitious projects and label this concept as 'intrapreneurship' or 'corporate entrepreneurship'. If entrepreneurial attitudes spillover into the attitudes of management in the broader economic, then country level attitudes towards entrepreneurship may influence project selection and hence cash flow volatility. This channel from entrepreneurial attitudes to 'intrapreneurship' leads to our next hypothesis.

**Hypothesis 2.** *At a country level, entrepreneurial attitudes and conditions are positively associated with mean firm cash flow volatility .*

There is a large literature on the relationship between values and economic outcomes. Schwartz (1999) provides a framework for understanding the relationship between values and work. Knack and Keefer (1997) empirically find a positive relationship between trust and economic outcomes. Zak and Knack (2001) model this relationship. Thus, relative to our model  $\alpha$  increases with trust. Stulz and Williamson (2003) explore the relationship between religion and investor rights. Using time invariant dimensions of culture (religion and ethnic background), Guiso, Sapienza, and Zingales (2006) confirm empirically that culture influences economic outcomes. Our next hypothesis postulates that country level values about work and trust are associated with cash flow volatility.

**Hypothesis 3.** *At a country level, values related to work and trust are associated with mean firm operating cash flow volatility.*

## 3 Data and Variable Construction

### 3.1 Sample Overview

Our sample is constructed by merging three data sources: Standard & Poors' Compustat Global, the World Values Survey and the Global Entrepreneurship Monitor. Standard & Poors' Compustat Global maintains annual company fundamental data since 1988, and daily market data

from 1984. Accounting systems are normalized across countries to ensure comparability, and figures presented in their native currency. The data set spans over 24,000 active firms and 10,000 inactive firms in over 100 countries, excluding the U.S. and Canada.<sup>5</sup> We utilize two of the data sets: the *Fundamentals Annual* database which holds annual accounting information for firms and the *Security Daily* database which captures market information such as firm market value and stock returns.

The Global Entrepreneurship Monitor (GEM) project was initiated in 1999 to explore the role of entrepreneurship in national economic growth. GEM’s annual Adult Population Survey focuses on the entrepreneurial attitudes, activity and aspirations of individuals. In each country, the survey covers at least 2,000 individual respondents. Acs (2006) uses the GEM database to study the relationship between economic growth and entrepreneurship. In contrast, we use the database to study if entrepreneurial attitudes influence the decisions of publicly traded firms.

The World Values Survey (WVS) is a regular survey conducted by the non-profit World Values Survey Association, a network of social scientists. The aim of the survey is to assist in the analysis of “changing values and their impact on social and political life.” The number of countries varies with each wave of surveys. In aggregate a total of 97 countries were surveyed as of 2007. The 2005-2008 wave of surveys, covered 54 countries and included a total of 77,000 respondents. Data from this dataset has been used in previous corporate finance studies, particularly as a source of a trust measure.<sup>6</sup>

### 3.2 Firm level panel data

We extract accounting data from Compustat Global’s Fundamentals Annual database, classifying a firm’s country by their Federal Identification Code (FIC). We restrict our sample to only those countries with sufficient firm observations to construct a valid cash flow volatility measure (see Section 3.4). We also drop financial service firms and utilities.

Using the Security Daily database we construct monthly prior 12-month returns and market values. We merge with accounting information by firm and year end date. Finally, as discussed

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<sup>5</sup>Statistics based on the year 2007.

<sup>6</sup>For example: Aghion, Algan, Cahuc, and Shleifer (2009) show the WVS trust measure is negatively correlated with Government intervention; Guiso, Sapienza, and Zingales (2003) use WVS data on religion to show religious beliefs are associated with growth conducive economic attitudes; Slemrod (2002) explore the relationship of the WVS trust measure with Government size and tax cheating; and Porta, Lopez-De-Silanes, Shleifer, and Vishny (1996) utilize WVS measures of trust and civic participation to empirically confirm the accuracy of the role of trust posited in existing economic theory.



in Section 4.1, we restrict our sample period to those financial years after 1999, leaving 151,818 observations with both accounting and market data. We also have 85,000 observations with accounting data only as market data is not available for some countries.

### 3.3 Country level cross sectional data

The data we utilize from the WVS and GEM restrict our analysis to a country level rather than a firm level. In addition, because the surveys are conducted in different years in different countries, we are restricted to cross-sectional regressions rather than panel analysis. As a result, we build a cross-sectional data set, illustrating country properties at a point in time.<sup>7</sup> We utilize information from the fourth wave of the WVS, covering years 2005-2007. The results provided match 39 of the countries in our data set (those with valid measures of  $AvgOCF Vol_{i,t}$ ). We utilize GEM data from the four Adult Population Surveys conducted from 2004-2007, averaging results over this period.

### 3.4 Conditional volatility measure

We follow the method of De Veirman and Levin (2011) to construct conditional cash flow, sales and employment volatility. First, we estimate

$$\begin{aligned} \omega_{i,t} = & \alpha + Year\vec{\beta}_1 + Industry_i\vec{\beta}_2 + SizeTercile_{i,t}\vec{\beta}_3 + Year * Industry_i\vec{\beta}_4 \\ & + Year * SizeTercile_{i,t}\vec{\beta}_5 + \epsilon_{i,t} \end{aligned} \quad (6)$$

where

i)  $\omega_{i,t}$  represents one of:

- (a) Cash flow growth from  $t-1$  to  $t$  for firm  $i$ , calculated as  $100*(OCF_{i,t} - OCF_{i,t-1})/REVT_{i,t-1}$  where REVT is the Compustat Global variable for total revenue;
- (b) Sales growth from  $t-1$  to  $t$  for firm  $i$ , calculated as  $100*(REVT_{i,t} - REVT_{i,t-1})/REVT_{i,t-1}$  where REVT is the Compustat Global variable for total revenue;
- (c) Employment growth from  $t-1$  to  $t$  for firm  $i$ , calculated as  $100*(EMP_{i,t} - EMP_{i,t-1})/EMP_{i,t-1}$  where EMP is the Compustat Global variable for the number of employees;

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<sup>7</sup>Some point-in-time observations are constructed as averages to make sample periods comparable.

- ii) *Year* represents a matrix of year dummies with  $\vec{\beta}_1$  the associated coefficient vector;
- iii) *Industry* represents a matrix of industry classification dummies based upon the five categories from Fama-French with  $\vec{\beta}_2$  the associated coefficient vector;
- iv) *SizeTercile* represents a matrix of size tercile dummies based on total assets with  $\vec{\beta}_3$  the associated coefficient vector;
- v) *Year\*Industry* represents a matrix of interactions between the industry and year dummies and  $\vec{\beta}_4$  the associated coefficient vector; and
- vi) *Year\*SizeTercile* represents a matrix of interactions between the size and year dummies and  $\vec{\beta}_5$  the associated coefficient vector.

The residual  $\epsilon_{i,t}$  captures the deviation of firm  $i$ 's growth in operating cash flows, sales or employees from the mean value after controlling for time, industry, size and related interactions. We utilize the regression errors,  $\epsilon_{i,t}$ , to estimate firm  $i$ 's conditional operating cash flow volatility at  $t$  as

$$\hat{\sigma}_{i,t} = \sqrt{\frac{\pi}{2}} |\epsilon_{i,t}|. \quad (7)$$

De Veirman and Levin (2011) show that  $\hat{\sigma}_{i,t}$  is an unbiased estimator of the true conditional volatility.<sup>8</sup> We define  $\hat{\sigma}_{i,t}$  as *OCF Vol* <sub>$i,t$</sub> , *Sales Vol* <sub>$i,t$</sub>  and *Emp Vol* <sub>$i,t$</sub>  for the following dependent variables: cash flow growth, sales growth and employee growth.

By using the residual  $\epsilon_{i,t}$ , the method of constructing conditional volatility implicitly defines volatility as the deviation of of the dependent variable that can not be explained by time, industry, firm size or related interactions. This allows for trends over time, so a firm with increasing cash flows does not necessarily have volatile cash flows if the trend is industry wide or driven by time trends. Similarly, high sales or employee growth does not necessarily indicate volatility unless they differ from the anticipated trend.

### 3.5 Firm level variables

Firm level variables include:

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<sup>8</sup>The estimator is unbiased under the condition of normality of  $\epsilon_{i,t}$ . Keefe and Tate (2012) show the empirical distribution of  $\epsilon_{i,t}$  is not normal, but by fitting the empirical distribution to the Johnson SU distribution and through simulation show non-normal errors introduce a relatively small downward bias.

- i)  $Sales\ Growth_{i,t}$  calculated as the change in Compustat item SALE, divided by the beginning of year value;
- ii)  $CAPX\ to\ Assets_{i,t}$  calculated as Compustat item CAPX scaled by beginning of period total assets;
- iii)  $R\&D\ to\ Assets_{i,t}$  calculated as Compustat item XRD scaled by beginning of period total assets;
- iv)  $Book\ to\ Market_{i,t}$  calculated as the total value of common equity divided by the market value of shareholder equity;
- v)  $Firm\ Size_{i,t}$  defined as the natural logarithm of the book value of total assets;
- vi)  $Prior\ 12-month\ Return_{i,t}$  calculated as the holding period return for ordinary stockholders over the previous financial year.

Appendix A provides detailed information on the construction of variables, including the name, definition, construction method and data source.

### 3.6 Country level explanatory variables

For country level analysis we construct variables as the mean of observed firm level variables within the country over the period of 2000-2007. We drop any country that does not have a valid measure for cash flow volatility or that has an average of less than 30 unique firms in the financial years over this period. These requirements leave our country level sample with 43 distinct firms.

The constructed variables have been labeled with the prefix *Avg.* to distinguish them from firm level data. For instance average cash flow volatility for Japan is calculated as the mean of all firm's  $OCF\ Vol_{i,t}$  observations within Japan during 2000-2007, which gives the value subsequently matched to Japan in  $AvgOCF\ Vol_{i,t}$ .

Using the GEM survey data spanning the years 2004-2007, we construct the following variables:

- i)  $Plan\ Future\ Start\ Up$  measures the proportion of respondents planning to start up a business in the next three years;

- ii) *Discontinued Business* measures the proportion of respondents who have recently closed down a business;
- iii) *Business Opportunities* measures the proportion of respondents who perceive future business opportunities in their local area in the next six months;
- iv) *Fear of Failure* measures the proportion of respondents for whom fear of failure would prevent them from starting a business;
- v) *High Status of Entrepreneurs* measures perceptions on the societal rank of successful entrepreneurs (measure increases as the perceived rank increases);
- vi) *Start Business is Valid Career* measures perceptions on whether entrepreneurship is considered to be a valid career choice (measure increases as the entrepreneurship is more accepted as a career).

Using the WVS fifth wave survey, spanning the years 2005-2007, we construct the following variables:

- i) *Desire for Risk* measures how important respondents considered risks to be as an aspect of life (the measure increases as risks are considered more important);
- ii) *National Trust* measures the proportion of respondents who believed most people could be trusted;
- iii) *Desire for Wealth* measures how important respondents considered wealth to be (the measure increases as wealth is considered more important);
- iv) *Job for Income* measures the proportion of people who believe income is the most important factor when job seeking;
- v) *Job for Security* measures the proportion of people who believe job security is the most important factor when job seeking;
- vi) *Job for Co-workers* measures the proportion of people who believe working with people you like is the most important factor when job seeking;
- vii) *Job for Accomplishment* measures the proportion of people who believe doing an important job that creates a sense of a accomplishment is the most important factor when job seeking.

Appendix B provides a detailed description of the survey questions and variable construction.

## 4 Univariate Sample Statistics

### 4.1 Sample period

As a reaction to the Asia Financial Crisis, Asami (2006) documents accounting reforms in Japan, which went into effect in 1999. To investigate the impact of these accounting reforms, we analyze the time series of capital expenditures and research and development expenses, both scaled by total assets. We find large increases in both measures in 1999 (relative to the prior years). Furthermore, these increases persist. Because accounting reforms materially affect the data reported in Compustat, we restrict our sample to those years subsequent to 1998.

### 4.2 Sample statistics

Table 1 shows mean firm level variables for the ten countries with the largest number of observations. Columns (5) through (8) report the mean volatility measures. These volatility measures show substantial variation between countries. For example, the mean  $OCF Vol_{i,t}$  is 140.3 percent in Australia versus only 4.0 percent in Japan; the mean  $Sales Vol_{i,t}$  is 114.89 percent in Australia versus only 13.5 percent in Japan;  $Emp Vol_{i,t}$  is 35.3 percent in Australia versus only 10.3 percent in Japan. Across 45 countries, Australia tends to have the highest volatility and Japan the lowest.

Panel A of Table 2 shows sample statistics associated with country averages of firm level variables for the period 2000 through 2007, which represents the period from which our survey variables are constructed. So that our results are not driven by outliers, we winsorize the country average variables at five percent in both tails.<sup>9</sup> The mean of  $AvgOCF Vol_{i,t}$ , our main variable of interest, is 21.8 percent. The standard deviation of 12.1 percent shows this variable varies considerably between countries. The means of  $AvgSales Vol_{i,t}$  and  $AvgEmp Vol_{i,t}$  are 37.1 percent and 19.8 percent, respectively.

Panel B of Table 2 depicts sample statistics associated with survey variables. Panel B shows entrepreneurial attitudes vary widely by country. For example, the percent of respondents

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<sup>9</sup>Winsorizing at the 5% level for a sample of 45 countries implies that the lowest two values are set equal to the third value and the top two values are set equal to the forty third value. This is why the mean  $OCF Vol_{i,t}$  associated with Australia in Table 1 does not match the maximum  $avgolofc$  in Table 2.

where *Fear of Failure* (the fear of failure prevents them from starting a business) varies from 25.5 in Norway percent to 52.6 percent in Greece with an overall mean of 36.8 percent. Also, the percent of respondents where *High Status of Entrepreneurs* (individuals who start successful business are given high status) varies from 50 percent in Japan percent to 86 percent in Finland with an overall mean of 69 percent. Overall, the GEM variables show substantial variation between countries.

The WVS variables also show substantial variation. Panel B of Table 2 shows that people rank differently the most important reason to work – 36 percent of the respondents rank *Job for Income* as most important, 31 percent of the respondents rank *Job for Security* as most important, 12 percent of the respondents rank *Job for Co-workers* as most important, and 23 percent of the respondents rank *Job for Accomplishment* as most important. Panel A also provides the standard deviation, minimum and maximums of each variable. These sample statistics show substantial heterogeneity between countries regarding why people work. For example, in Morocco 57 percent rank *Job for Security* as the most important whereas in Switzerland 14 percent rank *Job for Security* as the most important.

### 4.3 Correlations

Panel A of Table 3 shows the correlation coefficients between survey variables. The variables from (1) through (7) are constructed using the GEM survey. The correlation table shows that many of the variables are highly correlated. The correlation coefficient between *Start Business is Valid Career* and *Discontinued Business* is 48 percent; the correlation coefficient between *Desire for Risk* and *Plan Future Start Up* is 42 percent; and the correlation coefficient between *Business Opportunities* and *High Status of Entrepreneurs* is 50 percent. Overall, the high correlations suggest there may be one or two underlying factors that describe the GEM survey data.

The variables from (8) through (13) in Panel A of Table 3 are constructed using the WVS. The correlation structure provides insight into why people work. For example, the correlation coefficient between *Job for Co-workers* and *Job for Accomplishment* is 55 percent. Interestingly, both *Job for Co-workers* and *Job for Accomplishment* are negatively correlated with *Desire for Wealth* (-50 and -64 percent, respectively) and positively correlated with *National Trust* (47 percent and 50 percent, respectively). Lastly, both *Job for Co-workers* and *Job for Accom-*

*plishment* are negatively correlated with *Job for Income* and *Job for Security*. As with the GEM survey data, the high correlations between WVS constructed variables is suggestive of underlying factors that describe the WVS data.

Panel A also shows the correlation coefficients between variables constructed using GEM and the WVS. For example, *Job for Co-workers* and *Job for Accomplishment* are negatively correlated with *Plan Future Start Up* (-46 and -38 percent, respectively) whereas *Job for Income* and *Job for Security* are positively correlated with *Plan Future Start Up* (27 and 32 percent, respectively). The direction and magnitude of these correlation coefficients is consistent with the GEM survey capturing the need of people to pursue entrepreneurial activities for income. Lastly, the correlation coefficient between *Business Opportunities* and *National Trust* is only 0.0165, indicating these measures pick up distinctly different characteristics.

Panel B of Table 3 shows the correlation coefficient between average country variables with sales growth as well as our three conditional volatility measures. For comparison purposes, we also follow Bates, Kahle, and Stulz (2009) and construct *AvgBKS Vol<sub>i,t</sub>*, which is based on the standard deviation of operating cash flows over prior years. De Veirman and Levin (2011) show measures based on the standard deviation over a period have less variation than their conditional volatility measures; nonetheless, the correlation coefficient of the conditional averages and the *AvgBKS Vol<sub>i,t</sub>* measures tend to be qualitatively similar.

Panel B provides evidence that the reasons people work influences both sales growth and volatility. The correlation coefficients of *Job for Income* and *Job for Security* with *AvgSales Growth<sub>i,t</sub>* are 25 percent and -22 percent, respectively. Likewise, the correlation coefficients of *Job for Income* and *Job for Security* with *AvgOCF Vol<sub>i,t</sub>* are -12 percent and -61 percent, respectively. This evidence suggests that when security is the highest ranked job characteristic, then both sales growth and cash flow volatility decline. In contrast, the correlation coefficient of *Job for Accomplishment* with *AvgOCF Vol<sub>i,t</sub>* is 63 percent, suggesting that projects with higher volatility may be more fulfilling. Trust also appears to play an important role in both sales growth and volatility. Specifically, the correlation coefficient associated with *National Trust* and *AvgSales Growth<sub>i,t</sub>* is 31 percent and with *AvgOCF Vol<sub>i,t</sub>* is 53 percent. Thus, the univariate statistics suggest that firms may grow faster when there are high levels of trust within a country and where workers pursue jobs for accomplishment.

#### 4.4 Time variation

Figure 1 plots average firm sales growth for China, Japan, Taiwan, Germany, South Korea and the United Kingdom over the period of 1999 through 2011. Over most of the period, Japan exhibits the lowest sales growth. The only exception was from 2001 through 2003 when Germany had the lowest sales growth. Consistent with a state managed economy, China exhibits steady growth with minimal year to year fluctuation. For the same countries over the same period, Figure 2 plots country level cash flow volatility. Once again, Japan exhibits the lowest cash flow volatility. Interestingly, for six countries over 13 years there are four points where the volatility plots cross – Taiwan and South Korea and Taiwan and China both cross twice. This apparent stability of country level volatility indicates the possible presence of country level factors.

A possible issue with our measure of conditional cash flow volatility is that earnings management might bias downward the true operating cash flow measure. For example, if Japanese companies extensively manage earnings, then our low measure Japan's cash flow volatility may reflect earnings management and not true low cash flow volatility. Using several measures of earnings management, Leuz, Nanda, and Wysocki (2003) show that between 1990-1999 earnings management differed by country with Japan ranked tenth out of thirty one countries.<sup>10</sup> In addition, Land and Lang (2002) investigate earnings multiples of firms in seven countries between 1987 and 1999 and provide evidence of convergence in international accounting standards. As a further check, we investigate the stability of sales and employment volatility. Once again, we find Japan tends to have the lowest volatility in the sample. Because employment volatility is plausibly difficult to manage, we suggest that our volatility measures are not simply driven by earnings management and accounting manipulation.

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<sup>10</sup>Countries with higher earnings management scores include South Korea, Taiwan, Singapore, and Germany.



## 5 Hypothesis Testing

### 5.1 The relationship between cash flow volatility and sales growth

Hypothesis 1 posits cash flow volatility is positively associated with revenue growth. We specify a regression based around these two variables, giving the equation

$$Sales\ Growth_{i,t} = c_i + \sum_{j=0}^n \alpha_j Sales\ Growth_{i,t-j} + \sum_{j=1}^n \beta_j OCF\ Vol_{i,t-j} + \sum_{m=1}^n c_m CONTROL_{i,t}^m + \epsilon_{i,t}, \quad (8)$$

where *CONTROL* includes the variables *CAPX to Assets*<sub>*i,t*</sub>, *R&D to Assets*<sub>*i,t*</sub>, *Prior 12-month Return*<sub>*i,t*</sub>, *Book to Market*<sub>*i,t*</sub> and *Book Leverage*<sub>*i,t*</sub>. Due to the inclusion of lags of the dependent variable, fixed effects regression is biased. Thus, we utilize the Arellano-Bond linear dynamic panel data estimation with robust standard errors clustered by firm. As in other panel models, dynamic panel data estimation controls for unobserved time invariant firm level heterogeneity.

Panel A of Table 4 presents regression results from Equation 8 using the entire sample. Column (1) presents results using one lag of sales growth and contemporaneous cash flow volatility. Column (2) presents results using two lags of sales growth and contemporaneous and lagged cash flow volatility. Column (3) presents results using two lags of sales growth and contemporaneous and two lags of cash flow volatility. In all three specifications, the coefficients associated with each measure of cash flow volatility are positive and statistically significant at less than the 1% level of significance. Importantly, economic impact of cash flow volatility on growth is large – a one standard deviation increase in cash flow volatility is associated with an increase in sales growth of 0.70 times the standard deviation of sales growth. These results provide evidence in support of Hypothesis 1.

Panel B presents the results across several key countries using standardized variables. The coefficient associated with contemporaneous cash flow volatility *OCF Vol*<sub>*i,t*</sub> is positive and statistically significant at the 1% level in all countries except Korea. In Korea the coefficient associated with *OCF Vol*<sub>*i,t*</sub> is positive and statistically significant at the 5% level. Reflecting strong economic importance, the magnitudes of the coefficients range between 0.66 in Germany to 1.21 in Taiwan. The impact of lagged cash flow volatility is not consistent across countries – the coefficients associated with *OCF Vol*<sub>*i,t-1*</sub> are positive and statistically significant at less than the 5% level for Japan, Taiwan, and the United Kingdom and the coefficients associated

with  $OCF Vol_{i,t-2}$  are positive and statistically significant at less than the 5% level for China, Japan and the United Kingdom. Only, the coefficient associated with  $OCF Vol_{i,t-1}$  for China is negative and statistically significant. Consistent with the aggregate data, the country level results provide evidence in support of Hypothesis 1.

## **5.2 Testing the relationship between cash flow volatility, entrepreneurship, and values**

### **5.2.1 Factor analysis and testing approach**

Because of the large number of correlated sample variables, we utilize factor analysis to extract underlying factors within the data. We use this technique on the GEM, WVS and combined survey variables respectively. For each set of variables, we find factors using the principal component analysis method. Using the eigenvalues, we select either two or three factors and then orthogonalized using the varimax rotation to obtain scoring coefficients for each of the survey variables (Kaiser, 1958). Using the scoring coefficients, we interpret the underlying economic meaning of the factor and provide a descriptive label.

We regress these factors on cash flow volatility. Because the precision of our  $AvgOCF Vol_{i,t}$  measure is related to the sample size within that country, we use Weighted Least Squares (WLS) estimation in country level regressions. Countries are weighted according to the average number of firms in their annual samples. For example, Japan has a weight of 16.6 percent, United Kingdom a weight of 10.3 percent, India a weight of 7.4 percent, Germany a weight of 4 percent, and Indonesia a weight of 1.3 percent. These weights illustrate that no single country dominates the sample.

### **5.3 Does entrepreneurship influence country-level cash flow volatility?**

To test Hypothesis 2, we utilize factor analysis on the GEM survey variables. The two identified factor variables are shown in Panel A of Table 5.  $GEM f1$  places positive weightings on *Plan Future Start Up*, *Involved in Young Business* and *Discontinued Business*, each of which indicates high levels of entrepreneurial activity. We label the first factor *GEM Entrepreneurial Activity*. Meanwhile,  $GEM f2$  places positive weighting on fear of failure and high status of entrepreneurs. Accordingly, we label the second factor *GEM Entrepreneurial Attitudes*, which increases with a

fear of failure and the esteem given to entrepreneurs. Broadly, the factors seem to disentangle entrepreneurial attitudes from activities.

Figure 3 plots the position of in-sample countries relative to the two identified GEM factors. Japan is at the extreme of both factors, showing very little entrepreneurial activity despite relatively low fear of failure.<sup>11</sup> Meanwhile the United Kingdom, which has some of the highest levels of cash flow volatility, does not exhibit extreme levels of either *GEM Entrepreneurial Activity* or *GEM Entrepreneurial Attitudes*. The Philippines, Columbia, and Peru all exhibit high entrepreneurial activity, which illustrates that GEM survey responses seems to measure new business activity, possibly driven by need, rather than business activity driven by choice and innovation.

Panel B of Table 5 presents results from regressing cash flow volatility on the GEM factors and sales growth. In each regression, neither coefficient associated with *GEM f1* nor *GEM f2* is statistically different from zero. These results provide evidence that entrepreneurial attitudes do not appear to spill over into the broader economy. Overall, we find no evidence is support of Hypothesis 2.

#### 5.4 Do values influence country-level cash flow volatility?

Using factor analysis on the WVS survey variables, we construct the two factor variables shown in Panel A of Table 6. *WVS f1* places positive weightings on *Desire for Wealth* and *Job for Income*, thus capturing the desire for wealth and income. We label the first factor *WVS Desire Income & Wealth*. *WVS f2* places positive weightings on *National Trust*, *Job for Co-workers* and *Job for Accomplishment* and a large negative weighting on *Job for Security*. This factor increases with *National Trust* and emphasizes job factors oriented toward fulfillment through work. We label the second factor *WVS Trust & Fulfillment*.

Figure 4 plots the position of in-sample countries relative to the two identified WVS factors. Across thirty three countries, Japan exhibits the lowest *WVS f1* factor score suggesting the Japanese have a relatively low desire for income and wealth. In contrast, the *WVS f1* factor scores of South Korea, China, and the United Kingdom are both similar and moderate. The developing countries of Jordan and Morroco exhibit the highest *WVS f1* factor score suggesting

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<sup>11</sup>The *Fear of Failure* measure is based on a question which asks whether fear of failure would deter the respondent from starting a business.

in these developing countries working for income and wealth is very important. In contrast to its very low *WVS f1* score, Japan exhibits a relatively modest *WVS f2* score, which is qualitatively equivalent to China. Both Germany and South Korea exhibit low *WVS f2* scores showing low trust and fulfillment through work. In contrast, Sweden and the Netherlands have very *WVS f2* scores, suggesting high trust and fulfillment through work. Overall, the figure shows there is substantial variability in factor scores between countries.

Panel B of Table 6 presents regression results using the factors as explanatory variables. Specification (1) shows the coefficient associated with *WVS f1* is negative and statistically significant at the 10% level, providing some evidence that country level cash flow volatility decreases with the need for income and wealth. This is consistent with *Job for Income* capturing those respondents who value a steady income stream above other job characteristics, thus illustrating a low desire for risky opportunities. Specification (2) shows the coefficient associated with *WVS f2* is positive and statistically significant at the 1% level, providing strong evidence that country level cash flow volatility increases with the level of trust and fulfillment through work. Specification (3) shows the results hold with both factors in the specification. In this specification, the statistical significance of the coefficient associated with *WVS f1* increases to the 5% level. The  $R^2$  associated with each specification indicates the percent of the variation in cash flow volatility explained by the variables. The  $R^2$  in specification (1) is 36.8 percent, in specification (2) is 62.4 percent and in specification (3) is 69 percent, implying that *WVS f2* explains more than 25.6 percent more of the variance than *WVS f1*. Overall, these results provide evidence that trust and fulfillment through work positively explain firm cash flow volatility. To a lesser extent, desire for wealth and income negatively explains firm cash flow volatility. In summary, our finding supports Hypothesis 3, which advances that values affect cash flow volatility.

## 5.5 Constructing factors from both GEM and WVS

Because of these sample size differences, we first conducted out testing by exclusively using either the GEM or WVS data. The GEM survey provides information on forty five countries. The WVS provides information on thirty three countries. We next examine the combined sample. In the combined sample, the number of countries is reduced to twenty seven. Using this combined

sample, we construct three factors: *All f1* which is labeled *Entrepreneurial Activity*, *All f2* which is labeled *Desire Income & Wealth*, and *All f3* which is labeled *Trust & Fulfillment*. Panel A of Table 7 shows the factor loadings, which are qualitatively similar to the loadings in the separate analysis. Panel B of Table 7 depicts WLS estimation results. Consistent with the earlier analysis, the coefficient associated with *All f1* is not statistically significant, the coefficient associated with *All f2* is negative and statistically significant at the 1% level, the coefficient associated with *All f3* is positive and statistically significant at the 1% level. Overall, the combined analysis provides no evidence in support of Hypothesis 2, but provides strong evidence in support of Hypothesis 3.

## 6 The puzzle of low growth in Japan

From 1999-2011 the average Japanese firm experienced annual sales growth of 3.9 percent and cash flow volatility of 4.0 percent.<sup>12</sup> Across sample countries, average sales growth was 20.6 percent and cash flow volatility of 21.7 percent.<sup>13</sup> In addition, both the sales and employee volatility of Japanese firms is exceptionally low by international standards. Across our sample, Japanese firms have the lowest cash flow volatility and among the lowest sales growth.

Why do Japanese firms have such low sales growth and cash flow volatility? Iwamoto, Kawano, and Clenfeld (2012, page 2) explain the consequences of making a mistake in Japan are severe.

The breakdown of the lifetime employment system may be the main source of anxiety that leads people to play it safe, say Harvard's Brinton and her co-author, Toshio Yamagishi, a professor at Tamagawa University. There's still a prejudice against hiring people mid-career, and with companies firing workers and making fewer long-term commitments to employees, second chances are hard to come by. "There's a sense that if you screw up, it's kind of over" Brinton says. "Once you get pushed out of a group, you don't get back in."

Are Brinton and Yamagishi assertions consistent with our empirical findings?

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<sup>12</sup>See Table 1.

<sup>13</sup>See Table 2.

Table 8 provides sample statistics for the Japanese survey variables including the number of surveys used in constructing the variable, the average number of respondents and the mean value of the constructed variable. Japan’s rank relative to the other in-sample countries is displayed in the final column.<sup>14</sup> Table 8 shows that relatively few Japanese respondents plan to start up a business or perceive any potential business opportunities. Japanese respondents were the most risk averse in the sample (based on the *Desire for Risk* measure). Consistent with risk aversion, Japan ranks eighteenth out of thirty five countries in *Job for Security*. *Job for Security* positively loads with *WVS f1* and *WVS f1* negatively explains cash flow volatility. Japan *Job for Security* ranking is between Argentina and Poland.<sup>15</sup>

To explain low sales growth and volatility in Japanese firms, we examine the underlying variables that explain Japan’s *WVS f2* factor score. *WVS f2* is positively related to *National Trust* where Japan ranks thirteenth out of thirty seven countries. Although the level of trust in Japan is in the top half of the sample it is well below developed countries with homogeneous populations such as Norway (first) and Sweden (second). Modest levels of trust are plausibly associated with Brinton and Yamagishi’s assertion regarding the inability of Japanese workers to re-enter the workforce. A related issue is that the Japanese workers are motivated to work through their relationship with their co-workers. Japan ranks second in *Job for Co-workers* but only fourteenth *Job for Accomplishment* out of thirty five countries. Our findings suggest that low cash flow volatility may be related to a combination of the following: (i) relatively modest level of trust, (ii) relatively high level of concern with job security, and (iii) extremely high (relative to other countries) level of importance attributed to working with co-workers.

How can Japan incentivize growth? It is unlikely (maybe impossible) to change the Japanese value regarding the importance of co-workers. Thus, the issue of labor mobility must be addressed - Brinton’s insight “if you screw up, it’s kind of over” suggests two underlying issues. First, what does “screw up” mean? Of course a “screw-up” may be the result of mismanagement, but in the context of our model may simply be a negative draw from a cash flow volatile project. Second, if the negative draw occurs, it (the employee’s career) can’t be over. Japanese workers appear locked in a low growth equilibrium. Because Japanese workers are

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<sup>14</sup>The international position of Japan can be further gauged by comparing variable means to the international averages reported in Panel B of Table 2.

<sup>15</sup>Sweden has the lowest rank of *Job for Security*.

satisfied with their income, they are unwilling to face possible workforce ostracism by taking risks.

## 7 Conclusion

What causes revenue growth to differ by country? Our evidence suggests for firms to achieve revenue growth they must take risks. We measure risk as conditional firm operational cash flow volatility and empirically show that lagged and contemporaneous cash flow volatility sales is positively related with sales growth. This relationship is found across forty five countries. We then estimate conditional cash flow volatility by country and find wide variation between countries with Japan exhibiting the lowest cash flow volatility.

Why does cash flow volatility differ by country? We find entrepreneurial activities and attitudes do not have a material effect on country level cash flow volatility. However, we isolate the value driven factors *Desire Income & Wealth* and *Trust & Fulfillment* as major determinants of cash flow volatility levels observed within countries. Specifically, countries where employees emphasize the importance of job for income above job for fulfillment exhibit lower cash flow volatility, while countries with high trust and job for fulfillment exhibit higher cash flow volatility.

Our findings go some way in explaining Japan's low sales growth and cash flow volatility. First, we show low sales growth is directly associated with low cash flow volatility, asserting Japan's consistently low cash flow volatility is a function of their low levels of firm growth. Second, we indicate that modest levels of country level trust, relatively high emphasis on job security, and extremely high emphasis on working for co-workers may partially explain low cash flow volatility.

We advance the idea that, given Japan's work related values, their cash flow volatility and associated revenue growth should be higher, but that the inability for workers to take risks and re-enter the workforce provides a strong disincentive to take on risky projects. In order to incent risk taking, we suggest the government sponsor or companies put in place **pilot** programs that address employment re-entry risk. If re-entry risk is addressed, our empirical results suggest Japan may once again experience a high growth economy.

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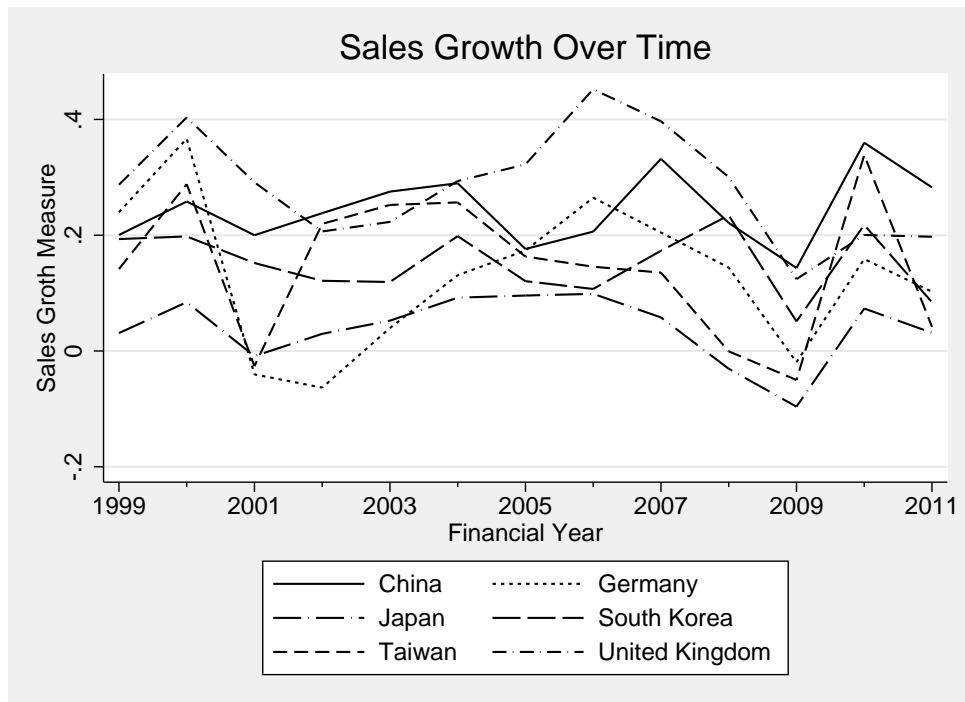


Figure 1: Average firm sales growth by country

This figure plots average country level  $Sales Growth_{i,t}$  from 1999 through 2011 for China, Japan, Taiwan, Germany, South Korea, and the United Kingdom. The  $y$ -axis represents average  $Sales Growth_{i,t}$  and the  $x$ -axis years.

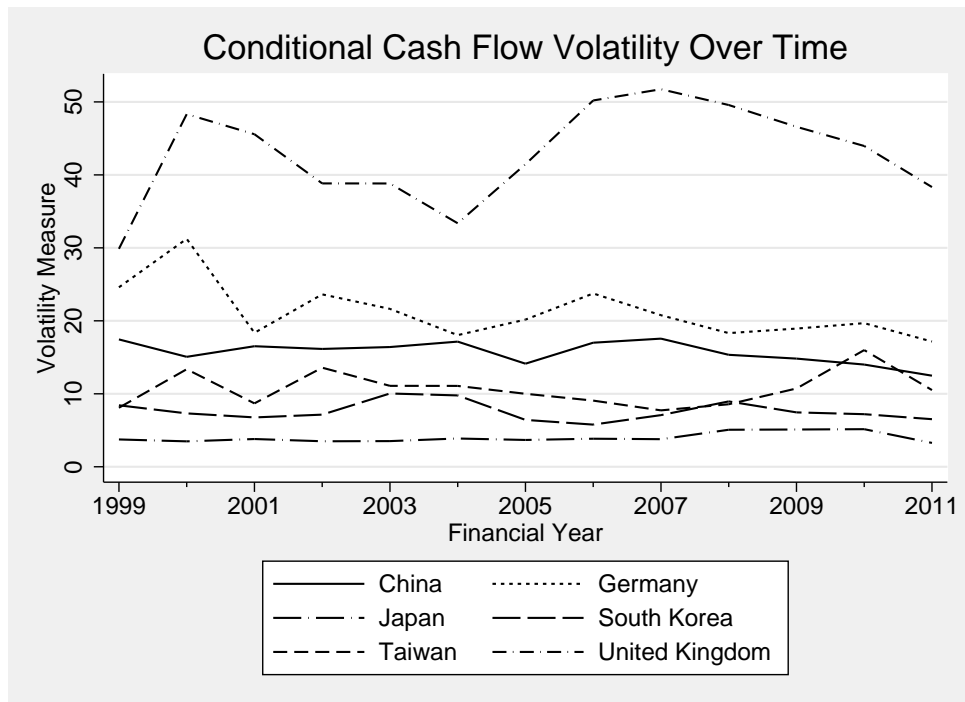


Figure 2: Average firm cash flow volatility by country

This figure plots average country level  $OCF Vol_{i,t}$  from 1999 through 2011 for China, Japan, Taiwan, Germany, South Korea, and the United Kingdom. The  $y$ -axis represents average  $OCF Vol_{i,t}$  and the  $x$ -axis years. See Section 3.4 for information on the construction of  $OCF Vol_{i,t}$ .

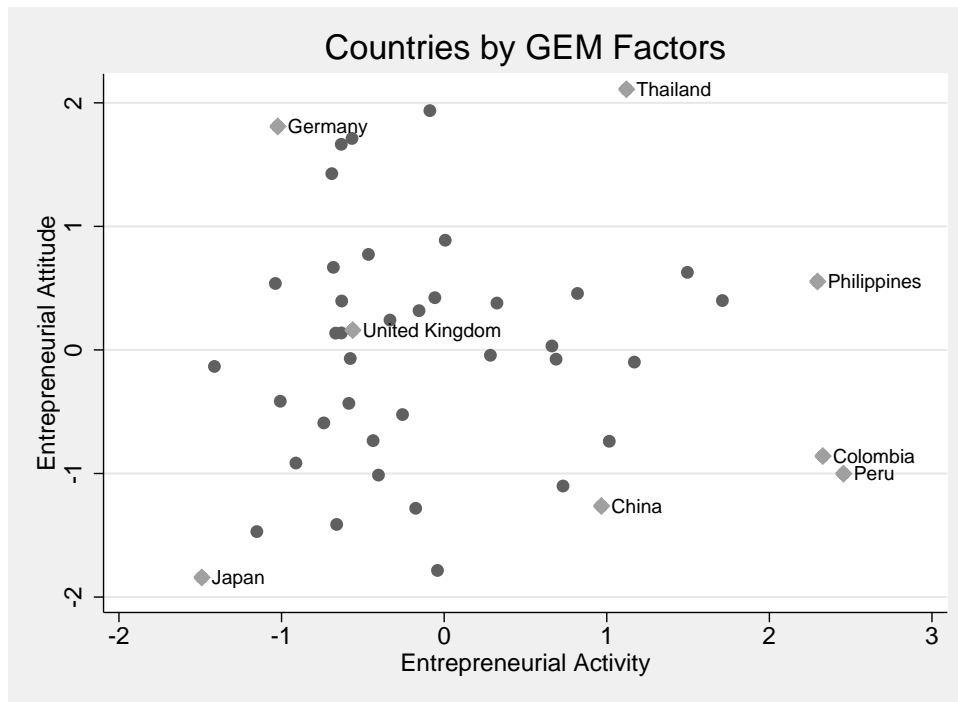


Figure 3: Position of countries relative to the two GEM factors

The figure plots country level factor scores for the two GEM factors. The  $x$ -axis represents  $GEM f1$  which we label  $GEM Entrepreneurial Activity$ . The  $y$ -axis represents  $GEM f2$  which we label  $GEM Entrepreneurial Attitudes$ .  $GEM f1$  is positively related to *Plan Future Start Up*, *Involved in Young Business* and *Discontinued Business*, which are all positively associated with high levels of entrepreneurial activity.  $GEM f2$  is positively related to *Fear of Failure* and *High Status of Entrepreneurs* which are related to attitudes toward entrepreneurs. Appendix A provides information on variable construction, including the name, definition, data source and construction method.

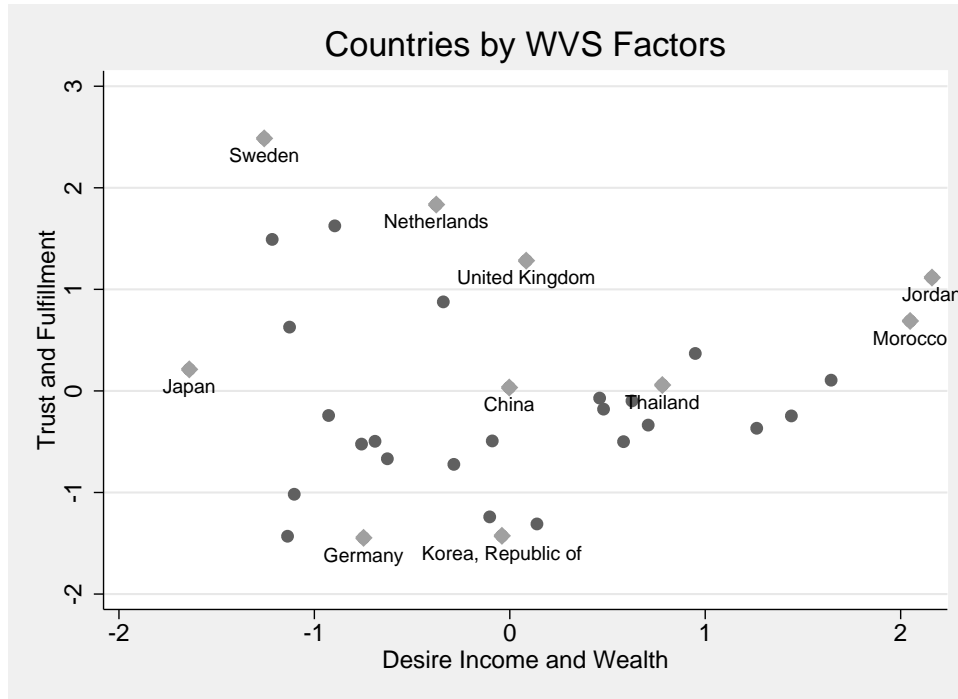


Figure 4: Position of countries relative to the two WVS factors

The figure plots country level factor scores for the two GEM factors. The  $x$ -axis represents  $WVS f1$  which we label  $WVS Desire Income \& Wealth$ . This factor places positive weightings on *Desire for Wealth* and *Job for Income*. The  $y$ -axis represents  $WVS f2$  which we label  $WVS Trust \& Fulfillment$ . This factor places positive weightings on *National Trust*, *Job for Co-workers* and *Job for Accomplishment* and a large negative weighting on *Job for Security*. Also, both factors are positively related to *Desire for Risk*. Appendix A provides information on variable construction, including the name, definition, data source and construction method.

Table 1: Mean firm values across countries. The table presents the sample mean value for variables across several key countries. The countries presented are the largest ten in our sample in terms of the number of observations. See Appendix A for information on variable construction, including the name, definition, construction method and data source.

	Obs.	CAPX to Assets <sub><i>i,t</i></sub>	R&D to Assets <sub><i>i,t</i></sub>	OCF Vol <sub><i>i,t</i></sub>	Sales Vol <sub><i>i,t</i></sub>	Emp Vol <sub><i>i,t</i></sub>	Prior 12- month Return <sub><i>i,t</i></sub>	Market Leverage <sub><i>i,t</i></sub>	Book to Market <sub><i>i,t</i></sub>	Sales Growth <sub><i>i,t</i></sub>	Firm Size <sub><i>i,t</i></sub>
Australia	20,403	0.118	0.015	140.274	114.889	35.307	0.176	0.225	0.831	0.568	3.161
China	22,975	0.084	0.001	15.382	36.481	18.693	0.353	0.31	0.677	0.249	7.158
Germany	12,265	0.056	0.023	21.357	36.525	24.049	0.028	0.456	0.951	0.133	4.713
United Kingdom	29,767	0.064	0.025	42.929	52.076	24.405	0.086	0.355	0.896	0.29	3.705
India	21,666	0.09	0.004	16.219	43.929	17.901				0.291	7.292
Japan	49,681	0.033	0.015	3.999	13.459	10.306	0.079	0.544	1.293	0.039	10.539
Korea	17,312	0.057	0.002	7.528	28.565		0.155	0.559	1.602	0.147	12.49
Malaysia	12,039	0.048	0.002	19.469	36.754	22.475	0.114	0.438	1.412	0.139	5.416
Singapore	7,694	0.064	0.003	17.18	40.751	25.81	0.187	0.447	1.63	0.179	4.892
Taiwan	16,287	0.058	0.028	10.677	29.348		0.153	0.389	0.959	0.141	8.153

Table 2: Summary statistics for country level variables

The table presents the summary statistics. Panel A summarizes the properties of country averages of these variables, as constructed in Section 3.6. Panel B presents the properties of the survey variables across the full international sample. See Appendix A for information on variable construction, including the name, definition, construction method and data source.

Panel A: Country Variables 2000-2007							
	# Countries	Mean	Std Dev.	Min	Max	Skewness	Kurtosis
<i>AvgSales Growth<sub>i,t</sub></i>	51	0.207	0.098	0.067	0.405	0.437	2.218
<i>AvgOCF Vol<sub>i,t</sub></i>	51	21.761	12.067	7.554	52.481	1.376	3.989
<i>AvgSales Vol<sub>i,t</sub></i>	51	37.086	11.804	21.198	63.300	0.875	3.093
<i>AvgEmp Vol<sub>i,t</sub></i>	38	19.766	6.969	5.301	33.425	-0.454	3.047
<i>AvgCAPX to Assets<sub>i,t</sub></i>	51	0.064	0.017	0.041	0.098	0.486	2.203
<i>AvgR&amp;D to Assets<sub>i,t</sub></i>	51	0.009	0.011	0.000	0.034	1.044	2.746
<i>AvgPrior 12-month Return<sub>i,t</sub></i>	48	0.238	0.181	-0.034	0.659	0.877	3.112
<i>AvgMarket Leverage<sub>i,t</sub></i>	51	0.498	0.073	0.348	0.623	-0.283	2.698
<i>AvgBook to Market<sub>i,t</sub></i>	47	1.385	1.021	0.428	5.399	2.306	8.310
<i>AvgFirm Size<sub>i,t</sub></i>	51	6.958	2.413	3.570	12.558	0.919	3.152

Panel B: Survey Variables							
	# Countries	Mean	Std Dev.	Min	Max	Skewness	Kurtosis
<i>Plan Future Start Up</i>	39	0.178	0.121	0.060	0.458	1.085	2.981
<i>Discontinued Business</i>	39	0.036	0.027	0.010	0.099	1.126	3.076
<i>Fear of Failure</i>	39	0.368	0.077	0.255	0.526	0.327	2.427
<i>Start Business is Valid Career</i>	39	0.622	0.121	0.377	0.843	-0.136	2.638
<i>High Status of Entrepreneurs</i>	39	0.686	0.096	0.500	0.859	-0.028	2.319
<i>Business Opportunities</i>	39	0.383	0.135	0.165	0.625	0.152	2.086
<i>Desire for Risk</i>	30	0.411	0.094	0.276	0.608	0.526	2.609
<i>National Trust</i>	33	0.320	0.178	0.060	0.680	0.365	2.125
<i>Desire for Wealth</i>	30	0.360	0.130	0.200	0.634	0.728	2.509
<i>Job for Income</i>	32	0.311	0.141	0.110	0.570	0.466	2.234
<i>Job for Security</i>	32	0.340	0.118	0.160	0.560	0.084	2.176
<i>Job for Co-workers</i>	32	0.123	0.055	0.060	0.260	1.021	3.420
<i>Job for Accomplishment</i>	32	0.225	0.125	0.080	0.490	0.708	2.488

Table 3: Correlation coefficients

The table presents the correlation coefficient between variables. Panel A presents correlations between country level survey variables, as constructed in Section 3.6. Panel B presents the correlation of sales growth and volatility measures with other country level variables. See Appendix A for information on variable construction, including the name, definition, construction method and data source.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) <i>Plan Future Start Up</i>	1.0000												
(2) <i>Discontinued Business</i>	0.8885	1.0000											
(3) <i>Fear of Failure</i>	-0.0164	-0.0986	1.0000										
(4) <i>Start Business is Valid Career</i>	0.6121	0.4809	0.1211	1.0000									
(5) <i>High Status of Entrepreneurs</i>	0.3461	0.3054	0.207	0.364	1.0000								
(6) <i>Business Opportunities</i>	0.352	0.4178	-0.1951	0.2633	0.5036	1.0000							
(7) <i>Desire for Risk</i>	0.4185	0.335	0.1558	0.2843	0.1418	0.2564	1.0000						
(8) <i>National Trust</i>	-0.2555	-0.3301	-0.2501	-0.4482	-0.0592	0.0165	-0.1286	1.0000					
(9) <i>Desire for Wealth</i>	0.2681	0.1487	0.1789	0.2557	0.2064	-0.0587	0.5225	-0.2144	1.0000				
(10) <i>Job for Income</i>	0.323	0.2685	0.3049	0.396	0.1249	0.0087	0.4595	-0.4118	0.7405	1.0000			
(11) <i>Job for Security</i>	0.2851	0.2847	0.3249	0.1275	-0.0354	-0.2026	-0.0824	-0.2454	-0.0296	-0.2318	1.0000		
(12) <i>Job for Co-workers</i>	-0.4575	-0.4286	-0.3063	-0.4258	-0.1807	-0.1094	-0.3887	0.4703	-0.5024	-0.5303	-0.3736	1.0000	
(13) <i>Job for Accomplishment</i>	-0.3785	-0.3339	-0.4628	-0.3435	-0.0369	0.192	-0.2762	0.5034	-0.6392	-0.6977	-0.4846	0.5481	1.0000



Panel B: International correlations, using averages over 2000-2007

	<i>AvgSales Growth<sub>i,t</sub></i>	<i>AvgOCF Vol<sub>i,t</sub></i>	<i>AvgBKS Vol<sub>i,t</sub></i>	<i>AvgSales Vol<sub>i,t</sub></i>	<i>AvgEmp Vol<sub>i,t</sub></i>
<i>AvgCAPX to Assets<sub>i,t</sub></i>	0.5995	0.232	0.2355	0.3414	-0.0408
<i>AvgR&amp;D to Assets<sub>i,t</sub></i>	-0.0409	0.4044	0.3936	0.2496	0.2266
<i>AvgPrior 12-month Return<sub>i,t</sub></i>	0.3921	-0.1008	-0.1231	-0.1401	-0.3158
<i>AvgMarket Leverage<sub>i,t</sub></i>	-0.4337	-0.0843	-0.0408	-0.0261	0.1285
<i>AvgBook to Market<sub>i,t</sub></i>	0.1019	-0.0244	-0.2543	0.0091	-0.0477
<i>AvgFirm Size<sub>i,t</sub></i>	-0.1371	-0.4158	-0.4148	-0.3667	-0.3406
<i>Plan Future Start Up</i>	0.2511	-0.0093	0.0335	0.0461	-0.0411
<i>Discontinued Business</i>	0.2871	0.0014	-0.0306	0.0133	-0.0528
<i>Fear of Failure</i>	-0.1806	-0.1374	0.0281	0.0174	0.1549
<i>Start Business is Valid Career</i>	0.0457	-0.0805	-0.0772	-0.0963	-0.0117
<i>High Status of Entrepreneurs</i>	0.1342	0.2949	0.2262	0.2514	0.328
<i>Business Opportunities</i>	0.3833	0.4359	0.0848	0.2998	0.2387
<i>Desire for Risk</i>	0.1286	0.0535	-0.0226	0.1847	0.043
<i>National Trust</i>	0.3139	0.53	0.5155	0.5658	0.3496
<i>Desire for Wealth</i>	0.2522	-0.1056	-0.0489	0.1814	-0.1105
<i>Job for Income</i>	0.2437	-0.121	-0.0134	-0.0309	-0.2451
<i>Job for Security</i>	-0.2246	-0.6125	-0.455	-0.3345	-0.0537
<i>Job for Co-workers</i>	-0.1444	0.1914	0.1872	0.0834	0.0882
<i>Job for Accomplishment</i>	0.0231	0.6243	0.3495	0.3452	0.2915

Table 4: The impact of cash flow volatility on sales growth. Panel A presents the regression results from Equation 8 on all firms, exploring the impact of cash flow volatility on sales growth. Panel B presents results from international subsamples. In Panel B variables have been standardized for ease of comparison. See Appendix A for information on variable construction, including the name, definition, construction method and data source. (\*), (\*\*), (\*\*\*) indicate the coefficient estimate is statistically significant at a 90%, 95% or 99% confidence level respectively

Panel A: All firms in sample		Dependent Variable: $Sales\ Growth_{i,t}$		
	(1)	(2)	(3)	
$Sales\ Growth_{i,t-1}$	0.0711***	0.0516***	0.0342***	
$Sales\ Growth_{i,t-2}$			-0.0079	
$OCF\ Vol_{i,t}$	0.6670***	0.6796***	0.7000***	
$OCF\ Vol_{i,t-1}$		0.0607***	0.0881***	
$OCF\ Vol_{i,t-2}$			0.0847***	
$CAPX\ to\ Assets_{i,t}$	0.1845***	0.1824***	0.1697***	
$R\&D\ to\ Assets_{i,t}$	0.1063***	0.1046***	0.1051***	
$Prior\ 12-month\ Return_{i,t}$	0.0074*	0.0066	0.0083*	
$Book\ to\ Market_{i,t}$	-0.0625***	-0.0632***	-0.0488***	
$Book\ Leverage_{i,t}$	0.0973***	0.0957***	0.1026***	
$Firm\ Size_{i,t}$	0.4807***	0.4811***	0.5305***	
Observations	90,103	90,053	79,802	
Number of firms	15,673	15,665	14,573	

Panel B: Country comparison		Dependent Variable: $Sales\ Growth_{i,t}$				
Country	China	Germany	Japan	Korea	Taiwan	UK
$Sales\ Growth_{i,t-1}$	0.1460***	0.0232	0.0215	-0.0558	0.0118	0.0280
$Sales\ Growth_{i,t-2}$	0.0004	-0.0553**	-0.0587***	-0.0758**	0.0010	-0.0233
$OCF\ Vol_{i,t}$	1.0332***	0.6641***	0.8491***	0.9697**	1.2108***	0.6725***
$OCF\ Vol_{i,t-1}$	-0.1105**	0.0033	0.2078**	-0.1108	0.3399***	0.1028**
$OCF\ Vol_{i,t-2}$	0.1158**	0.0664	0.2471***	0.0771	0.2052	0.0880**
$CAPX\ to\ Assets_{i,t}$	0.1541***	0.2219***	0.0353**	0.0533	0.0975***	0.1954***
$R\&D\ to\ Assets_{i,t}$	-0.0518	0.1369***	0.1920***	-0.0851	0.2110***	0.0794***
$Prior\ 12-month\ Return_{i,t}$	0.0231***	0.0612***	-0.0014	-0.0176	-0.0122	0.0290*
$Book\ to\ Market_{i,t}$	-0.0406*	-0.0318	-0.0957***	-0.0279	-0.1373***	-0.1183***
$Book\ Leverage_{i,t}$	-0.0030	0.0256	0.0563**	0.1233	0.0665	0.1099*
$Firm\ Size_{i,t}$	0.5923***	0.5319***	0.7025***	0.7528***	0.7710***	0.6163***
Observations	6,181	3,738	22,386	2,347	6,267	6,867
Number of firms	1,351	608	3,046	477	1,202	1,387

Table 5: Factor analysis using the GEM data.

Panel A presents the factor scoring coefficients, as constructed using the method in Section 5.2. Panel B presents results from a weighted least squared regression, using the average number of firms sampled per year as the weighting variable for each country. See Appendix A for information on variable construction, including the name, definition, construction method and data source. (\*), (\*\*) and (\*\*\*) indicate the coefficient estimate is statistically significant at a 90%, 95% or 99% confidence level respectively.

Panel A: Factor scoring coefficients		
	<i>GEM f1</i>	<i>GEM f2</i>
<i>Plan Future Start Up</i>	0.255	-0.067
<i>Discontinued Business</i>	0.247	-0.146
<i>Fear of Failure</i>	-0.072	0.816
<i>Start Business is Valid Career</i>	0.190	0.148
<i>High Status of Entrepreneurs</i>	0.120	0.404
<i>Involved in Young Business</i>	0.241	-0.023
<i>Business Opportunities</i>	0.180	-0.047
Eigenvalue	3.73	1.13
Label	<i>GEM Entrepreneurial Activity</i>	<i>GEM Entrepreneurial Attitudes</i>

Panel B: Regression results			
	Dependent Variable: <i>OCF Vol<sub>i,t</sub></i>		
	(1)	(2)	(3)
<i>GEM f1</i>	-0.631		-0.791
<i>GEM f2</i>		1.042	1.08
<i>AvgSales Growth<sub>i,t</sub></i>	83.63***	84.67***	87.07***
Constant	5.916*	5.698*	5.216
Observations	45	45	45
R-squared	0.413	0.428	0.431

Table 6: Factor analysis using the WVS data.

Panel A presents the factor scoring coefficients, as constructed using the method in Section 5.2. Panel B presents results from a weighted least squared regression, using the average number of firms sampled per year as the weighting variable for each country. See Appendix A for information on variable construction, including the name, definition, construction method and data source. (\*), (\*\*) and (\*\*\*) indicate the coefficient estimate is statistically significant at a 90%, 95% or 99% confidence level respectively.

Panel A: Factor scoring coefficients		
	<i>WVS f1</i>	<i>WVS f2</i>
<i>Desire for Risk</i>	0.271	0.217
<i>National Trust</i>	-0.056	0.282
<i>Desire for Wealth</i>	0.309	0.105
<i>Job for Income</i>	0.330	0.118
<i>Job for Security</i>	-0.192	-0.563
<i>Job for Co-workers</i>	-0.142	0.243
<i>Job for Accomplishment</i>	-0.152	0.268
Eigenvalue	3.44	1.49
Label	<i>WVS Desire Income &amp; Wealth</i>	<i>WVS Trust &amp; Fulfillment</i>

Panel B: Regression results			
	Dependent Variable: <i>OCF Vol<sub>i,t</sub></i>		
	(1)	(2)	(3)
<i>WVS f1</i>	-2.863*		-2.695**
<i>WVS f2</i>		6.022***	5.953***
<i>AvgSales Growth<sub>i,t</sub></i>	60.62***	44.81***	48.38***
Constant	7.511**	10.80***	10.09***
Observations	33	33	33
R-squared	0.368	0.624	0.69

Table 7: Factor analysis using all survey data.

Panel A presents the factor scoring coefficients, as constructed using the method in Section 5.2. Panel B presents results from a weighted least squared regression, using the average number of firms sampled per year as the weighting variable for each country. See Appendix A for information on variable construction, including the name, definition, construction method and data source. (\*), (\*\*), (\*\*\*) indicate the coefficient estimate is statistically significant at a 90%, 95% or 99% confidence level respectively.

Panel A: Factor scoring coefficients			
	<i>All f1</i>	<i>All f2</i>	<i>All f3</i>
<i>Plan Future Start Up</i>	0.252	-0.048	-0.029
<i>Discontinued Business</i>	0.258	-0.107	-0.078
<i>Fear of Failure</i>	-0.121	0.140	-0.146
<i>Start Business is Valid Career</i>	0.161	0.037	0.000
<i>High Status of Entrepreneurs</i>	0.136	0.026	0.122
<i>Involved in Young Business</i>	0.228	-0.017	0.016
<i>Business Opportunities</i>	0.248	-0.078	0.188
<i>Desire for Risk</i>	0.043	0.237	0.222
<i>National Trust</i>	-0.001	0.002	0.304
<i>Desire for Wealth</i>	-0.076	0.337	0.142
<i>Job for Income</i>	-0.053	0.317	0.093
<i>Job for Security</i>	0.018	-0.167	-0.477
<i>Job for Co-workers</i>	-0.056	-0.078	0.179
<i>Job for Accomplishment</i>	0.069	-0.191	0.196
Eigenvalue	5.24	2.30	1.60
Label	<i>Entrepreneurial Activity</i>	<i>Desire Income &amp; Wealth</i>	<i>Trust &amp; Fulfilment</i>

Panel B: Regression results				
	Dependent Variable: <i>OCF Vol<sub>i,t</sub></i>			
	(1)	(2)	(3)	(4)
<i>All f1</i>	-1.437			-1.384
<i>All f2</i>		-3.987***		-3.822***
<i>All f3</i>			4.460***	4.050***
<i>AvgSales Growth<sub>i,t</sub></i>	79.53***	83.62***	59.15***	66.24***
Constant	5.498	4.496	9.580***	7.981***
Observations	27	27	27	27
R-squared	0.525	0.632	0.644	0.782

Table 8: Survey variable statistics for Japan

This table presents the value of country survey variables for Japan as well as the Japan's rank relative to the other countries. See Appendix A for information on variable construction, including the name, definition, construction method and data source.

Sample survey statistics from Japan				
	# Samples	Avg # respondents	Mean	Country Rank
<i>Plan Future Start Up</i>	4	1746	0.026	45/45
<i>Discontinued Business</i>	4	1746	0.011	41/45
<i>Fear of Failure</i>	4	1746	0.259	42/45
<i>Start Business is Valid Career</i>	4	1746	0.287	45/45
<i>High Status of Entrepreneurs</i>	4	1746	0.500	43/45
<i>Business Opportunities</i>	4	1746	0.121	45/45
<i>Desire for Risk</i>	1	1032	0.276	33/33
<i>National Trust</i>	1	1026	0.390	13/37
<i>Desire for Wealth</i>	1	1050	0.200	32/33
<i>Job for Income</i>	1	1082	0.140	32/35
<i>Job for Security</i>	1	1082	0.360	18/35
<i>Job for Co-workers</i>	1	1082	0.260	2/35
<i>Job for Accomplishment</i>	1	1082	0.250	14/35

## A Description of Variables

A summary of the variables used throughout the paper including the method of construction for each and the source of data. The construction of survey based variables is discussed in Appendix B.

Variable	Definition	Construction	Data Sources
Panel A: Firm level variables			
$Book\ to\ Market_{i,t}$	Total value of common equity divided by the number of ordinary shares multiplied by the end-of-year market price	$CEQ_{i,t} / (PRCC\_F_{i,t} * CSHO_{i,t})$	Compustat
$OCF\ Vol_{i,t}$	The De Veirman & Levin estimate for firm specific cash flow volatility at time $t$ for firm $i$ , constructed with random effects.	See Section 3.4, using $OCF_{i,t}$	Constructed
$Sales\ Vol_{i,t}$	The De Veirman & Levin estimate for firm specific sales volatility at time $t$ for firm $i$ , constructed with random effects.	See Section 3.4, $SALE_{i,t}$	Constructed
$Emp\ Vol_{i,t}$	The De Veirman & Levin estimate for firm specific employment volatility at time $t$ for firm $i$ , constructed with random effects.	In Section 3.4, using $EMP_{i,t}$	Constructed
$Firm\ Age_{i,t}$	The number of years firm $i$ has had data in Compustat.	FYEAR-First year in Compustat	Compustat
$Firm\ Size_{i,t}$	Natural logarithm of total assets (From Hadlock and Pierce (2010)).	$\ln(AT_{i,t})$	Compustat
$Industry_i$	Sector of firm as classified using the Fama & French 5 Sector economy.	Classification using SIC code	Compustat
$Book\ Leverage_{i,t}$	Total liabilities divided by total assets	$LT_{i,t} / AT_{i,t}$	Compustat
$Market\ Leverage_{i,t}$	Total assets less book equity, divided by the market value of the firm	$[LT_{i,t} - TXDITC_{i,t} + PSTKL_{i,t}] / [LT_{i,t} - TXDITC_{i,t} + PSTKL_{i,t} + CSHO_{i,t} * PRCC\_F_{i,t}]$	Compustat
$CAPX\ to\ Assets_{i,t}$	Capital expenditure, scaled by beginning of period total assets.	$CAPX_{i,t} / AT_{i,t-1}$ . If $Firm\ Age_{i,t} = 1$ , $CAPX_{i,t} / AT_{i,t}$	Compustat
$R\&D\ to\ Assets_{i,t}$	Research and development expenditure, scaled by beginning of period total assets.	$XRD_{i,t} / AT_{i,t-1}$ . If $Firm\ Age_{i,t} = 1$ , $XRD_{i,t} / AT_{i,t}$	Compustat
$OCF_{i,t}$	Operating income before depreciation less interest expense, income taxes and dividends. (Bates, Kahle, and Stulz, 2009)	$OIBDP_{i,t} - XINT_{i,t} - TXT_{i,t} - DVC_{i,t}$	Compustat
$Monthly\ Return_{i,m}$	Monthly stock return for ordinary stock holders in firm $i$	$[(PRCCD_{i,m} * TRFD_{i,m}) / AJEXDI_{i,m}] / [(PRCCD_{i,m-1} * TRFD_{i,m-1}) / AJEXDI_{i,m-1}]$	Compustat

Variable	Definition	Construction	Data Sources
<i>Prior 12-month Return<sub>i,t</sub></i>	Twelve month holding period return for ordinary stockholders of firm <i>i</i>	$(1 + \text{Monthly Return}_{i,m}) * \dots * (1 + \text{Monthly Return}_{i,m-11}) - 1$	Compustat
<i>Sales Growth<sub>i,t</sub></i>	Change in total revenues divided by previous periods revenue.	$(\text{REVT}_{i,t} - \text{REVT}_{i,t-1}) / \text{REVT}_{i,t-1}$	Compustat
Panel B: Country Level Variables			
<i>Plan Future Start Up</i>	Proportion of country respondents that expect to start a business in the next 3 years.	See Appendix B.	GEM
<i>Discontinued Business</i>	Proportion of country respondents that closed a business in the past 12 months.	See Appendix B.	GEM
<i>Involved in Young Business</i>	Proportion of country respondents currently involved in a young business.	See Appendix B.	GEM
<i>Fear of Failure</i>	Proportion of country respondents that fear of failure will prevent from starting a business.	See Appendix B.	GEM
<i>Start Business is Valid Career</i>	Proportion of country respondents who perceive entrepreneurship as a valid career choice.	See Appendix B.	GEM
<i>High Status of Entrepreneurs</i>	Proportion of country respondents who perceive entrepreneurs receive high societal status .	See Appendix B.	GEM
<i>Desire for Risk Business Opportunities</i>	Measure of the importance of risk for country respondents. Proportion of country respondents who perceive good opportunities for starting a business in the next 6 months.	See Appendix B.	WVS
<i>National Trust</i>	Measure of whether respondents believed they could trust most people.	See Appendix B.	WVS
<i>Desire for Wealth</i>	Measure of the importance of wealth for country respondents.	See Appendix B.	WVS
<i>Job for Income</i>	Importance of income for country job seekers.	See Appendix B.	WVS
<i>Job for Security</i>	Importance of job security for country job seekers.	See Appendix B.	WVS
<i>Job for Co-workers</i>	Importance of likable co-workers for country job seekers.	See Appendix B.	WVS
<i>Job for Accomplishment</i>	Importance of feelings of accomplishment for country job seekers.	See Appendix B.	WVS
<i>AvgCAPX to Assets<sub>i,t</sub></i>	The average value of firm level <i>CAPX to Assets<sub>i,t</sub></i> within the country, from the period 2000-2007.	Average firm <i>CAPX to Assets<sub>i,t</sub></i> obs, 2000-2007	Constructed
<i>AvgR&amp;D to Assets<sub>i,t</sub></i>	The average value of firm level <i>R&amp;D to Assets<sub>i,t</sub></i> within the country, from the period 2000-2007.	Average firm <i>R&amp;D to Assets<sub>i,t</sub></i> obs, 2000-2007	Constructed
<i>AvgOCF Vol<sub>i,t</sub></i>	The average value of firm level <i>OCF Vol<sub>i,t</sub></i> within the country, from the period 2000-2007.	Average firm <i>OCF Vol<sub>i,t</sub></i> obs, 2000-2007	Constructed



<b>Variable</b>	<b>Definition</b>	<b>Construction</b>	<b>Data Sources</b>
<i>AvgSales Vol<sub>i,t</sub></i>	The average value of firm level <i>Sales Vol<sub>i,t</sub></i> within the country, from the period 2000-2007.	Average firm <i>Sales Vol<sub>i,t</sub></i> obs, 2000-2007	Constructed
<i>AvgEmp Vol<sub>i,t</sub></i>	The average value of firm level <i>Emp Vol<sub>i,t</sub></i> within the country, from the period 2000-2007.	Average firm <i>Emp Vol<sub>i,t</sub></i> obs, 2000-2007	Constructed
<i>AvgPrior 12-month Return<sub>i,t</sub></i>	The average value of firm level <i>Prior 12-month Return<sub>i,t</sub></i> within the country, from the period 2000-2007.	Average firm <i>Prior 12-month Return<sub>i,t</sub></i> obs, 2000-2007	Constructed
<i>AvgMarket Leverage<sub>i,t</sub></i>	The average value of firm level <i>Market Leverage<sub>i,t</sub></i> within the country, from the period 2000-2007.	Average firm <i>Market Leverage<sub>i,t</sub></i> obs, 2000-2007	Constructed
<i>AvgBook to Market<sub>i,t</sub></i>	The average value of firm level <i>Book to Market<sub>i,t</sub></i> within the country, from the period 2000-2007.	Average firm <i>Book to Market<sub>i,t</sub></i> obs, 2000-2007	Constructed
<i>AvgSales Growth<sub>i,t</sub></i>	The average value of firm level <i>Sales Growth<sub>i,t</sub></i> within the country, from the period 2000-2007.	Average firm <i>Sales Growth<sub>i,t</sub></i> obs, 2000-2007	Constructed
<i>AvgFirm Size<sub>i,t</sub></i>	The average value of firm level <i>Firm Size<sub>i,t</sub></i> within the country, from the period 2000-2007.	Average <i>Firm Size<sub>i,t</sub></i> obs, 2000-2007	Constructed

## B Survey Variable Construction

Panel A: WVS

Data from the fifth wave of the World Value Survey, corresponding to the years 2005-2007<sup>16</sup>.

Variable	Question	Calculation
<i>Desire for Risk</i>	“ Does the following apply to you? Adventure and taking risks are important to this person; to have an exciting life.”	The respondent highlights their opinion from an ordinal set of responses. We weight each of these responses by an integer value (Very much like me=5, Not at all like me=0). By multiplying the portion of each respondents from a country in each category by this integer value, we obtain a numeric proxy for risk aversion in each country. We divide by five to scale the variable to zero-one values.
<i>National Trust</i>	“Does the following apply to you? Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?”	The response to this question is binary (Most people can be trusted=1, Can't be too careful=0). We take the proportion of a countries respondents that answer most people can be trusted.
<i>Desire for Wealth</i>	“ Does the following apply to you? It is important to this person to be rich; to have a lot of money and expensive things.”	Similar to the <i>Desire for Risk</i> question, the answers are given in an ordinal ranking (Very much like me=5, Not at all like me=0). Therefore, a numeric value is calculated in an identical way.
<i>Job for Income, Job for Security, Job for Co-workers, Job for Accomplishment</i>	“Now I would like to ask you something about the things which would seem to you, personally, most important if you were looking for a job. Here are some of the things many people take into account in relation to their work. Regardless of whether you're actually looking for a job, which one would you, personally, place first if you were looking for a job (read out and code one answer): 1) A good income so that you do not have any worries about money; 2) A safe job with no risk of closing down or unemployment; 3) Working with people you like; and 4) Doing an important job that gives you a feeling of accomplishment.”	For this question we create a variable for each response measuring the proportion of respondents in this category, creating <i>Job for Income</i> , <i>Job for Security</i> , <i>Job for Co-workers</i> and <i>Job for Accomplishment</i> respectively.

<sup>16</sup>Although the fifth wave includes some sample from 2008 these are dropped to avoid the structural break caused by the GFC

Panel B: GEM

From GEM we consider the data from the annual global “Adult Population Survey”

Variable	Question	Calculation
<i>Plan Future Start Up</i>	“Does the following apply to you? You are, alone or with others, expecting to start a new business, including any type of self-employment, within the next three years.”	Is the proportion of the working age population (age 18-64) that responded ‘yes’ to the question, averaged over the non-missing responses from years 2004-2007.
<i>Discontinued Business</i>	“Does the following apply to you? You have, in the past 12 months, sold, shut down, discontinued or quit a business you owned and managed, any form of self-employed, or selling goods or services to anyone.”	Is the proportion of the working age population (age 18-64) that responded ‘yes’ to the question, averaged over the non-missing responses from years 2004-2007.
<i>Involved in Young Business</i>	“Does the following apply to you? You are, alone or with others, currently the owner of a company you help manage, self-employed, or selling any goods or services to others.”	Is the proportion of the working age population (age 18-64) that responded ‘yes’ to the question, averaged over the non-missing responses from years 2004-2007.
<i>Business Opportunities</i>	“Does the following apply to you? In the next six months there will be good opportunities for starting a business in the area where you live.”	Is the proportion of the working age population (age 18-64) that responded ‘yes’ to the question, averaged over the non-missing responses from years 2004-2007.
<i>Fear of Failure</i>	“Does the following apply to you? Fear of failure would prevent you from starting a business.”	Is the proportion of the working age population (age 18-64) that responded ‘yes’ to the question, averaged over the non-missing responses from years 2004-2007.
<i>High Status of Entrepreneurs</i>	“Does the following apply to you? In your country, those successful at starting a new business have a high level of status and respect.”	Is the proportion of the working age population (age 18-64) that responded ‘yes’ to the question, averaged over the non-missing responses from years 2004-2007.
<i>Start Business is Valid Career</i>	“Does the following apply to you? In your country, most people consider starting a new business a desirable career choice.”	Is the proportion of the working age population (age 18-64) that responded ‘yes’ to the question, averaged over the non-missing responses from years 2004-2007.

**C Material to be added to website and deleted from final submission**

### C.1 Ranking of countries by key variables.

The table presents the ranking of countries in terms of key variables. If several variables are equal, they are each given equal rank and subsequent ranks are skipped. For example, if two observations are ranked second, then the next lowest variable will be ranked fourth (three is skipped). The first column presents the weighting of each country in subsequent weighted least squares regressions (see Section 5.2). All other variables are defined in Appendix A.

Country	WLS weight	AvgSales Growth <sub><i>i,t</i></sub>	AvgOCF Vol <sub><i>i,t</i></sub>	Plan Future Start Up	Fear of Failure	High Status of Entrepreneurs	Desire for Risk	National Trust	Desire for Wealth	Job for Income	Job for Security	Job for Co-workers	Job for Accomplishment
Argentina	0.003	20	26	12	22	17	25	27	30	12	14	16	24
Australia	0.065	1	1	18	25	18	21	8	19	17	27	13	7
Austria	0.005	42	19	38	10	20							
Belgium	0.007	44	15	37	36	33							
Brazil	0.011	27	13	9	15	10	28	34	32	29	5	24	12
Chile	0.007	32	24	10	26	21	16	31	16	5	24	33	21
China	0.067	17	33	8	43	23	31	5	8	11	20	13	24
Colombia	0.001	22	32	1	35	16		30					
Croatia	0.003	25	49	31	13	42							
Cyprus	0.003	11	36				5	33	14	12	12	22	21
Czech Republic	0.003	41	31	23	28	45							
Denmark	0.008	33	10	34	24	11							
Egypt	0.004	9	40				30	23	10	8	7	28	32
Finland	0.006	38	23	40	17	1	23	3	25	31	20	4	9
France	0.026	46	37	20	3	25	17	23	31	25	14	5	14
Germany	0.040	37	16	39	5	13	29	14	13	25	3	28	17
Greece	0.013	45	46	21	1	26							
Hong Kong	0.014	16	8	25	14	24		12					
Hungary	0.002	40	48	42	44	39							
India	0.074	10	28	5	9	7							
Indonesia	0.013	24	25	6	19	41							
Ireland	0.004	15	5	27	18	6							
Israel	0.012	18	9	17	7	28							
Italy	0.012	48	38	26	23	31							
Japan	0.166	50	51	45	42	43							
Jordan	0.006	12	21	4	21	2							
Korea, Republic of	0.055	34	50										
Malaysia	0.040	29	22	36	6	9							
Mexico	0.005	36	39	15	39	38							
Morocco	0.003	28	12										
Netherlands	0.009	43	18	44	37	27							
New Zealand	0.006	6	4	16	40	19							
Norway	0.009	3	3	28	45	29							

Country	WLS weight	AvgSales Growth <sub>i,t</sub>	AvgOCF Vol <sub>i,t</sub>	Plan Future Start Up	Fear of Failure	High Status of Entrepreneurs	Desire for Risk	National Trust	Desire for Wealth	Job for Income	Job for Security	Job for Co-workers	Job for Accomplishment
Peru	0.003	31	35	2	38	12	22	36	26	23	17	19	11
Philippines	0.008	19	2	3	16	5							
Poland	0.013	13	44	14	8	36	10	23	15	7	23	28	17
Portugal	0.003	51	42	33	12	30							
Russian Federation	0.005	4	14	41	11	44	24	19	9	2	29	16	32
Saudi Arabia	0.004	14	20	30	41	37							
Singapore	0.025	23	30	22	20	40	17	27	21	28	10	9	13
Slovenia	0.002	47	41	29	34	22	4	23	2	9	10	24	27
South Africa	0.009	21	17	19	33	35	13	22	17	19	9	7	23
Spain	0.008	49	45	43	4	34	17	2	24	34	35	1	2
Sweden	0.014	5	7	24	30	32	17	4	29	35	30	7	1
Switzerland	0.012	39	11	32	29	14	26	4	20	29	4	5	19
Taiwan, Province of China	0.054	26	47				31	20	18	29	4	5	19
Thailand	0.014	35	43	7	2	8	8	11	11	5	18	19	35
Turkey	0.012	30	34	13	31	3	11	37	7	15	22	13	16
United Arab Emirates	0.003	7	29	11	32	4							
United Kingdom	0.103	8	6	35	27	15	13	15	21	14	31	9	5
Viet Nam	0.005	2	27				27	5	5	21	2	28	29
TOTAL	1	51	51	45	45	45	33	37	33	35	35	35	35

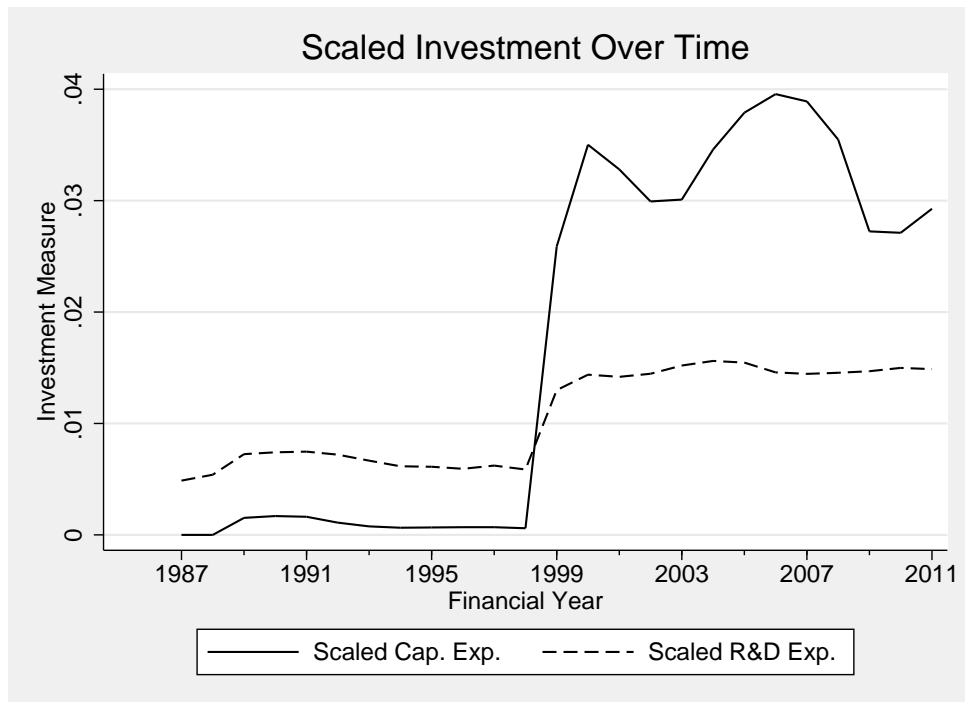


Figure 5: Average firm investment by Japanese firms, over time.

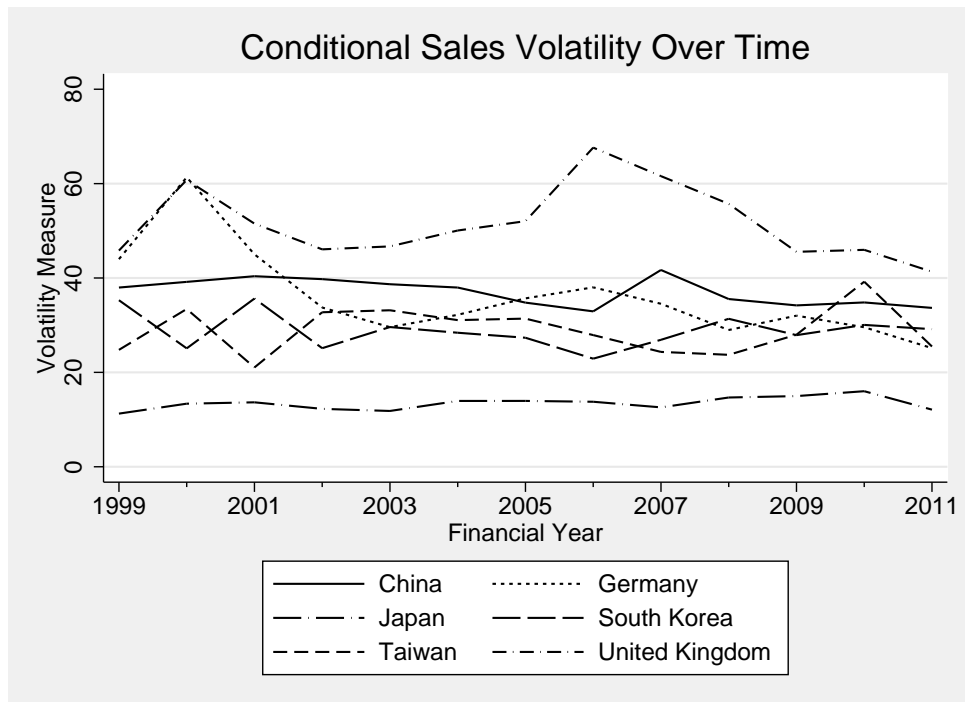


Figure 6: Average firm  $Sales Vol_{i,t}$  by country, over time.



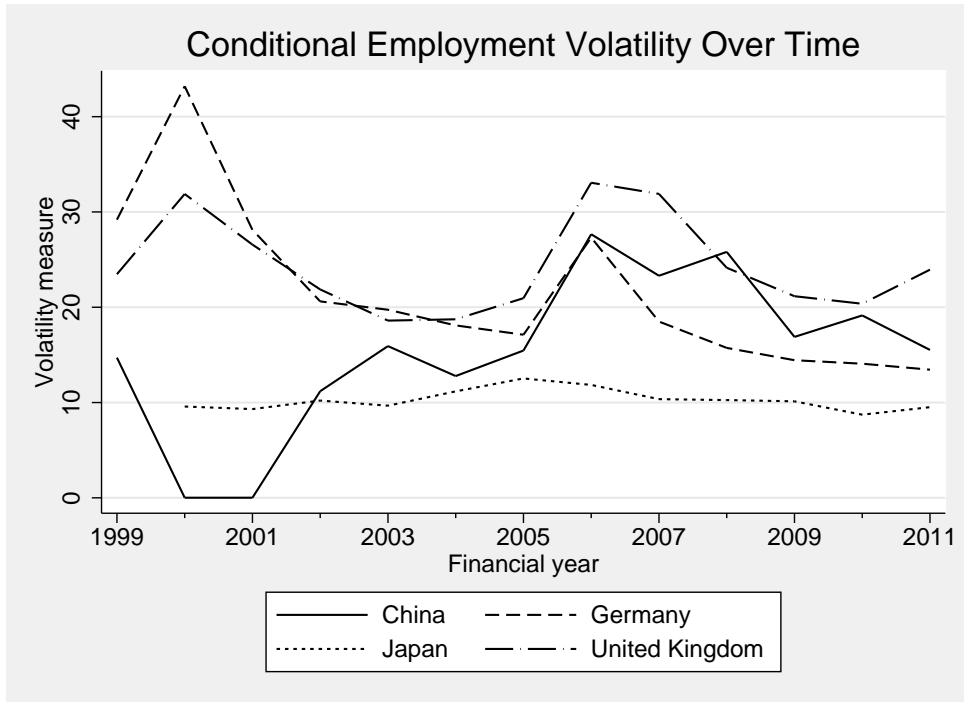


Figure 7: Average firm  $Emp Vol_{i,t}$  by country, over time.