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Risk, Culture and Investor Behavior in Small (but notorious) Eurozone Countries ☆

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ABSTRACT

This research investigates how culture moderates the impact of risk on individual investors' trading behavior in nine Eurozone countries, where risk is measured by conventional and extreme risk. These markets were particularly affected by the global financial crisis, the subsequent European banking crisis, and the European sovereign debt crisis. Using mutual fund flows as proxy of investors' trading behavior, our evidence indicates that country culture variable significantly affects investor' trading responsiveness to risk. Specifically, the impact of risk on fund flows is significantly positive and is larger in scale in countries with individualist cultures.

JEL codes: G11, G12, G15

Keywords: volatility; extreme risk; small investor behavior; country culture

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ABSTRACT

This research investigates how culture moderates the impact of risk on individual investor's trading behavior in nine Eurozone countries, where risk is measured by conventional and extreme risk. These markets were particularly affected by the global financial crisis, the subsequent European banking crisis, and the European sovereign debt crisis. Using mutual fund flows as proxy of investors' trading behavior, our evidence indicates that country culture variable significantly affects investor' trading responsiveness to risk. Specifically, the impact of risk on fund flows is significantly positive and is larger in scale in countries with individualist cultures.

1. Introduction

How investors respond to risk has been a fundamental question in finance over the past several decades. Most studies that use the traditional volatility measure (standard deviation of stock returns) as it relates to investors' trading behavior find mixed results. For instance, Sirri and Tufano (1998), Barber, Odean, and Zheng (2005), Spiegel and Zhang (2013), and Kim (2017) assert that fund flows are negatively related to risk. On the other hand, O'Neal (2004) and Cashman et al. (2014) show a positive relation between fund inflows and risk. In a related vein, Clifford et al. (2013) show that fund inflows from small investors are positively related to unsystematic risk, while its relation to market risk is an open question. In a recent paper, Switzer et al. (2017) examine the responses of investors to both an extreme risk measure, and the traditional risk measure. They find that individual investors in G-7 countries have different reactions and sensitivities to these two types of risk. In this study, we use both traditional risk measure and extreme risk measure to study investors' response for countries particularly affected by the global financial crisis, the subsequent European banking crisis, and the European sovereign debt crisis. Specifically, we construct standard risk measures based on the logarithmic percentage changes of stock prices over different holding periods, with the assumptions of normality and symmetry of return distribution and risk averse investors. The standard deviation of returns is also an essential component of the traditional value-at-risk (VaR) measure. Such risk has been the focus of regulators in seeking to establish how much financial institutions should put aside to guard against the types of financial and operational risks banks (and the whole economy) face. However, because the standard deviation does not capture the risk to the investor when the distribution is non-symmetric, the traditional methods of calculating conventional value-at-risk (VaR) measures that are based on a normal distribution are problematic, and need to be interpreted cautiously. Our second measure of risk, that focuses on the distribution around the tail, falls under the rubric of extreme value theory. Extreme risk observations are identified as the mild outliers in our samples, using the Tukey (1977) definition. They are computed using the percentage of extreme days, weeks, and months over a specific year. One advantage of this extreme measure is that we can decompose the total risk measure into a positive shock component and a negative shock component, so that we can observe accurately the behavior such investors whose utility responses to stock price change are asymmetric. Comparing the risks based on those two measures, our results show that the extreme measures do not always cohere with the classical standard deviation measure of risk for the countries considered.

While previous literature focuses on large developed countries, we examine nine relatively small European countries in this study, since it is observed that those countries have amplified impacts from internal or external financial shocks for recent years. More specifically, during the Global Financial crisis of 2007-08 and its aftermath, as G-7 countries generally recovered, relatively small economies such as Belgium, Greece, Ireland, and Portugal became the main epicenters of continued instability. For example, two of Belgium's largest banks: Fortis and Dexia, underwent reorganization and restructuring in order to survive. Fortis was spun off into two parts, while the Dutch group was nationalized and the Belgian component was sold to the French bank BNP Paribas. Ireland and Greece also went into a debt crisis in 2010. Allied Irish Bank and the Bank of Ireland received a €7 billion rescue package in 2009 and went into recapitalization. The four largest banks of Greece, National Bank of Greece SA, Piraeus Bank SA, Euro-bank Ergasias SA, and Alpha Bank AE, have been the regular recipients of emergency loans from the European Central Bank. Portugal applied for bail-out programs to cover its insolvent sovereign debt, drawing a €79 billion from the International Monetary Fund (IMF), the European Financial Stabilization Mechanism (EFSM), and the European Financial Stability Facility (EFSF). The debt crises of Ireland, Greece and Portugal marked the start of the European sovereign debt crisis. One might posit that the behavior of investors in such countries experiencing protracted financial instability may not be consistent with those in larger countries that have more or less recovered. Therefore, in this paper, we focus on individual investors' response to the two aforementioned risk measures in those nine relatively small Eurozone countries: Austria, Belgium, Denmark, Finland, Greece, Ireland, Norway, Portugal, and Sweden that were epicenters of continued instability. By using mutual fund flow as proxy of individual investor's trading behavior, our results show significantly different behavior of investors in those countries in terms of their sensitivity to risks.

Why investors from those countries exhibit different responses to the same risk measures? This is a critical important research question addressed in this study. Previous literature in this line of research show cross-country investor behavioral variations. For example, Statman (2008) investigates twenty-two countries and identifies significant differences in stated propensities for risk taking of investors. Grinblatt and Keloharju (2001) emphasis culture variables in explaining stockholder's behavior. Eun, Wang, and Xiao (2015) find that culture influences stock price synchronicity by affecting correlations in investors' trading activities and a country's information environment.

While these studies typically show that individualism plays a significant role, they do not explore the actual trading behavior of market participants across different countries. Several researchers endeavor to ascertain the influence of such cultural dimension's influence on performance of financial markets. For example, by using use Hofstede's culture dimension score of 26 developed countries' data, Chui et al. (2010) assert that country individualist score is positively related to trading volume, volatility, and the magnitude of momentum profits. Schmeling (2009) examines the impacts of investor sentiment on stock returns over 18 industrialized countries and finds that sentiment negatively forecasts aggregate stock returns. Chang and Lin (2015) provide comparable results. According to their findings, national cultures are associated with investor herding behavior. Such herding behavior is particularly observed in countries where Confucianism is dominant and in less sophisticated stock markets. Although these studies provide insights about how cultural factors influence overall investing activities in equity markets, they do not consider investors' attitudes against risk. Our paper provides new evidence on this issue, as we examine individual investor's trading behavior directly, as reflected in portfolio position changes in response to changing risk, and how culture factor plays a role in deterring investor's trading behavior based on different risk levels.

We use the Hofstede (2001) culture dimension score on individualism vs. collectivism, as the culture factor. The detailed score for each country can be found in Appendix 1. Based on Hofstede's classification, a country with higher cultural dimension score is classified more as individualism culture. Individualism cultures describes societies that emphasize the moral worth of the individuals, the exercise of individuals' goals, desires, freedom, independence, and self-reliance, and advocate that interests of individuals should be priority. Considering these culture characteristics, we hypothesize that subjective assessments among individuals may explain the differential or contrasting behaviors to risk: individual investors are more likely to take the initiative in actively trading in response to market signals. In addition, investors may have high risk tolerance, or are even adventuresome so exhibit "flight to risk" preferences, in the sense that they invest more, rather than liquidating their investments when they sense risk. On the other hand, societies with collectivist traditions emphasize cohesiveness amongst members, and individuals in these societies are more likely to adjust their behavior with that of their cohorts, rather than maximizing their own private benefits. Therefore, we propose that more collectivist cultures constrain the initiative for investors to actively trading in response to market signals, and individual investors with these cultural attributes are more likely to exhibit herding behavior and are less sensitive to variations in the risk environment.

Our results support our hypothesis. We find that small investors' responses to risk (both traditional and extreme risks) in those small Eurozone countries are significantly influenced by country culture. In other words, the culture variable affects the impact of risk on investor's trading behavior. The impact of risk on fund flow is significantly positive and are larger from countries with more individualistic cultures. This implies that individual investors from these countries are more sensitive to variations in risk, in terms of engaging in active trading in response to risk changes. On the other hand, when controlling for the culture variable, small investors trading behavior is not directly affected by risk. Our results emphasize the importance of cultural factors in determining individual investor's behavior in response to risk in small Eurozone countries. To the best of our knowledge, our research is the first study that provides a detailed examination of individual investor's trading behavior and its key determinants in relatively small Eurozone countries that were particularly affected by the European banking and European sovereign debt crisis.

The remainder of the paper is organized as follows: Section 2 describes sample construction; Section 3 describes model specifications. The detail results are reported in Section 4, and the paper concludes with a summary in Section 5.

2. Sample Construction

The data of mutual fund net flows used in this study are obtained from Thomson Reuters DataStream and Thomson ONE. For each of the countries in this study, we choose the equity index with the longest history as the major stock index to use in this study. The historical prices for those indices are collected from Bloomberg and Thomson Reuters DataStream. Table 1 presents the details of the indices, including the time period and the number of observations for each country when we use daily, weekly, and monthly data to calculate risk variables.

[Insert Table 1 here]

The index for our sample countries start from as early as 1987, including Finland's OMS Helsinki Index, Ireland's Irish Overall Index, and Sweden's Stockholm All-Share Index, to as late as 1995, including Norway's OMX Oslo All Share Index. The index for each country covers more than 18 years, from as short as 225 months (19 years) to as long as 445 months (37 years). Therefore, our sample period covers major historical events and business cycles, allowing for a broad perspective for investigating investors' behavior across different market conditions.

2.1. Traditional risk (bases on standard deviations) and extreme risk estimation

2.1.1 Traditional risk measure

In order to calculate both the standard and extreme risk measure, we need to calculate returns from index prices first. Following previous literature, we use the logarithmic percentage change (L%) of the stock index closing price to estimate returns on a daily, weekly, and monthly basis, respectively. The summary statistics of logarithmic percentage changes for each country is shown in Table 2. Panel A, B, and C in Table 2 provide the statistics of returns based on daily, weekly, and monthly index prices, respectively. Panel D of Table 2 show the statistics during the crisis period of 2008-09, in addition to the whole sample period.

[Insert Table 2 here]

As shown in table 2, Greece has the lowest average returns during over its sample period with -0.47% daily return, while Norway and Sweden have the highest returns during the sample period. For all countries, significant departures from normality are observed for all data frequencies, based on the Jarque-Bera statistics. At daily, weekly, and monthly frequencies, for all nine countries, the markets show negative skewness and leptokurtosis. Jarque-Bera test rejects the normality of the return distribution, implying that extreme measure of risk which does not assume normal distribution may be better than standard risk measure. However, in this study we compare and use both measures comprehensively to check investor's response.

We then annualize the returns to get annualized geometric returns before calculating traditional and extreme risks, assuming 252 effective trading days over a year. The traditional risk measure is calculated as the annualized geometric standard deviation of the annualized return of index for each country.

2.1.2 Extreme risk measure

The extreme measure of volatility is estimated as the percentage of extreme days, weeks or months over a given period. Most researchers define the extreme value as the lowest or the highest daily return of a stock market index observed over a given period (see e.g. Longin, 1996). Jones, Walker and Wilson (2004) use the statistical distribution of annualized geometric return to arbitrarily assign the distribution percentiles of 5% and 95% as cutoff points to distinguish extreme values. In our study, we define the extreme dates as the observations that are less than the difference between the lower quartile (Q1) and the value of 1.5 times of the interquartile range (IQR, aka. the lower inner fence), or greater than the sum of the upper quartile (Q3) and the value of 1.5 times of the interquartile range (IQR, aka. the upper inner fence), following the traditional outlier classification methodology suggested by Tukey (1977):

$$\textit{Extreme Observation} < Q1 - 1.5 \times IQR, \textit{ or Extreme Observation} > Q3 + 1.5 \times IQR$$

The range suggested by Tukey’s fence is slightly narrower than ±3σ in normally distributed dataset, which declares about 1% of outliers. The extreme risk for a given year is determined as the percentage of outliers during a given interval over that year, i.e. Percentage of Extremes = No. of Outliers / Annual Trading Days (Weeks or Months).

2.2. Comparison of two risk measures

One weakness of the traditional risk measure is that it is treats positive and negative price changes symmetrically. However, the extreme volatility method provides both positive and negative measures, and can be used to more accurately predict the behavior of risk-averse investors who responses are more dramatic to negative changes than to the positive changes of equity prices.

Figure 1 portrays the time series of the extreme measure of risk for Belgium, Greece, Ireland, and Portugal from 1986-2016. As shown in these graphs, 35.8% of Ireland’s trading days were characterized by extreme volatility in 2008; Belgian and Portuguese markets experienced extreme volatility on more than 25% of their trading days in the same year, reflecting the strong and persistent influence of the Global financial crisis in 2008-2009. Greece has 16% of extreme days in 2015, somewhat higher than its experience in 2008, when 13% of annual trading days are identified as extreme. In sum, the countries of this sample display some commonalities as well as differences in regards to the timing and magnitude of their exposure to extreme volatility over the sample period.

[Insert Figure 1 here]

In Tables 3 to 5, we compare the traditional risk and extreme risk as measured by the percentage of extreme days, weeks, or months by each country, respectively. As table 3 shows, estimated from daily data, volatility rankings of conventional risk measure are similar to those of extreme measures. In particular, the most volatile year and top ranked extreme years for each country are almost identical for all the nine countries.

[Insert Tables 3 here]

Using weekly data to measure risk, as shown in table 4, both methodologies almost cohere as well. In most countries, the most volatile 2 or 3 years are identical across risk measures. However, Greece and Sweden are exceptional cases. Traditional risk measure shows 1998, 2015, and 2014 as the most volatile years, while extreme measure suggests 2009, 1999, and 2011 in Greece. For Sweden, extreme measure approach indicates 2001, 2000, and 2002 are the most volatile years, whereas standard deviation catches 2008, 1998, and 2000 as the most unstable periods.

[Insert Table 4 here]

Using monthly data, we observe that in the majority of cases, the most volatile years based on extreme measure rankings also shown to be the most volatile based on traditional standard deviation analysis ranking.

[Insert Table 5 here]

According to Switzer et al (2017), for G-7 countries of their study, volatility as captured by the extreme measure shows similar patterns as the traditional volatility measure for most years. Many commonalities in the attribution of high risk by both measures are observed, consistent with Longin and Solnik (2001). However, differences are also observed, therefore, in our formal test, we use both risk measures in our analyses of investor behavior.

3. Results based on individual countries

In this research, our objective is to explain investor's reaction to both risk variables by measuring net flows to equity mutual funds against changes in both extreme volatility and standard deviation changes. In our initial specifications, our dependent variables is the net flow to equity mutual funds, with the risk measures lagged by one period in separate specifications. Our control variables include returns (GeoMean), linear time trend (Time) to account for possible secular growth in such funds, as well as a financial market crisis dummy variable (Crisis) in our following models.

$$NetFlows(t) = \alpha + \beta GeoMean(t\text{-}1) + \gamma GeoStdDev(t\text{-}1) + \delta Time + \lambda Crisis + \varepsilon(t) \qquad \text{Model 1}$$

$$NetFlows(t) = \alpha + \beta GeoMean(t\text{-}1) + \gamma TotalExtr(t\text{-}1) + \delta\ Time + \lambda Crisis + \varepsilon(t) \qquad \text{Model}$$

2

$NetFlows(t) = \alpha + \beta GeoMean(t\text{-}1) + \gamma NegExtr(t\text{-}1) + \zeta PosExtr(t\text{-}1) + \delta\, Time + \lambda Crisis + \varepsilon(t)$ Model 3

The variable *NetFlow* refers to the net flows to equity mutual funds, which are defined as new sales plus reinvestment of income less withdrawals and transfers; *TotalExtr* denotes the percentage of the number of extreme days over the measure horizon; *NegExtr* and *PosExtr* represent the percentages of number of negative and positive extreme days over the measure horizon, respectively; *Crisis* is a dummy variable to indicate the global financial crisis in 2008-9. We expect that regression coefficients for mean returns are positive, and for market volatility are negative, using the traditional or extreme day risk measures. In addition, when volatility is divided into negative and positive components, the coefficient for the negative extreme days should be negative since when stock market is negatively volatile, loss averse investors tend to hold less equity, and the coefficient for the positive extreme days probably positive.

In order to anticipate the effect of the crisis variable, we compare summary statistics during the financial crisis and the full sample period, based on Panel D of Table 2. In most countries, the average monthly logarithmic percentage changes are negative, ranging between -4.53 to -8.86 percent in 2008, and between -0.08 to 1.00 percent across the whole sample period. The standard deviations also increase, during the financial crisis years, while Kurtosis decreases in both 2008 and 2009. To prevent possible “overfitting” using the crisis dummy variable, we also estimate our above three models with crisis dummy variable excluded.

In Table 6, we provide the regression results for the nine countries. Panel A (B) shows the results for models 1-3 (4-6) that include (exclude) the crisis dummy variable.

[Insert Table 6 here]

There is no major difference in the results between Models 1-3 and Models 4-6, except for the case of Belgium. The regression data shows significant statistic values for the traditional measure of the risk in Austria's case. Austrian retail investors also respond to extreme risk measures, according to the result of Model 2. Furthermore, they move into markets subsequent to negative extreme event. It is interesting to observe Austria's case since the country is classified as a relatively less individualistic culture according to Hofstede (2001). The only other country in which investors respond to risk/extreme risk is Belgium, which is one of central figures of the European banking crisis, suffering from the default of its two largest banks. As shown in Model 3, small investors in Belgium exhibit "flight to risk" behavior with increased negative extreme measures, while there was fund outflow when there are positive extreme outliers. This gives us a scenario that Belgian investors are attracted to negative extreme events (buying the dips) and exit the markets on positive extreme events (sell at the high). However, when we run regression without financial crisis dummy variable, such behavior is no longer observable in Models 4, 5 and 6.

For both Portugal and Ireland, the crisis dummy variable plays significant role, though in different directions. With the crisis dummy included, funds flow out of the Portuguese market while the opposite happens in Ireland. Hofstede's individualism vs. collectivism score classifies Portugal as a highly collectivist and Ireland as a highly individualistic culture. Indeed, investors in highly individualistic cultures such as Ireland show high risk tolerance or even risk loving proclivities. Hence, during the crisis period, they are more inclined to exhibit "flight to risk" behavior. However, as we see from the separate country results, the impacts of risks on fund flow are not monotonic with respect to increases of Hofstede's individualism score. For example, at the same level of individualism score, countries such as Sweden and Norway do not show consistent result. Mutual fund flows of Greece, Norway, and Sweden are not significantly responsive to changes in with any of the variables in the models. Norway and Sweden show high levels of the individualism index. So far, the influence of culture on investor responsiveness to risk is not clearcut.

[Insert Figure 2 here]

These results are also depicted in Figure 2, where the relationship between investors' behavior vs. extreme risk is shown for Belgium, Greece, Ireland, and Portugal. Figure 2.1 graphs the case of Belgium, which is classified as an individualistic. The investors' tendency of "flight to risk" is evident in the graph, as it is observed that the increased risk of the equity market has the negative relationship with the equity market's mutual fund inflow, especially in 2002, 2005, and 2008. In collectivist cultures, the relation between risk and fund flow is mixed. For example, Figure 2.2 shows that in Greece, the equity market volatility moves in the same trend with the equity market's mutual fund inflow. However, for another collectivist culture country, Portugal, the relation between risk and fund flow is negative, as shown in Figure 2.4. For Ireland, the mutual fund flow is not responsive to changes in equity market volatility. Therefore, we cannot conclude decisively that the cultural variable has monotonic impact on the relation between fund flow and extreme risk.

The drawback of the regression based on individual countries is that we cannot incorporate the culture variable directly in the regression, since it is a highly persistent/time-invariant. As a consequence, in order to clearly understand the impact of culture in the relation between extreme risk and fund flow, in the next section, we perform a serious of panel regressions including all the nine countries with culture dummy variable added.

4. Country culture and panel regressions

One important research focus of this study is on the effects of cultural factors on small investors' behavior in response to both traditional and extreme risks. In order to examine the influence of individualism or collectivism in the market, we import Hofstede's cultural dimension score. As discussed in the previous section, according to the results of individual country analyses, investors' reaction against risks by country are non-monotonic, considering the cultural dimension score. This may due to the fact the impact of cultural factors on the relation between investors' response to risk factors are regime dependent, or there is a threshold level of culture score that affect such impact. Thus, in order to obtain distinct and intuitive outcomes, we separate the nine Eurozone countries into two groups: countries with individualistic cultures vs. countries with collectivist cultures, based on the median of Hofstede's cultural dimension score. Countries with Hofstede's score above the median are classified as individualistic, and we use a dummy variable, Individualism =1 to indicate this group. For our sample countries, Belgium, Denmark, Sweden, Ireland and Norway are members of this group. On the other hand, Finland, Austria, Greece, and Portugal are classified as collectivist societies (Individualism =0).

With this country classification, we perform panel regressions using the country specific, time invariant cultural variables, and consider the interaction between the culture variable and the risk variable to determine how culture moderates the impact of risk on investor's trading behavior. The maintained hypothesis of delayed responses of investors is carried forth from the previous regression models. In order to control for economic development for each country, we also add GDP per capita (*GDP*) to the analysis. The specific models follow:

$$NetFlows(t) = \alpha + \beta_1 GeoMean(t\text{-}1)+\beta_3 Individualism+\beta_{11}GDP(t\text{-}1)+ \beta_{12}Crisis+ \varepsilon(t) \quad 1'$$

$$NetFlows(t) = \alpha + \beta_1 GeoMean(t\text{-}1)+\beta_2 GeoStdDev(t\text{-}1)+\beta_3 Individualism +\beta_{11}GDP(t\text{-}1) + \beta_{12}Crisis + \varepsilon(t) \quad 2'$$

$$NetFlows(t) = \alpha + \beta_1 GeoMean(t\text{-}1)+\beta_2 GeoStdDev(t\text{-}1)+\beta_4 Individualism*GeoStdDev(t\text{-}1)+\beta_{11}GDP(t\text{-}1) +\beta_{12}Crisis+\varepsilon(t) \quad 3'$$

$$NetFlows(t) = \alpha + \beta_1 GeoMean(t\text{-}1)+\beta_5 TotalExtr(t\text{-}1) + \beta_{11}GDP(t\text{-}1)+\beta_{12}Crisis+\varepsilon(t) \quad 4'$$

$$NetFlows(t) = \alpha + \beta_1 GeoMean(t\text{-}1)+ \beta_3 Individualism + \beta_5 TotalExtr(t\text{-}1) + \beta_{11}GDP(t\text{-}1)+\beta_{12}Crisis+\varepsilon(t) \quad 5'$$

$$NetFlows(t) = \alpha + \beta_1 GeoMean(t\text{-}1) +\beta_5 TotalExtr(t\text{-}1)+ \beta_6 Individualism*TotalExtr(t\text{-}1)+\beta_{11}GDP(t\text{-}1) +\beta_{12}Crisis+ \varepsilon(t) \quad 6'$$

$$NetFlows(t) = \alpha + \beta_1 GeoMean(t\text{-}1) + \beta_7 NegExtr(t\text{-}1) +\beta_8 PosExtr(t\text{-}1)+ \beta_{11}GDP(t\text{-}1)+\beta_{12}Crisis+ \varepsilon(t) \quad 7'$$

$$NetFlows(t) = \alpha + \beta_1 GeoMean(t\text{-}1) + \beta_3 Individualism + \beta_7 NegExtr(t\text{-}1) +\beta_8 PosExtr(t\text{-}1)+ \beta_{11}GDP(t\text{-}1) +\beta_{12}Crisis+ \varepsilon(t) \quad 8'$$

$$NetFlows(t) = \alpha + \beta_1 GeoMean(t\text{-}1) +\beta_7\, NegExtr(t\text{-}1)+\beta_8\, PosExtr(t\text{-}1)+ \beta_9 Individualism*NegExtr(t\text{-}1)+ \beta_{10}Individualism*PosExtr(t\text{-}1)+\beta_{11}GDP(t\text{-}1)+\beta_{12}Crisis+ \varepsilon(t) \quad 9'$$

In the regression models, Individualism is the cultural dummy variable. *GDP* represents for GDP per capita of each country at specific time point t. The definitions of the other variables are identical to the regression models in section 3. We also implement panel regressions that incorporate controls for year fixed effects. Table 7 below reports the results. Panel A provides results for models 1'to 9' without country fixed effects and Panel B reports results that include country fixed effects in the analyses.

[Insert Table 7 here]

We observe positive coefficients for the interaction variables *Individualism*Geo StdDev* and *Individualism*Total Extr.*, as shown in models 3' and 6' in both panel A and panel B.

However, it is interesting to note that neither the traditional risk nor the extreme risk measure affects fund flow directly, as shown by the insignificant coefficient of *Geo.Std.Deviation(t-1)* and coefficient of *Total Extreme Value (t-1)* in models 1', 2', 4' and 5' for both panels. We note that the culture-risk interaction variables show a significantly positive impact on fund flow (e.g., 0.163 in model 3' and 0.112 in model 6') at the 1% significant level. This finding can explain why our previous tests in section 3, based on risk variables only, does not systematically predict investors trading behavior. Further looking at the sign of the interaction terms in models 3' and 6' in both panels, in contrast to investors from collectivist cultures, investors based in individualistic cultures are more responsive to changes in both traditional and extreme risk. In addition, the positive sign of the interaction terms shows that investors from individualistic societies exhibit "flight to risk" behavior, performing like risk seekers with high risk tolerance. We use country size, as measured by GDP per capita as a control variable in the regressions. However, it is not found to be a significant determinant of investors' trading behavior.

Another noteworthy point is that when we further look at whether the positive extreme shock and negative extreme shock have different impact on investor's response to risk, we find out that investors are actually indifferent in this regard. For example, for each of the negative and positive extreme risk variables, the coefficients are not significant, shown in the results for models 7' and 8'. Similar results are also shown with the interaction terms (models 3', 6', and 9').

As a robustness check, we also separate sample countries into three groups based on Hofstede's culture score, with individualism in the top tercile group, neutral in the middle tercile group and collectivism in the bottom tercile group.[1] Our results based on this alternative

[1] Full sample results provide qualitatively and quantitatively similar findings, are available on request, and are omitted for brevity.

classification are qualitatively and quantitatively consistent with the previous findings: the culture-risk interaction term has a significantly positive impact on fund flows. In addition, small investors with individualism (or neutral) cultural backgrounds exhibit flight to risk behavior.

[Insert Table 8 here]

We also conduct a further robustness check using simultaneous equations to account for the possibility that both risk and fund flows are determined simultaneously. Table 8 present the results of the simultaneous regression analyses using 2SLS. The results are consistent with our previous findings that there is a significant positive impact of the traditional risk-individualism interaction term on fund flow, as shown in model 3' that the coefficient of *Individualism*Geo StdDev* is 0.143 with 95% level. When we use extreme risk measure, the results are similar: the coefficient of *Individualism*Total Extr* in model 6' is 0.101 with 5% level. Therefore, our results are robust to alternative classification of the culture dummy variable as well as simultaneous model specification.

5. Conclusion

This study focuses on nine small European countries over a long-time frame and show that two different risk measures, i.e. the traditional risk measure and the extreme risk measure, capture different responses from investors in those countries. More importantly, we find that a country culture factor plays a critical role in explaining small stockholders' behavior, and in particular the trading responses of such investors to changes in the risk environment. In country specific regressions, with the exception of Austria, small investors domiciled in collectivist countries do not show much responsiveness to changes in the risk environment, which implies that collectivism constrains the initiative for investors to actively trade in response to market signals. In a pooled panel regression where we can control for the highly persistent and time invariant country variable, we find that the culture-risk interaction variable has a significantly positive impact on fund flows. In addition, small investors from individualistic societies exhibit “flight to risk” behavior, consistent with high risk tolerance.

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Figure 1. Extreme Risk Measure (in %) for Belgium, Greece, Ireland, and Portugal during 1983-2016

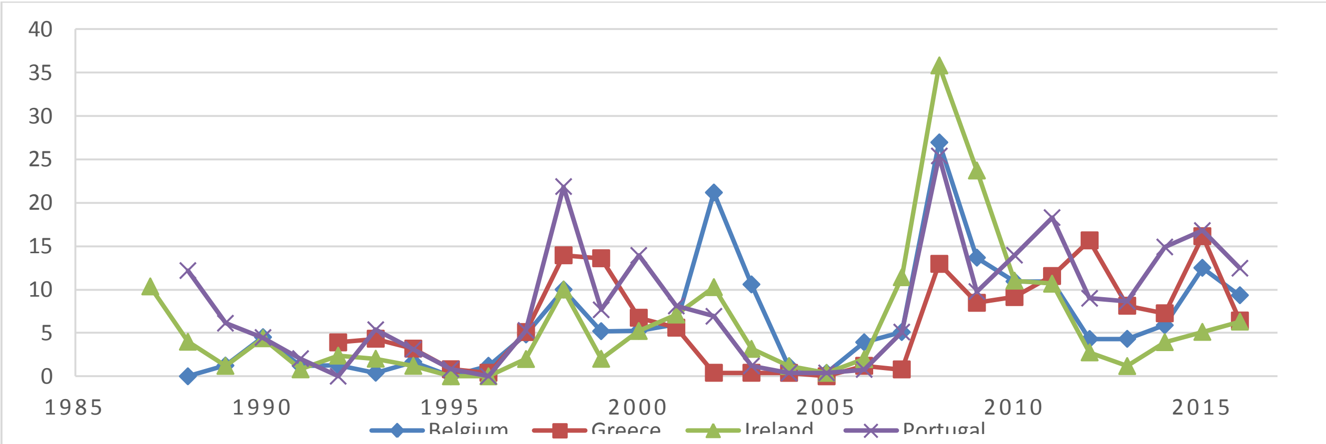

Figure 1.1. Extreme Risk Measure (in %) for Belgium, 1988-2016

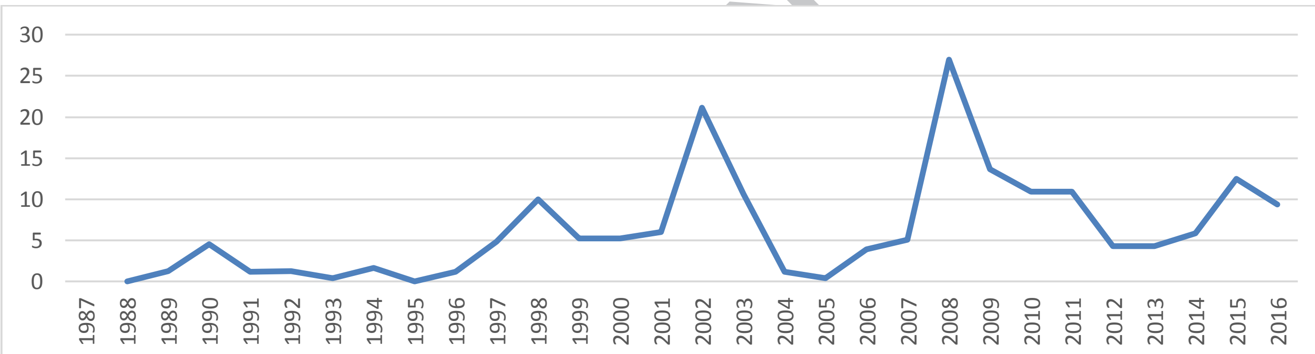

Figure 1.2. Extreme Risk Measure (in %) for Greece, 1992-2016

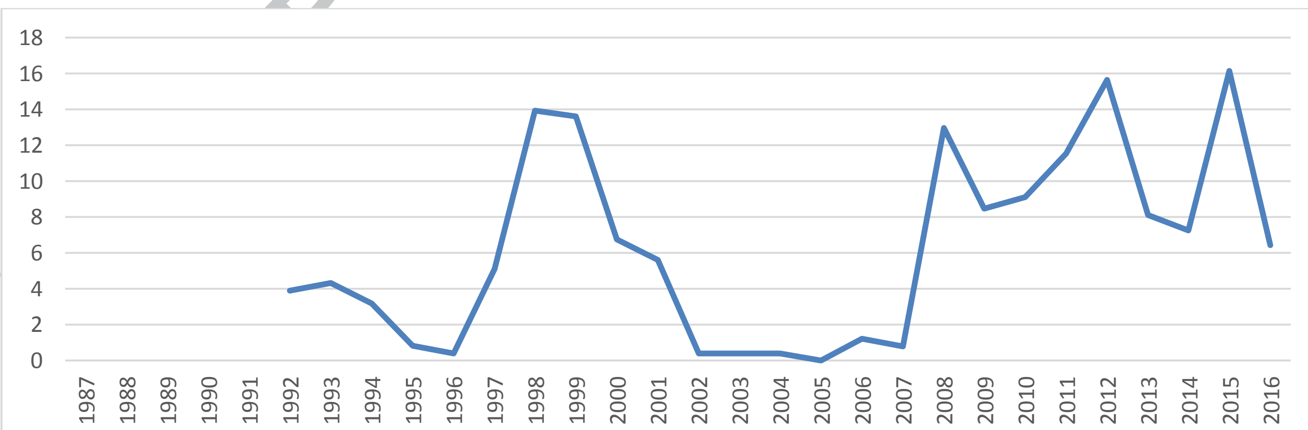

Figure 1.3. Extreme Risk Measure (in %) for Ireland, 1987-2016

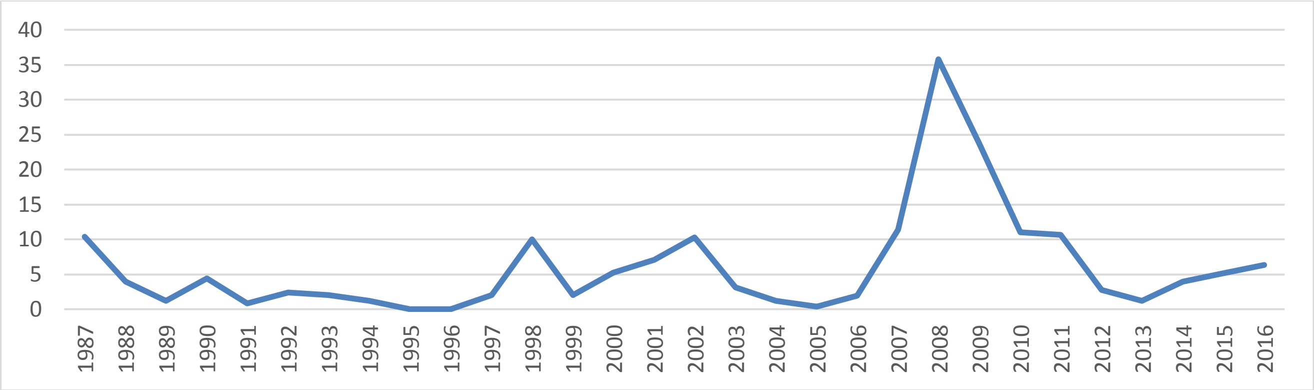

Figure 1.4. Extreme Risk Measure (in %) for Portugal, 1988-2016

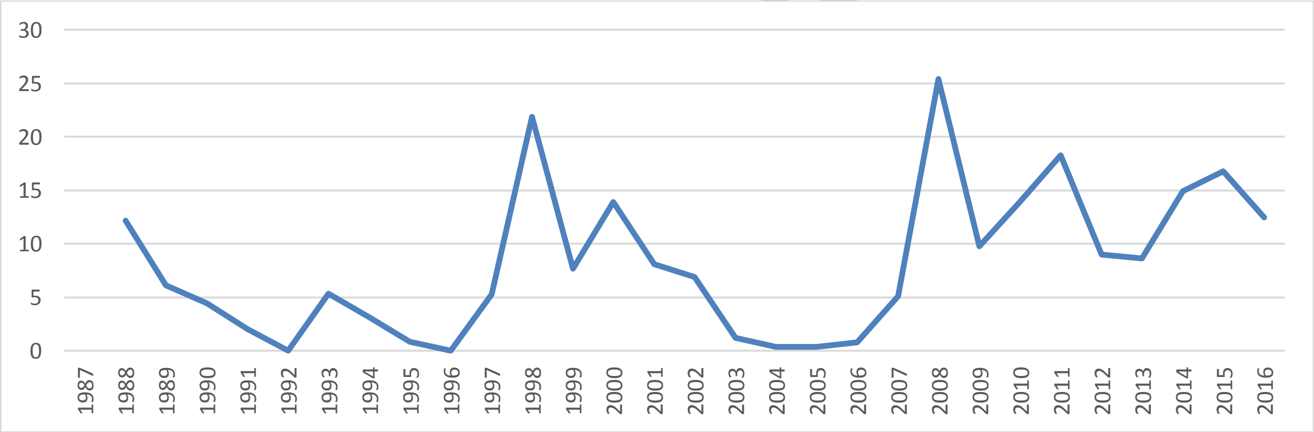

Figure 2.1. Net Flows (annual) into Equity Mutual Funds for Belgium (in USD $100 Million) vs. Extreme Risk Measure (in %) in Belgium, 1995-2013

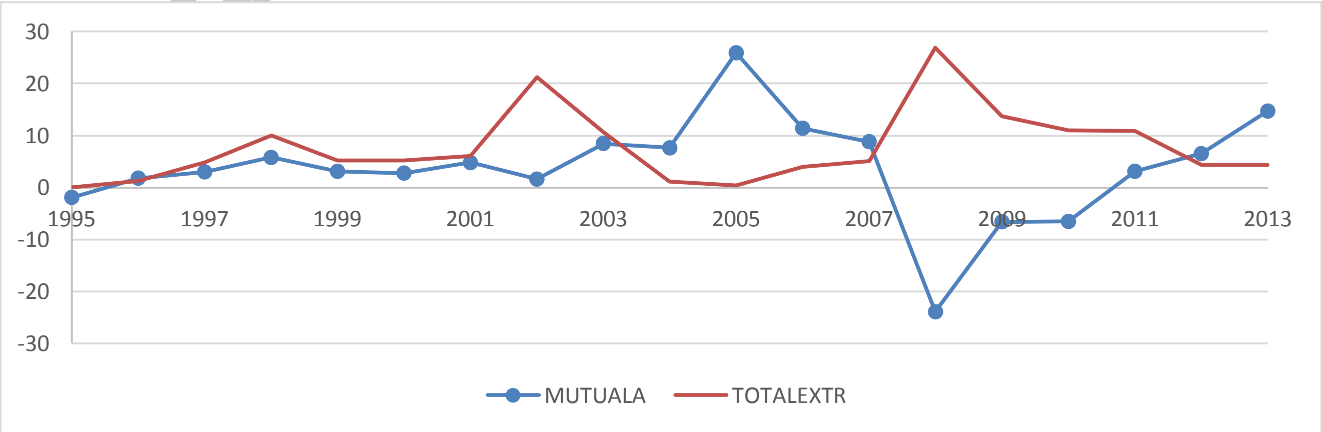

Figure 2.2. Net Flows (annual) into Equity Mutual Funds for Belgium (in USD $100 Million) vs. Extreme Risk Measure (in %) in Greece, 1995-2013

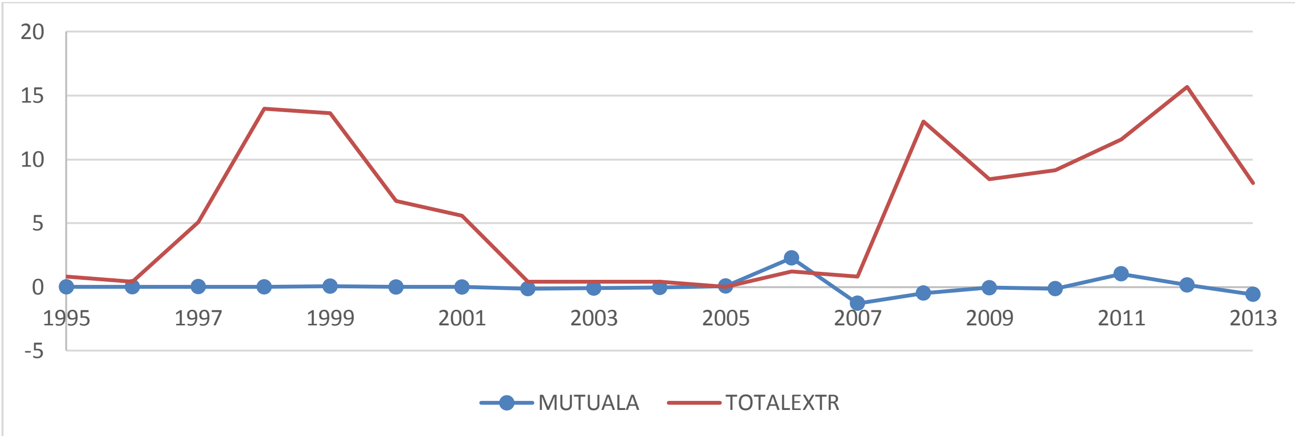

Figure 2.3. Net Flows (annual) into Equity Mutual Funds for Belgium (in USD $100 Million) vs. Extreme Risk Measure (in %) in Ireland, 2002-2012

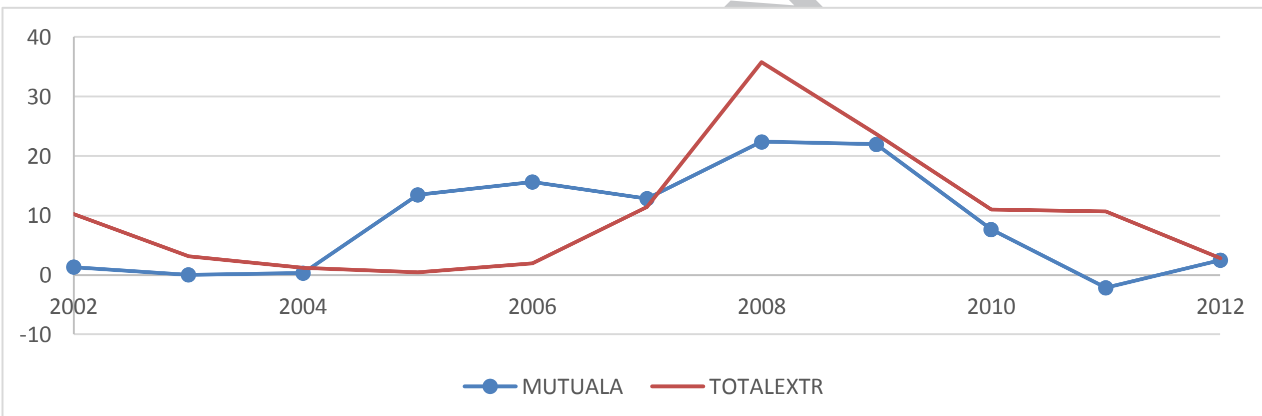

Figure 2.4.
Net Flows (annual) into Equity Mutual Funds for Belgium (in USD $100 Million) vs. Extreme Risk Measure (in %) in Portugal, 1995-2013

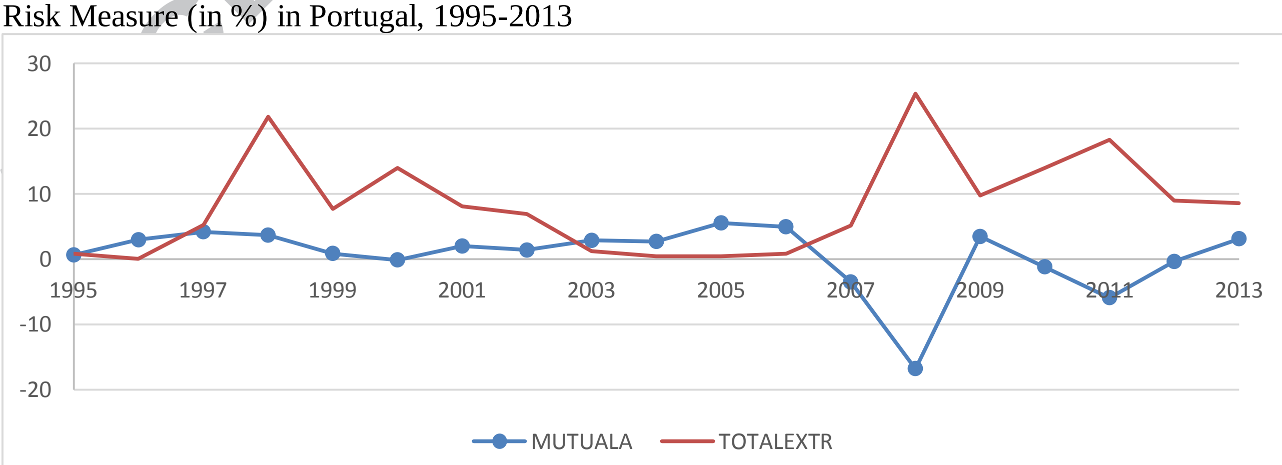

Table 1 Statistics of indices

We focus on nine relatively small Eurozone countries in this study: Austria, Belgium, Denmark, Finland, Greece, Ireland, Norway, Portugal, and Sweden that were epicenters of European banking crisis, and the European sovereign debt crisis. For each country, we choose the equity index with the longest history as the major stock index to use in this study. The historical prices for those indices are collected from Bloomberg and Thomson Reuters DataStream. This table presents the details of _the nine indices, including time period and the number of observations for each country when we use daily, weekly, and monthly data to calculate risk variables.

No.	Country	Index	Daily Data		Weekly Data		Monthly Data	
			Time Period	Obs.	Time Period	Obs.	Time Period	Obs.
1	Austria	Austrian Traded Index (ATX)	June 5, 1992 - March 24, 2017	6150	June 5, 1992 - March 24, 2017	1295	June 30, 1992 - February 28, 2017	297
2	Belgium	Belgium All Share Index (BELAS)	October 3, 1988 - March 24, 2017	7162	October 7, 1988 - March 24, 2017	1486	October 7, 1988 - February 28, 2017	341
3	Denmark	OMX Copenhagen 20 Index (KFX)	December 4, 1989 - March 24, 2017	6837	December 8, 1989 - March 24, 2017	1425	December 29, 1989 - February 28, 2017	327
4	Finland	OMS Helsinki Index (HEX)	January 30, 1987 - February 28, 2017	7549	January 30, 1987 - February 24, 2017	1570	January 30, 1987 - January 31, 2017	361
5	Greece	Athens Stock Exchange (ASE) Index	Jun 30, 1992 - February 28, 2017	6140	July 3, 1992 - February 24, 2017	1282	July 31, 1992 - January 31, 2017	294
6	Ireland	Irish Overall Index (ISEQ)	January 2, 1987 - March 24, 2017	7609	February 4, 1983 - February 24, 2017	1786	January 31, 1983 - February 28, 2017	410
7	Norway	OMX Oslo All Share Index (OSEAX)	December 29, 1995 - March 24, 2017	5331	December 29, 1995 - March 24, 2017	1109	December 29, 1995 - February 28, 2017	255
8	Portugal	Portugal All Share Index (PSI)	January 5, 1988 - March 24, 2017	7154	January 9, 1988 - March 24, 2017	1520	January 29, 1988 - February 28, 2017	350
9	Sweden	Stockholm All-Share Index (SAX)	January 2, 1987 - February 28, 2017	7573	January 2, 1987 - February 28, 2017	1574	January 31, 1980 - January 31, 2017	445

Table 2. Summary statistics of daily/weekly/monthly logarithmatic percent changes (i.e. returns) of indices

Country	Mean	Median	StdDev	Skewness	Kurtosis	Jarque-Bera	Percentile					
							1%	5%	10%	90%	95%	99%
Panel A. Daily Data												
Austria	0.0168	0.0600	1.3605	-0.3699	7.0939	13033.5632	-4.1698	-2.1652	-1.4002	1.4208	1.9056	3.4388
Belgium	0.0296	0.0599	1.0437	-0.1100	7.6207	17342.4548	-2.9831	-1.6847	-1.0868	1.0716	1.5673	2.7324
Denmark	0.0312	0.0596	1.1896	-0.2878	5.4294	8490.7097	-3.3404	-1.8812	-1.2997	1.3315	1.8244	3.0799
Finland	0.0283	0.0560	1.6216	-0.2981	7.6116	18332.9331	-4.6496	-2.5136	-1.6873	1.6915	2.4616	4.5382
Greece	-0.0047	0.0115	1.8742	-0.2601	5.6020	8096.5801	-5.4298	-2.9842	-2.0064	2.0397	2.8572	5.1334
Ireland	0.0238	0.0495	1.2607	-0.8218	10.5498	36138.0111	-3.8700	-1.8522	-1.2400	1.3019	1.7842	3.3301
Norway	0.0381	0.1043	1.3554	-0.5958	6.0898	8551.5429	-4.1378	-2.1205	-1.4159	1.4479	2.0026	3.3202
Portugal	0.0131	0.0140	1.0759	-0.3667	9.7827	28683.4787	-3.1829	-1.6620	-1.0920	1.1272	1.6241	2.8246
Sweden	0.0342	0.0801	1.3225	-0.1239	5.3008	8884.3645	-3.8125	-2.0677	-1.4092	1.4066	1.9700	3.5672
Panel B. Weekly Data												
Austria	0.0801	0.2580	3.0910	-1.4792	14.4433	11719.3723	-8.2113	-4.5514	-3.4394	3.2815	4.3767	6.7723
Belgium	0.1420	0.3113	2.3731	-1.4583	14.9052	14272.7576	-6.7343	-3.9823	-2.4188	2.6087	3.4002	5.7797
Denmark	0.1512	0.3175	2.6330	-0.9537	6.6591	2846.9231	-7.0802	-4.1158	-2.8720	3.0625	3.8407	5.8779
Finland	0.1362	0.2652	3.5620	-0.5548	3.6421	947.6775	-10.1309	-5.5977	-4.0108	4.0295	5.6184	8.7303
Greece	-0.0185	0.0574	4.2358	-0.1996	3.3167	595.6637	-12.0981	-6.9053	-4.8627	4.6592	6.1885	10.9949
Ireland	0.1702	0.3937	2.8646	-1.5298	12.7169	12724.0204	-8.5059	-4.1356	-2.8895	3.2471	4.2346	6.6763
Norway	0.1834	0.5046	2.9096	-1.1327	7.3826	2753.1451	-8.3526	-4.8245	-2.9110	3.0252	3.8062	6.8770
Portugal	0.0528	0.1028	2.5132	-0.7780	6.2558	2630.1025	-8.2099	-3.7179	-2.7498	2.7429	3.9139	6.5868
Sweden	0.1646	0.4128	2.8486	-0.6693	5.4360	2054.1876	-7.6722	-4.5096	-3.1517	3.1939	4.2327	7.1231

Panel C. Monthly Data

Austria	0.3615	1.0892	6.1555	-1.1407	3.7602	238.5806	-18.5845	-10.1973	-6.9855	7.5428	8.8351	12.4084
Belgium	0.6137	1.0386	4.6288	-1.0080	2.4974	145.9397	-14.5691	-8.1971	-4.6983	5.3307	6.7679	9.5863
Denmark	0.6637	0.9758	5.3089	-0.5545	1.3498	41.4537	-14.8811	-8.1400	-6.0569	6.9451	8.2421	11.6878
Finland	0.5861	0.6732	7.4341	-0.2154	1.6876	45.5041	-19.1259	-11.3699	-8.3427	8.8410	11.4745	20.3757
Greece	-0.0887	0.4265	9.0829	-0.2345	1.3781	25.8701	-25.3191	-15.4895	-11.8359	10.4745	14.0990	20.0462
Ireland	0.7458	1.3983	6.0320	-1.0131	3.2589	250.9545	-17.6699	-9.1039	-6.3349	7.1754	9.5612	12.6107
Norway	0.8019	1.3902	5.9166	-1.3484	4.4471	286.2679	-22.8869	-8.3305	-5.5780	7.3036	8.8279	11.1287
Portugal	0.2573	0.3602	5.4960	-0.4136	2.3449	89.9131	-16.1342	-8.3648	-5.9919	6.6518	8.8381	14.5988
Sweden	1.0082	1.2433	5.9358	-0.4064	2.0092	86.9052	-15.3517	-9.3336	-6.1547	7.7278	10.2612	14.0407

Panel D. Whole sample period vs. crisis period.

Period	Observation	Mean	Median	StdDev	Skewness	Kurtosis	Jarque-Bera	Percentile					
								1%	5%	10%	90%	95%	99%
Austria													
Jun 1992 - Feb 2017	296	0.3615	1.0892	6.1555	-1.1407	3.7602	238.5806	-18.5845	-10.1973	-6.9855	7.5428	8.8351	12.4084
2009	12	2.9535	3.3022	8.5102	-0.8379	0.7025	1.6508	-14.7698	-10.4303	-5.4879	12.0763	12.8230	13.4021
2008	12	-7.8906	-5.1448	12.6039	-0.6202	0.3061	0.8161	-31.9413	-29.3298	-25.6027	2.7774	7.2486	11.4020
Belgium													
Oct 1988 - Feb 2017	340	0.6137	1.0386	4.6288	-1.0080	2.4974	145.9397	-14.5691	-8.1971	-4.6983	5.3307	6.7679	9.5863
2009	12	2.0548	3.2581	6.0660	-0.4587	-0.3349	0.4768	-9.1809	-6.9306	-4.5274	9.2403	10.0677	10.5426
2008	12	-5.3790	-3.6539	9.0788	-0.2209	-1.2006	0.8183	-20.1941	-17.5311	-14.7823	5.2510	6.3431	7.1137
Denmark													
Dec 1989 - Feb 2017	326	0.6637	0.9758	5.3089	-0.5545	1.3498	41.4537	-14.8811	-8.1400	-6.0569	6.9451	8.2421	11.6878
2009	12	2.5572	1.8970	7.0328	0.7288	1.3946	2.0348	-7.8010	-6.7073	-5.3600	7.3126	12.3817	17.2850
2008	12	-5.2324	-3.8184	8.9896	-0.4373	-0.6429	0.5892	-20.5937	-19.7455	-18.2835	5.1821	6.4481	7.2954

Finland													
Jan 1987 - Jan 2017	360	0.5861	0.6732	7.4341	-0.2154	1.6876	45.5041	-19.1259	-11.3699	-8.3427	8.8410	11.4745	20.3757
2009	12	1.4832	2.5201	8.6403	0.1700	1.4814	1.1552	-14.0734	-10.4541	-6.6444	7.7624	13.2955	18.4713
2008	12	-6.3652	-6.1905	6.8957	-0.6141	-0.4420	0.8520	-19.5638	-16.3998	-13.0412	0.5285	0.8950	1.2246
Greece													
Jul 1992 - Jan 2017	293	-0.0887	0.4265	9.0829	-0.2345	1.3781	25.8701	-25.3191	-15.4895	-11.8359	10.4745	14.0990	20.0462
2009	12	1.7204	2.6189	10.7347	-0.3204	-0.1370	0.2147	-16.8673	-15.8082	-13.7705	12.1840	15.8038	19.0224
2008	12	-8.8693	-6.1391	10.3716	-1.0793	1.3006	3.1757	-31.2140	-25.3777	-19.1827	-0.9396	2.0115	4.8559
Ireland													
Jan 1983 - Feb 2017	409	0.7458	1.3983	6.0320	-1.0131	3.2589	250.9545	-17.6699	-9.1039	-6.3349	7.1754	9.5612	12.6107
2009	12	1.9889	3.4268	9.0016	-0.4051	0.5340	0.4708	-14.9858	-12.9271	-9.9477	10.1154	13.7264	17.0055
2008	12	-9.0412	-5.9859	8.7199	-0.1941	-1.2916	0.9095	-22.9332	-20.3369	-17.6670	1.9485	2.6709	2.7593
Norway													
Dec 1995 - Feb 2017	254	0.8019	1.3902	5.9166	-1.3484	4.4471	286.2679	-22.8869	-8.3305	-5.5780	7.3036	8.8279	11.1287
2009	12	3.6776	4.0228	5.2600	0.1802	0.6893	0.3025	-5.3866	-4.1903	-2.5998	9.6991	11.8826	13.5900
2008	12	-6.2202	-5.2617	12.8421	-0.4010	-0.9388	0.7624	-27.0131	-25.6363	-23.9752	7.6412	9.4098	11.0751
Portugal													
Jan 1988 - Feb 2017	349	0.2573	0.3602	5.4960	-0.4136	2.3449	89.9131	-16.1342	-8.3648	-5.9919	6.6518	8.8381	14.5988
2009	12	2.8017	2.6839	4.9600	-0.0534	-0.6464	0.2146	-5.5719	-3.9126	-2.1452	8.1656	9.3783	10.5464
2008	12	-5.7293	-2.5220	8.6310	-0.8762	0.0096	1.5356	-22.6329	-19.3963	-16.0307	2.2100	3.8644	5.2217
Sweden													
Jan 1980 - Jan 2017	444	1.0082	1.2433	5.9358	-0.4064	2.0092	86.9052	-15.3517	-9.3336	-6.1547	7.7278	10.2612	14.0407
2009	12	3.1910	1.9663	5.6680	1.2865	3.1955	8.4160	-5.3646	-2.7040	0.0672	9.1543	13.0364	16.3422
2008	12	-4.5332	-1.3914	8.3117	-0.7971	-1.0682	1.8412	-19.2165	-17.2613	-15.0661	3.0916	3.3752	3.5383

Table 3. The top 15 year rankings of volatility as measured by standard deviation and by the percentage of extreme days for each of the nine European countries

	Austria				Belgium				
	Geometric Standard Deviation		Percentage of Extreme Days		Geometric Standard Deviation		Percentage of Extreme Days		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	2008	47.9863	2008	28.4000	2008	35.7265	2008	35.7265	1
2	2009	35.7144	2009	24.1935	2002	25.6784	2002	25.6784	2
3	2011	29.1925	2011	13.3065	2009	22.5379	2009	22.5379	3
4	1998	24.3126	1992	8.4507	2011	21.2453	2011	21.2453	4
5	2010	23.8813	2012	7.6923	2015	20.5910	2015	20.5910	5
6	2016	21.8380	1998	7.6613	2003	19.8203	2003	19.8203	6
7	2012	21.7115	2010	7.6305	2010	19.5069	2010	19.5069	7
8	2006	20.5959	2016	5.622	2016	18.9441	2016	18.9441	8
9	2007	20.2668	1997	5.2632	1998	18.6076	1998	18.6076	9
10	1997	20.1104	2007	4.4534	1999	16.0590	1999	16.0590	10
11	2015	20.0032	2015	4.0323	2014	15.8120	2014	15.8120	11
12	1992	18.5516	2006	3.6585	2000	15.6013	2000	15.6013	12
13	2014	16.8607	2000	3.2520	2007	15.2289	2007	15.2289	13
14	1993	16.6748	1993	3.2129	2001	14.7436	2001	14.7436	14
15	1999	16.2005	2014	2.8340	2013	14.5637	2013	14.5637	15

	Denmark				Finland				
	Geometric Standard Deviation		Percentage of Extreme Days		Geometric Standard Deviation		Percentage of Extreme Days		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	2008	38.4943	2008	23.2000	2000	54.7089	2000	35.4582	1
2	2009	26.6886	2009	12.4498	2001	51.0954	2001	33.3333	2
3	2002	24.4199	2002	10.0402	2002	39.1523	2002	24.8996	3
4	1998	23.3034	1998	9.6000	2008	37.5657	2008	15.4150	4
5	2016	22.0259	2001	8.8353	1998	33.0828	1999	13.5458	5
6	2000	21.8666	2011	8.3333	1999	31.0529	1998	12.8000	6
7	2011	21.2402	2016	7.5397	2009	29.9125	2011	12.6482	7
8	2015	20.4903	2000	7.1713	2011	28.2242	2009	12.3506	8
9	2001	19.9714	2015	6.0241	2003	27.8146	2003	9.2000	9
10	2010	19.8851	1992	5.6000	1997	23.4500	1992	4.3825	10
11	2003	17.9649	2010	5.5777	1995	22.5236	1997	4.0161	11
12	2007	17.6929	2007	4.8193	1992	22.0537	2007	3.2000	12
13	1992	17.4694	2003	4.0161	2012	20.8853	2006	3.1873	13
14	2012	16.0330	2006	3.9683	1993	20.3695	2012	2.8000	14
15	2006	15.8967	2012	3.6145	2004	20.1625	2010	2.7778	15

Table 3. Cont'd

	Greece				Ireland				
	Geometric Standard Deviation		Percentage of Extreme Days		Geometric Standard Deviation		Percentage of Extreme Days		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	2015	46.4653	2015	16.1435	2008	47.8976	2008	35.8268	1
2	2012	39.9886	2012	15.6627	2009	32.6774	2009	23.7154	2
3	2008	38.8718	1998	13.9442	1987	30.7513	2007	11.4173	3
4	1998	38.4077	1999	13.6000	2010	25.2077	2010	11.0236	4
5	1999	37.6695	2008	12.9555	2007	23.2181	2011	10.6719	5
6	2011	37.0962	2011	11.5538	2011	22.8458	1987	10.3586	6
7	2014	34.6443	2010	9.1270	2016	22.7368	2002	10.2767	7
8	2010	34.1359	2009	8.4677	1998	22.5521	1998	10.0000	8
9	2009	33.2648	2013	8.1301	2002	22.0552	2001	7.1146	9
10	2000	32.4245	2014	7.2581	2001	19.4826	2016	6.2992	10
11	2016	32.0999	2000	6.7460	2015	18.8086	2000	5.2209	11
12	1997	31.0177	2016	6.4257	2000	17.6076	2015	5.1181	12
13	2013	30.4778	2001	5.6000	1990	16.7002	1990	4.3825	13
14	2001	28.6758	1997	5.0980	1999	16.4688	1988	3.9841	14
15	1993	26.0297	1993	4.3307	2014	16.2031	2014	3.9370	15

	Norway				Portugal				
	Geometric Standard Deviation		Percentage of Extreme Days		Geometric Standard Deviation		Percentage of Extreme Days		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	2008	46.8717	2008	24.2063%	2008	32.8977	2008	25.3906%	1
2	2009	31.7568	2009	17.5299%	1998	26.4106	1998	21.8623%	2
3	1998	25.2844	2011	9.0909%	2010	22.3970	2011	18.2879%	3
4	2011	24.6472	1998	8.3665%	2011	22.0392	2015	16.7969%	4
5	2006	24.0700	2006	6.7729%	2015	22.0009	2014	14.9020%	5
6	2010	21.1818	2002	6.0241%	2014	20.0170	2010	13.9535%	6
7	2002	20.7336	2016	5.5336%	2000	19.3877	2000	13.9344%	7
8	2016	20.3397	2010	5.1587%	2016	19.3550	2016	12.4514%	8
9	2007	19.7297	2000	4.7809%	1989	18.0892	1988	12.1827%	9
10	2000	19.3475	2001	3.6290%	1988	17.9535	2009	9.7656%	10
11	2001	19.1654	2005	3.5573%	2009	17.5111	2012	8.9844%	11
12	2015	17.6858	2014	3.2000%	2012	17.2451	2013	8.6275%	12
13	2005	17.5407	2007	3.2000%	2001	16.9526	2001	8.0972%	13
14	2012	16.5922	2012	3.1873%	2013	16.8674	1999	7.6613%	14
15	1999	16.0560	1999	1.9841%	1997	16.3335	2002	6.9106%	15

Table 3. Cont'd

	Sweden			
	Geometric Standard Deviation		Percentage of Extreme Days	
Rank	Year	GeoStdDev(%)	Year	L(%)
1	2008	37.9923	2008	21.0317%
2	2001	29.9827	2000	15.9363%
3	2002	29.2078	2002	14.0000%
4	2000	28.5168	2001	12.8000%
5	1987	28.2888	2009	11.5538%
6	2009	27.2778	2011	10.6719%
7	2011	26.9015	1998	10.0000%
8	1998	26.7977	1987	8.0000%
9	1992	23.7326	1992	7.1713%
10	2007	19.4590	2007	5.2000%
11	1990	19.3971	1990	4.8000%
12	2003	19.2338	2003	4.4177%
13	2016	19.2001	2006	4.3825%
14	1997	19.1660	1997	4.0161%
15	2015	18.6994	2016	3.9526%

Table 4. The top 15 year rankings of volatility as measured by standard deviation and by the percentage of extreme weeks for each of the nine European countries

	Austria				Belgium				
	Geometric Standard Deviation		Percentage of Extreme Weeks		Geometric Standard Deviation		Percentage of Extreme Weeks		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	2008	51.7178	2008	59.6154	2008	37.2575	2008	63.4615	1
2	2009	36.6474	2009	57.6923	2009	24.4423	2011	53.8462	2
3	2011	29.6846	1992	48.2759	2011	22.1039	2009	51.9231	3
4	2010	25.6182	2010	45.2830	2001	21.4142	1997	50.0000	4
5	1998	23.8982	1998	44.2308	1998	21.3581	2002	46.1538	5
6	1992	23.2436	2011	38.4615	2002	20.7649	1999	45.2830	6
7	2006	21.5954	2014	36.5385	2003	19.4470	1998	44.2308	7
8	2012	19.5731	2012	34.6154	2015	17.9414	2015	42.3077	8
9	2016	19.5607	1997	34.6154	2010	17.8058	2010	41.5094	9
10	2007	19.4641	2015	32.6923	1990	17.6666	2014	36.5385	10
11	1999	19.4486	1999	32.0755	1999	17.5854	2013	36.5385	11
12	1997	19.1372	1993	32.0755	2016	17.4139	2003	36.5385	12
13	2014	19.0307	2016	30.1887	2007	16.4739	1990	36.5385	13
14	2015	18.4312	2007	28.8462	1997	16.3341	2016	35.8491	14
15	1993	18.1802	2006	28.8462	2000	16.1972	2007	34.6154	15

	Denmark				Finland				
	Geometric Standard Deviation		Percentage of Extreme Weeks		Geometric Standard Deviation		Percentage of Extreme Weeks		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	2008	40.6063	2009	51.9231	2000	52.3659	2000	67.3077	1
2	2009	28.7925	2008	46.1538	2001	48.5823	2002	61.5385	2
3	2001	23.9041	1998	42.3077	2008	35.3267	2001	61.5385	3
4	2016	21.4325	2000	40.3846	2002	34.4546	2008	50.0000	4
5	2011	21.2590	1997	40.3846	1998	32.4487	1999	49.0566	5
6	2010	21.1865	2015	36.5385	2011	29.8203	2009	48.0769	6
7	2002	20.6397	2001	36.5385	2009	29.0908	1998	44.2308	7
8	2000	19.3637	2002	34.6154	2003	28.0922	2011	42.3077	8
9	1998	19.2449	2016	33.9623	1999	27.9954	2003	42.3077	9
10	1992	19.2035	2003	32.6923	1992	27.5150	1992	40.3846	10
11	1997	18.3778	1992	32.6923	1995	25.5737	1993	37.7358	11
12	2015	17.5312	1999	32.0755	1993	24.5855	1995	36.5385	12
13	1999	16.9973	2011	30.7692	2004	23.4496	1991	34.6154	13
14	1990	16.6178	2010	30.1887	1997	21.7572	1997	32.6923	14
15	2007	16.6049	1993	30.1887	2012	20.6029	1994	28.8462	15

Table 4. Cont'd

	Greece				Ireland				
	Geometric Standard Deviation		Percentage of Extreme Weeks		Geometric Standard Deviation		Percentage of Extreme Weeks		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	1998	45.5930	2009	57.6923	2008	50.4654	2008	69.2308	1
2	2015	42.9724	1999	56.6038	1987	37.6552	2009	67.3077	2
3	2014	41.8967	2011	51.9231	2009	34.7781	2007	51.9231	3
4	2008	40.9340	2014	50.0000	1998	26.0643	1987	50.0000	4
5	1999	40.8248	2015	48.9362	2001	24.6354	1998	42.3077	5
6	2012	39.8754	2013	48.0769	2007	23.9698	2001	40.3846	6
7	2011	33.6441	1998	48.0769	2010	23.3425	2010	39.6226	7
8	2013	33.4140	2012	46.1538	2011	22.0351	1986	38.4615	8
9	2000	33.3201	2010	45.2830	2002	21.6112	2014	36.5385	9
10	2009	33.2355	2008	44.2308	1986	20.3187	2011	36.5385	10
11	2010	31.3972	1997	42.3077	2014	18.8292	1994	36.5385	11
12	2001	31.1299	2000	34.6154	1990	18.6988	2015	34.6154	12
13	1997	30.6134	2001	32.6923	2016	17.3470	2002	34.6154	13
14	2016	28.9728	2016	32.0755	2000	17.2497	1990	32.6923	14
15	1992	23.2622	1992	32.0000	1988	16.8934	2000	30.7692	15

	Norway				Portugal				
	Geometric Standard Deviation		Percentage of Extreme Weeks		Geometric Standard Deviation		Percentage of Extreme Weeks		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	2008	45.8560	2008	55.7692	2008	33.2408	1998	76.9231	1
2	2009	29.1440	2009	50.0000	1998	31.7820	2014	59.6154	2
3	1998	28.1193	1998	40.3846	2014	24.7682	2008	55.7692	3
4	2001	23.5154	2010	33.9623	1988	23.6870	2010	52.8302	4
5	2011	22.9092	2007	30.7692	2010	22.1164	2016	50.9434	5
6	2006	21.1417	2006	30.7692	2011	21.2006	2015	50.0000	6
7	2010	20.6750	2002	30.7692	2015	20.5779	1997	50.0000	7
8	1999	18.6570	2011	28.8462	2016	19.3491	2009	48.0769	8
9	2002	18.5096	1999	26.4151	1997	19.1329	2011	46.1538	9
10	2016	18.1036	2001	25.0000	2001	18.8394	1988	43.1373	10
11	2007	17.8288	2016	24.5283	2000	18.7302	2007	42.3077	11
12	2005	17.3425	2005	23.0769	1989	18.6647	2000	42.3077	12
13	2014	17.0615	2003	23.0769	1999	18.0941	1999	41.5094	13
14	2000	16.7580	2014	21.1538	2009	17.9053	2002	40.3846	14
15	2003	15.8350	1997	21.1538	1990	17.8543	2001	40.3846	15

Table 4. Cont'd

	Sweden			
	Geometric Standard Deviation		Percentage of Extreme Weeks	
Rank	Year	GeoStdDev(%)	Year	L(%)
1	2008	38.0421	2001	57.6923
2	1998	28.6410	2000	55.7692
3	2000	27.3161	2002	53.8462
4	2001	27.0393	2008	48.0769
5	2002	26.8213	2009	44.2308
6	2011	26.7513	1998	44.2308
7	1990	26.5180	2011	36.5385
8	1987	25.8891	1990	34.6154
9	1992	25.7377	1992	32.6923
10	2009	25.5469	1991	32.6923
11	1991	18.6649	1987	31.3725
12	2010	18.6029	1999	30.1887
13	2007	18.5062	2003	26.9231
14	1994	18.0107	1994	26.9231
15	1997	17.9156	1993	24.5283

Table 5. The top 15 year rankings of volatility as measured by standard deviation and by the percentage of extreme months for each of the nine European countries

	Austria				Belgium				
	Geometric Standard Deviation		Percentage of Extreme Months		Geometric Standard Deviation		Percentage of Extreme Months		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	2008	43.6612	1993	91.6667	2008	31.4498	1998	91.6667	1
2	2009	29.4802	2008	83.3333	1998	23.5242	1997	91.6667	2
3	1998	29.1508	2005	83.3333	2002	21.6430	2009	83.3333	3
4	1997	23.1339	2016	75.0000	1990	21.2586	2005	83.3333	4
5	1993	21.8066	2015	75.0000	2009	21.0132	2004	83.3333	5
6	2010	21.5577	1997	75.0000	2003	20.1805	2015	75.0000	6
7	1992	21.3587	2012	66.6667	2015	19.1744	2008	75.0000	7
8	1999	20.8975	2010	66.6667	2000	17.0880	1989	75.0000	8
9	2015	20.4569	2009	66.6667	1997	16.5425	2014	66.6667	9
10	2011	20.3502	2004	66.6667	1991	15.0907	2012	66.6667	10
11	2012	18.0167	2002	66.6667	1989	13.9651	2010	66.6667	11
12	2016	17.9077	1999	66.6667	2010	13.5704	1993	66.6667	12
13	2001	17.7594	1998	66.6667	2001	13.3557	1990	66.6667	13
14	2006	17.4930	1994	66.6667	1992	12.2344	2011	58.3333	14
15	1996	16.8506	1992	66.6667	1999	12.0797	2007	58.3333	15

	Denmark				Finland				
	Geometric Standard Deviation		Percentage of Extreme Months		Geometric Standard Deviation		Percentage of Extreme Months		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	2008	31.1409	2016	83.3333	2001	58.8500	2001	100.0000	1
2	2009	24.3624	2002	83.3333	1992	39.5677	2004	91.6667	2
3	1998	23.1493	1997	83.3333	2002	35.0402	2002	91.6667	3
4	2001	22.9897	1992	83.3333	1999	34.1264	1998	91.6667	4
5	2002	22.8876	2009	75.0000	1998	33.2609	1997	83.3333	5
6	2003	21.2062	1990	75.0000	2009	29.9307	1994	83.3333	6
7	1990	21.1136	2015	66.6667	1991	28.2831	1993	83.3333	7
8	1992	20.2355	2010	66.6667	1995	26.0440	1987	81.8182	8
9	2011	19.0249	2008	66.6667	2004	25.1911	2015	75.0000	9
10	1997	18.5076	2005	66.6667	1994	24.9458	2011	75.0000	10
11	2015	18.3247	2003	66.6667	2003	24.3057	2009	75.0000	11
12	1994	17.1399	2001	66.6667	1997	24.2671	2000	75.0000	12
13	2000	17.0473	1999	66.6667	2008	23.8874	1999	75.0000	13
14	1993	16.0979	1993	66.6667	2000	21.2439	1992	75.0000	14
15	2012	15.3780	2011	58.3333	1990	20.9775	1991	75.0000	15

Table 5. Cont'd

	Greece				Ireland				
	Geometric Standard Deviation		Percentage of Extreme Months		Geometric Standard Deviation		Percentage of Extreme Months		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	1998	56.6405	2010	91.6667	1987	45.1398	2008	100.0000	1
2	2012	43.5045	2000	83.3333	2009	31.1825	2001	91.6667	2
3	2015	40.4667	1997	83.3333	2008	30.2065	1992	91.6667	3
4	1997	37.4118	2012	75.0000	1998	27.0171	2005	83.3333	4
5	2009	37.1860	2009	75.0000	2002	26.6785	2002	83.3333	5
6	2008	35.9283	2008	75.0000	1990	25.1560	1997	83.3333	6
7	2013	35.1912	2003	75.0000	2010	23.3673	1990	83.3333	7
8	2011	34.6977	2001	75.0000	1986	22.2488	1987	83.3333	8
9	2000	33.8414	1999	75.0000	1991	22.1082	1985	83.3333	9
10	2010	32.2309	2015	72.7273	2001	22.0702	1983	81.8182	10
11	2001	31.0690	2016	66.6667	1988	21.2369	2009	75.0000	11
12	2016	30.6310	2013	66.6667	2016	20.1764	1994	75.0000	12
13	2003	27.3089	1998	66.6667	1984	19.1826	1986	75.0000	13
14	2014	26.9293	2014	58.3333	2000	19.0909	1984	75.0000	14
15	1993	23.9730	2011	58.3333	1985	18.7222	2016	66.6667	15

	Norway				Portugal				
	Geometric Standard Deviation		Percentage of Extreme Months		Geometric Standard Deviation		Percentage of Extreme Months		
Rank	Year	GeoStdDev(%)	Year	L(%)	Year	GeoStdDev(%)	Year	L(%)	Rank
1	2008	44.4863	2005	91.6667	1998	38.1811	1988	100.0000	1
2	1998	32.4518	2008	83.3333	2008	29.8985	1998	91.6667	2
3	2002	22.4656	2007	83.3333	1989	25.1228	1997	91.6667	3
4	2001	21.7071	2003	83.3333	1988	24.5670	1994	91.6667	4
5	2010	20.4839	2002	83.3333	2002	23.0465	2002	83.3333	5
6	2003	20.1908	2001	83.3333	2000	21.9241	1999	83.3333	6
7	2005	19.1972	2010	75.0000	1997	19.6740	1993	83.3333	7
8	2009	18.2212	2009	75.0000	2015	19.2287	2015	75.0000	8
9	1999	17.9293	2004	66.6667	2010	19.1633	2014	75.0000	9
10	2011	16.7016	2000	66.6667	2014	18.4535	2012	75.0000	10
11	2006	16.6438	1998	66.6667	2001	17.8566	2010	75.0000	11
12	2000	16.5380	2006	58.3333	1994	17.1879	2009	75.0000	12
13	2004	15.6969	1999	58.3333	2009	17.1818	2003	75.0000	13
14	2012	13.8440	2015	50.0000	2007	16.3367	1989	75.0000	14
15	1997	13.8072	1997	50.0000	1999	16.2677	2016	66.6667	15

Table 5. Cont'd

	Sweden			
	Geometric Standard Deviation		Percentage of Extreme Months	
Rank	Year	GeoStdDev(%)	Year	L(%)
1	1987	37.0711	1997	91.6667
2	1992	32.3222	2002	83.3333
3	2002	31.7092	1987	83.3333
4	2001	30.5038	2015	75.0000
5	1990	29.5851	2001	75.0000
6	1983	28.8175	1989	75.0000
7	2008	28.7925	1988	75.0000
8	1998	25.9940	1983	75.0000
9	1994	21.7047	1981	75.0000
10	1993	21.0375	2005	66.6667
11	2000	20.9825	2003	66.6667
12	1981	20.2546	1998	66.6667
13	1997	19.9931	1994	66.6667
14	1991	19.8585	1993	66.6667
15	2009	19.6344	1992	66.6667

Table 6. Regression Results of Equity Mutual Fund Net Flows on Risk Measures for Small Eurozone Countries

	Austria (1996-2012)			Belgium (1995-2013)		
	Model (1)	Model (2)	Model (3)	Model (1)	Model (2)	Model (3)
Panel A: Annual Observation with Financial Crisis Dummy Variable (Austria: n=17; Belgium: n=19)						
Constant	2.4426	7.7979	6.9923	2.4233	2.8781	0.3985
	0.77	3.98	3.88	0.63	0.65	0.10
GeoMean(t-1)	9.5968	8.1307	26.7668	0.0000	-6.0533	-1.5173
	0.81	0.82	2.08	-	-0.20	-0.06
GeoStdDev(t-1)	0.4081			-1.7749		
	2.20			-0.08		
TotalExtr(t-1)		0.1976			-0.0345	
		2.85			-0.23	
NegExtr(t-1)			0.7464			1.1290
			2.65			2.22
PosExtr(t-1)			-0.4502			-1.7044
			-1.36			-2.38
Time	-0.5968	-0.6136	-0.7059	0.3782	0.4107	0.5843
	-2.15	-2.52	-3.17	1.13	1.09	1.75
Dummy Variable	-9.7441	-9.3226	-10.7261	-23.4073	-23.4763	-28.1261
	-2.43	-2.55	0.00	-3.24	-3.14	-4.16
Adjusted R Square	0.3863	0.4860	0.0596	0.3307	0.3567	0.5162

	Austria (1996-2012)			Belgium (1995-2013)		
	Model (4)	Model (5)	Model (6)	Model (4)	Model (5)	Model (6)
Panel B: Annual Observation without Financial Crisis Variable (Austria: n=17; Belgium: n=19)						
Constant	3.1549	7.9911	7.4769	1.2937	1.4899	0.1372
	0.85	3.42	3.13	0.27	0.27	0.02
GeoMean(t-1)	20.5567	19.7462	33.2442	0.0000	38.4154	44.9684
	1.60	1.87	1.96	-	1.13	1.27
GeoStdDev(t-1)	0.3679			40.2214		
	1.69			1.65		
TotalExtr(t-1)		0.1914			-0.0150	
		2.31			-0.08	
NegExtr(t-1)			0.5542			0.5583
			1.51			0.78
PosExtr(t-1)			-0.2382			-0.8332
			-0.55			-0.83
Time	-0.7288	-0.7640	-0.8402	0.1343	0.1481	0.2078
	-2.28	-2.71	-2.89	0.32	0.32	0.44
Adjusted R^2	0.1541	0.2681	0.2698	-0.0235	-0.0246	-0.0467

Table 6. Cont'd	Denmark (2003-2013)			Finland (1995-2012)		
	Model (1)	Model (2)	Model (3)	Model (1)	Model (2)	Model (3)
Panel A: Annual Observation with Financial Crisis Dummy Variable (Denmark: n=11; Finland: n=19)						
Constant	-1.9165	-1.3322	-1.9737	3.8327	2.4267	3.5382
	-1.03	-1.32	-1.58	0.75	0.69	0.90
GeoMean(t-1)	-2.0470	-0.7117	5.0563	-9.5690	-9.3994	-17.6914
	-0.34	-0.12	0.56	-0.89	-0.88	-1.09
GeoStdDev(t-1)	0.0597			-1.2308		
	0.64			-0.61		
TotalExtr(t-1)		0.0407			-0.0322	
		0.91			-0.58	
NegExtr(t-1)			0.2428			-0.3713
			1.05			-0.75
PosExtr(t-1)			-0.1350			0.2691
			-0.67			0.61
Time	0.5586	0.5399	0.5130	0.4734	0.4853	0.4990
	3.98	3.88	3.54	1.69	1.74	1.75
Dummy Variable	-1.0069	-1.0615	-0.9845	-7.3596	-7.5456	-8.2332
	-0.77	-0.84	-0.76	-1.61	-1.63	-1.70
Adjusted R Square	0.6288	0.6509	0.6385	0.0880	0.0857	0.0474

	Denmark (2003-2013)			Finland (1995-2012)		
	Model (4)	Model (5)	Model (6)	Model (4)	Model (5)	Model (6)
Panel B: Annual Observation without Financial Crisis Variable (Denmark: n=11, Finland: n=18)						
Constant	-1.8887	-1.4059	-2.0784	3.3158	2.0470	2.5779
	-1.04	-1.43	-1.73	0.62	0.55	0.62
GeoMean(t-1)	-0.5161	0.8002	6.7826	-5.1050	-4.3124	-8.1711
	-0.09	0.14	0.81	-0.47	-0.40	-0.50
GeoStdDev(t-1)	0.0510			-0.8899		
	0.57			-0.42		
TotalExtr(t-1)		0.0355			-0.0161	
		0.82			-0.28	
NegExtr(t-1)			0.2496			-0.1825
			1.12			-0.35
PosExtr(t-1)			-0.1499			0.1332
			-0.77			0.29
Time	0.5475	0.5297	0.5020	0.3662	0.3778	0.3797
	4.04	3.91	3.61	1.27	1.32	1.28
Adjusted R^2	0.6502	0.6658	0.6638	-0.0149	-0.0220	-0.0917

Table 6. Cont'd	Greece (2003-2013)			Ireland (1995-2012)		
	Model (1)	Model (2)	Model (3)	Model (1)	Model (2)	Model (3)
Panel A: Annual Observation with Financial Crisis Dummy Variable (Greece: n=19, Ireland: n=11)						
Constant	0.2781	0.0801	0.0839	7.1932	5.6588	10.3754
	0.51	0.21	0.21	0.97	1.24	0.84
GeoMean(t-1)	-0.4488	-0.3883	-0.3515	22.5714	27.4193	-11.3329
	-0.42	-0.37	-0.29	0.69	0.93	-0.12
GeoStdDev(t-1)	-0.0110			-1.8291		
	-0.59			-0.27		
TotalExtr(t-1)		-0.0057			-0.0120	
		-0.42			-0.08	
NegExtr(t-1)			-0.0006			-0.7822
			-0.01			-0.42
PosExtr(t-1)			-0.0113			0.6076
			-0.14			0.41
Time	0.0110	0.0097	0.0096	0.0117	-0.0972	-0.0750
	0.31	0.27	0.26	0.01	-0.12	-0.09
Dummy Variable	-0.4872	-0.4651	-0.4999	25.1384	25.4558	24.9086
	-0.79	-0.75	-0.61	2.82	2.87	2.58
Adjusted R Square	-0.2057	-0.2200	-0.3134	0.4184	0.4120	0.3181

	Greece (2003-2013)			Ireland (1995-2012)		
	Model (4)	Model (5)	Model (6)	Model (4)	Model (5)	Model (6)
Panel B: Annual Observation without Financial Crisis Variable (Greece: n=19, Ireland: n=11)						
Constant	0.2541	0.0804	0.0633	10.8503	6.9073	15.5529
	0.47	0.21	0.16	1.05	1.07	0.92
GeoMean(t-1)	-0.2048	-0.1601	-0.4038	-36.2552	-26.9905	-96.2743
	-0.20	-0.16	-0.34	-1.03	-0.84	-0.75
GeoStdDev(t-1)	-0.0098			-4.8519		
	-0.53			-0.51		
TotalExtr(t-1)		-0.0054			-0.0479	
		-0.40			-0.23	
NegExtr(t-1)			-0.0289			-1.4663
			-0.49			-0.57
PosExtr(t-1)			0.0195			1.0958
			0.31			0.53
Time	0.0050	0.0044	0.0068	0.6344	0.4075	0.4284
	0.15	0.12	0.19	0.54	0.36	0.36
Adjusted R^2	-0.1757	-0.1849	-0.2548	-0.1613	-0.1959	-0.3268

Table 6. Cont'd	Norway (1997-2013)			Portugal (1995-2013)		
	Model (1)	Model (2)	Model (3)	Model (1)	Model (2)	Model (3)
Panel A: Annual Observation with Financial Crisis Dummy Variable (Norway: n=17; Portugal: n=19)						
Constant	0.6241	0.2738	0.4143	4.2220	4.3452	4.1639
	0.76	0.59	0.63	1.28	1.79	1.64
GeoMean(t-1)	-0.5150	-0.1188	-0.9350	-19.0232	-19.4260	-13.6505
	-0.22	-0.05	-0.27	-1.58	-1.58	-0.74
GeoStdDev(t-1)	-0.3677			0.0066		
	-0.57			0.04		
TotalExtr(t-1)		-0.0065			-0.0025	
		-0.33			-0.04	
NegExtr(t-1)			-0.0335			0.1693
			-0.37			0.42
PosExtr(t-1)			0.0274			-0.1721
			0.25			-0.43
Time	0.0244	0.0190	0.0173	-0.2368	-0.2334	-0.2657
	0.49	0.38	0.33	-1.18	-1.16	-1.21
Dummy Variable	-1.3454	-1.4294	-1.4458	-9.5473	-9.5090	-10.5338
	-1.70	-1.84	-1.78	-2.56	-2.57	-2.35
Adjusted R Square	0.0908	0.0751	-0.0002	0.2496	0.2496	0.2033

	Norway (1997-2013)			Portugal (1995-2013)		
	Model (4)	Model (5)	Model (6)	Model (4)	Model (5)	Model (6)
Panel B: Annual Observation without Financial Crisis Variable (Norway: n=17, Portugal: n=19)						
Constant	0.9339	0.2795	0.3672	5.1340	4.3824	4.7160
	1.09	0.55	0.51	1.33	1.54	1.63
GeoMean(t-1)	0.2369	1.1121	0.6116	-11.6650	-11.0451	-23.6160
	0.10	0.49	0.17	-0.85	-0.79	-1.14
GeoStdDev(t-1)	-0.6878			-0.0786		
	-1.03			-0.37		
TotalExtr(t-1)		-0.0128			-0.0207	
		-0.62			-0.26	
NegExtr(t-1)			-0.0297			-0.3403
			-0.31			-0.87
PosExtr(t-1)			0.0083			0.3022
			0.07			0.76
Time	0.0167	0.0051	0.0040	-0.3115	-0.3185	-0.2403
	0.32	0.10	0.07	-1.34	-1.37	-0.95
Adjusted R^2	-0.0409	-0.0943	-0.1824	-0.0273	-0.0320	-0.0535

Table 6. Cont'd	Sweden (1995-2013)		
	Model (1)	Model (2)	Model (3)
Panel A: Annual Observation (Sweden: n=19)			
Constant	-5.6016	-1.3133	0.2287
	-0.60	-0.25	0.04
GeoMean(t-1)	-17.1531	-16.9401	-25.2051
	-0.62	-0.59	-0.83
GeoStdDev(t-1)	0.3240		
	0.81		
TotalExtr(t-1)		0.1506	
		0.76	
NegExtr(t-1)			-0.5469
			-0.71
PosExtr(t-1)			0.8997
			1.10
Time	0.6340	0.6420	0.6337
	1.70	1.72	1.69
Dummy Variable	-11.8822	-11.9234	-9.4073
	-1.63	-1.63	-1.20
Adjusted R^2	0.1623	0.1586	0.1518
	Model (4)	Model (5)	Model (6)
Panel B: Annual Observation without Financial Crisis Variable (Sweden: n=19)			
Constant	-6.4102	-1.8243	0.5465
	-0.65	-0.33	0.10
GeoMean(t-1)	-1.0663	-0.9150	-17.6518
	-0.04	-0.03	-0.59
GeoStdDev(t-1)	0.3450		
	0.81		
TotalExtr(t-1)		0.1591	
		0.77	
NegExtr(t-1)			-0.8457
			-1.15
PosExtr(t-1)			1.2330
			1.57
Time	0.4964	0.5049	0.5346
	1.30	1.32	1.44
Adjusted R^2	0.0700	0.0655	0.1245

Table 7.

Panel A: Pooled regression results of equity mutual fund net flows on risk measures, with no country fixed effect controlled. The countries examined are separated into two groups, individualism and collectivism, based on Hofstede's culture dimension score of individualism vs. collectivism.

VARIABLES	(1) Model 1'	(2) Model 2'	(3) Model 3'	(4) Model 4'	(5) Model 5'	(6) Model 6'	(7) Model 7'	(8) Model 8'	(9) Model 9'
Geometric Mean (t-1)	-9.045**	-9.740**	-9.053**	-8.035	-8.224*	-1.432	-6.569	-7.738	-5.112
	(4.157)	(4.025)	(3.909)	(5.072)	(4.859)	(4.079)	(5.242)	(4.963)	(4.874)
Geo. Std. Deviation (t-1)	0.00983	0.00239	-0.0907						
	(0.0561)	(0.0573)	(0.0697)						
Individualism		4.196***			4.647***			4.082***	
		(1.456)			(1.414)			(1.503)	
Individualism*Geo StdDev (t-1)			0.163***						
			(0.0553)						
Total Extreme Value (t-1)				-0.0632	-0.0780*	-0.112**			
				(0.0435)	(0.0418)	(0.0511)			
Individualism*Total Extr (t-1)						0.112***			
						(0.0399)			
Negative Extreme Value (t-1)							0.0608	0.0580	0.105
							(0.127)	(0.123)	(0.163)
Positive Extreme Value (t-1)							0.00169	-0.0250	-0.220
							(0.134)	(0.133)	(0.205)
Individualism*Neg Extr (t-1)									0.0157
									(0.217)
Individualism*Pos Extr (t-1)									0.221
									(0.255)
GDP (t-1)	2.60e-05	-4.34e-05	-3.10e-05	1.99e-05	-5.86e-05**	-1.60e-05	2.52e-05	-4.33e-05	-7.64e-06
	(2.18e-05)	(2.85e-05)	(2.61e-05)	(2.20e-05)	(2.87e-05)	(2.40e-05)	(2.31e-05)	(3.09e-05)	(2.69e-05)
Crisis	-5.446*	-5.240	-5.334*	-3.034	-2.269	-1.459	-5.691*	-5.460*	-5.765*
	(3.145)	(3.186)	(3.146)	(2.726)	(2.797)	(2.689)	(3.119)	(3.180)	(3.182)
Constant	2.888*	3.486**	5.336***	4.296***	5.065***	5.078***	2.417**	3.142***	3.860***
	(1.608)	(1.600)	(1.850)	(1.274)	(1.193)	(1.344)	(1.139)	(1.112)	(1.296)
Fixed Effect	No	No	No	No	No	No	No	No	No
Observations	141	141	141	141	141	141	141	141	141
R-squared	0.058	0.111	0.108	0.080	0.143	0.144	0.065	0.113	0.095

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Panel B: Pooled regression results of equity mutual fund net flows on risk measures, with country fixed effect controlled.

VARIABLES	(1) Model 1'	(2) Model 2'	(3) Model 3'	(4) Model 4'	(5) Model 5'	(6) Model 6'	(7) Model 7'	(8) Model 8'	(9) Model 9'
Geometric Mean (t-1)	-8.278	-9.594	-10.10*	-8.839	-9.429	-7.362	-9.733	-10.79	-8.674
	(6.087)	(5.644)	(5.793)	(6.681)	(6.512)	(6.883)	(7.284)	(7.062)	(6.795)
Geo. Std. Deviation (t-1)	0.0165	-0.00314	-0.105						
	(0.0581)	(0.0604)	(0.0782)						
Individualism		4.396***			4.446***			4.258***	
		(1.278)			(1.333)			(1.385)	
Individualism*Geo StdDev (t-1)			0.182***						
			(0.0450)						
Total Extreme Value (t-1)				0.0197	-0.00766	-0.0411			
				(0.0366)	(0.0395)	(0.0432)			
Individualism*Extreme Measure (t-1)						0.103***			
						(0.0207)			
Negative Extreme Value (t-1)							-0.0477	-0.0631	-0.0514
							(0.151)	(0.114)	(0.0873)
Positive Extreme Value (t-1)							0.142	0.0952	-0.0620
							(0.174)	(0.136)	(0.191)
Individualism*Neg Extr (t-1)									0.106
									(0.129)
Individualism*Pos Extr (t-1)									0.134
									(0.218)
GDP (t-1)	1.66e-05	-5.95e-05*	-5.02e-05*	1.86e-05	-6.11e-05	-1.41e-05	2.45e-05	-5.22e-05	-1.77e-05
	(1.93e-05)	(3.20e-05)	(2.61e-05)	(2.11e-05)	(3.67e-05)	(2.40e-05)	(2.18e-05)	(3.66e-05)	(2.49e-05)
Crisis = o,	-	-	-	-	-	-	-	-	-
Constant	2.455	3.524*	5.595**	2.342	3.646**	3.630**	1.858	3.177**	3.902**
	(1.763)	(1.962)	(2.204)	(1.369)	(1.617)	(1.618)	(1.159)	(1.416)	(1.539)
Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	141	141	141	141	141	141	141	141	141
R-squared	0.011	0.084	0.088	0.012	0.085	0.065	0.021	0.087	0.066
Number of year	18	18	18	18	18	18	18	18	18

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8. Simultaneous Regression Results (2 Groups: Individualism vs Collectivism), 2SLS Estimates

	Model (2')		Model (3')		Model (4')		Model (5')		Model (6')	
VARIABLES	Net Flow	Geo.StDev	Net Flow	Geo.StDev	Net Flow	Total Extr.	Net Flow	Total Extr.	Net Flow	Total Extr.
Geometric Mean (t-1)	-2.872	8.552	-2.405	8.599	-2.158	15.76	-3.657	16.06	-2.196	16.05
	(5.514)	(5.950)	(5.513)	(5.946)	(5.419)	(11.63)	(5.299)	(11.52)	(5.335)	(11.60)
Geo. StdDev (t-1)	0.212**		0.125							
	(0.0851)		(0.0951)							
Individualism	4.012***	-0.571					3.555**	4.321		
	(1.505)	(1.881)					(1.497)	(3.642)		
Net Flow(t-1)		0.230**		0.219*		0.539**		0.461**		0.509**
		(0.115)		(0.114)		(0.224)		(0.223)		(0.219)
Individualism*Geo StdDev (t-1)			0.143**							
			(0.0559)							
Total Extr. (t-1)					0.106***		0.0896**		0.0313	
					(0.0372)		(0.0365)		(0.0495)	
Individualism*Total Extr. (t-1)									0.101**	
									(0.0451)	
GDP (t-1)	-4.46e-05	-1.97e-05	-2.82e-05	-2.89e-05	2.78e-05	-0.000109	-3.13e-05	-0.000180*	-1.48e-06	-0.000109
	(3.96e-05)	(4.87e-05)	(3.63e-05)	(3.78e-05)	(3.10e-05)	(7.39e-05)	(3.91e-05)	(9.44e-05)	(3.32e-05)	(7.37e-05)
Crisis	-5.773***	17.60***	-5.857***	17.59***	-6.036***	39.42***	-5.782***	39.37***	-5.849***	39.33***
	(1.949)	(2.404)	(1.948)	(2.403)	(1.962)	(4.699)	(1.913)	(4.655)	(1.936)	(4.689)
Constant	-0.944	19.88***	0.758	0.219*	0.887	17.71***	1.603	18.35***	0.0313	17.79***
	(2.331)	(1.854)	(2.529)	(0.114)	(1.679)	(3.590)	(1.657)	(3.589)	(0.0495)	(3.582)
Var(e.netflow)	44.53***		44.51***		45.20***		42.82***		43.92***	
	(5.851)		(5.836)		(5.607)		(5.304)		(5.450)	
Var(e.risk)	67.22***		67.11***		256.6***		252.0***		255.8***	
	(8.188)		(8.162)		(31.250)		(30.590)		(31.02)	
Covariance	-21.94***		-21.35***		-39.22***		-37.81***		-38.99***	
	(6.760)		(6.778)		(11.910)		(11.340)		(11.53)	
Observations	141	141	141	141	141	141	141	141	141	141

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix A: Hofstede's Cultural Dimension Score (Individualism vs Collectivism)

Rank	Country	Score (Individualism)	For our study Dummy = individualism (1) vs. Collectivism (0)
1	United States	91	N/A
2	United Kingdom	89	N/A
3	Canada	80	N/A
3	Netherland	80	N/A
5	Italy	76	N/A
6	Belgium	75	Individualism
7	Denmark	74	Individualism
8	France	71	N/A
8	Sweden	71	Individualism
10	Ireland	70	Individualism
11	Norway	69	Individualism
12	Switzerland	68	N/A
13	Germany	67	N/A
14	Finland	63	Collectivism
15	Austria	55	Collectivism
16	Spain	51	N/A
17	Japan	46	N/A
18	Greece	35	Collectivism
19	Portugal	27	Collectivism

[dataset] Hofstede, G., 2001. The 6-D model of national culture: country comparison. https://www.hofstede-insights.com/country-comparison/