Sources and Transmission of Country Risk*

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Abstract

We construct new measures of country risk from the micro perceptions of global investors and executives using textual analysis of the quarterly earnings calls of publicly listed firms around the world. Our quarterly measures cover 45 countries from 2002-2020. We use our measures to characterize the sources of country risk and its transmission around the world. We demonstrate that elevated perceptions of a country's riskiness are associated with significant falls in local asset prices, a depreciated exchange rate, capital outflows, and reductions in firm-level investment and employment. We also show direct evidence of a novel type of contagion, where foreign risk is transmitted across borders through firm-level exposures. These complex micro-linkages between firms and countries give rise to aggregate transmission of risks that can differ dramatically between crisis and non-crisis periods. We use our measures to characterize the degree of bilateral and global transmission of risks between countries for major crises in the past two decades. Finally, we provide direct evidence that heterogeneous currency loadings on global risk help explain the cross-country pattern of interest rates and currency risk premia.

Keywords: country risk, contagion, investment, employment, textual analysis, earnings calls

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1. Introduction

Researchers and policymakers often argue that global perceptions of risk are a major driver of international capital flows, financial contagion, and sudden stops. In addition, business leaders often cite crises in foreign markets where they may produce their products, sell their products, or be otherwise exposed as holding up their investment and employment decisions. Although such notions of country risk and its transmission across borders feature prominently in policy circles and boardrooms, documenting the sources of country risk and its channels of global transmission has proven more difficult.

This paper aims to provide a micro-to-macro approach to measure country risk and quantify its transmission across borders. We measure perceived country risk at the firm-country-quarter level by measuring the share of time that global executives and investors spend discussing commercial risks related to countries around the world. In particular, we apply natural language processing (NLP) to more than 300,000 English-language conference call transcripts of publicly listed firms headquartered in 82 countries around the world to measure the perceived risks and opportunities each firm associates with each of 45 major economies that collectively cover more than 90% of world GDP.

The primitive of our analysis and our key contribution is to measure how much commercial risk firm i headquartered in country d associates with country c in quarter t. That is, we take a highly granular approach to measuring country risk that allows for flexible aggregations: for example, with a suitable aggregation we can separate global risks from those associated with particular countries, firms, and industries; separate the perceptions of different types of firms (such as foreign vs. domestic firms); and trace the transmission of risk between countries. A second advantage is that our approach to measurement is based on the semantic content of text. This allows us to distinguish variation in perceived risk (the second moment) from variation in perceived opportunities (the first moment), and understand the sources of risks and opportunities that firms face.

After validating our granular measure, we successively aggregate it into three different directions, analyze each in turn, and illustrate how these aggregations relate to one another. In the first step of our analysis we average across firms to obtain an aggregate measure of risk for each of our 45 countries. We use these time series to systematically identify local and global spikes in risk ("crises") over the last two decades. For each crisis episode, we can then use the excerpts of underlying text that drive the spike in the aggregate series to pinpoint the concerns that led investors and executives to focus their conversations on risks associated with the country in question. In this sense, our approach allows us to identify the sources of variation in country risk without much guesswork.

Using these aggregate time series of country risk, we then turn to examining the effects of fluctuations in aggregate country risk, demonstrating that increases in a country's perceived riskiness are accompanied by sharp declines in equity prices, increases in equity volatility, a depreciated exchange rate, and increases in sovereign credit default swap (CDS) spreads. We document a similar relationship between risk and global capital flows. In particular, we find that elevated levels of country risk coincide with foreign investors pulling capital out of the country; this result holds even conditional on country and year-quarter fixed effects, indicating that these flows are moving with country-specific fluctuations in riskiness, even after variation in global risk is controlled for.[1]

Consistent with its significant effect on asset prices and capital flows, we also find that elevated country risk is associated with reductions in firm-level investment and employment of firms based in the country. Importantly, these results hold even conditional on the firm's own perceived risk as well as on firm and year fixed effects. We view these results as providing strong evidence that fluctuations in perceived country risk are an important determinant of real firm outcomes, above and beyond firm-specific uncertainty.

We then create aggregate measures of country risk as perceived by different subsets of firms. That is, we obtain multiple aggregate measures of risk for the same country that allow us to distinguish the perceptions of foreign vs. domestic firms, those of financial vs. non-financial firms, and those of financial firms from those in the same sector as the firm in question. We find that it is the perception of foreign firms rather than domestic firms that explains the patterns of capital inflows and sovereign credit spreads; and that portfolio flows, a volatile component of capital flows of particular focus from policymakers, is best explained by the country risk perception of financial firms. By contrast, variation in firm-

[1] There is a large literature, beginning with Calvo et al. (1996) demonstrating the importance of "push factors" in explaining global capital flows. These push factors speak to the relative importance of common shocks, particularly in developing countries, in explaining global capital flows. Our analysis introduces a new force: we demonstrate the importance of a country-specific factor ("Country Risk") in explaining capital flows.

level investment and employment loads most on country risk-perceptions of firms in the same sector.

Having demonstrated the importance of aggregate country risk, we then in the second step turn to studying the propagation of foreign risks at the firm-level. For each firm i in quarter t we sum our measures of country risk across all foreign countries c, yielding a measure of how much foreign risk each firm is exposed to in each quarter. We find that firm-level exposure to foreign risks is quantitatively important: About 20% of the overall variation firm-level risks is accounted for by foreign sources. We then demonstrate that when a firm's foreign risk increases, it reduces its investment and employment, and experiences declines in its stock returns. This occurs above and beyond not just fluctuations in country risk of the firm's own home country, but also the firm's other (not foreign-related) risks. Notably, we show evidence that this kind of spillover of foreign risk to real outcomes often operates through complicated exposures that are not well-approximated by customer-supplier relationships or the firm's observable foreign investments. These results thus provide clear evidence that contagion (the spillover of foreign country risk on firm-level outcomes) is an important driver of firm-level outcomes.

These firm-level effects of foreign risks motivate us to study in a third step the transmission of risk across countries more systematically. We construct a measure of the aggregate flow of risk from each origin country to each destination country by calculating the commercial risk firms headquartered in d associate with country c at time t (that is, we calculate the average of country risk across all i in d). We use this measure of "Transmission Risk" to show that, on average, the transmission of risk across countries follows a gravity structure, with firms on average worrying more about risks in countries geographically closer to them, that speak the same language, and which were in a colonial relationship.

However, despite this regular pattern of transmission of risk during normal times, we also find that these patterns can shift dramatically during periods of crisis. To quantify these shifts, we calculate the pattern of transmission for each of the 20 major country-specific crises identified in the first step of our analysis and regress this crisis-specific pattern onto the regular pattern of transmission from that origin country in non-crisis times. These regressions serve as useful indices characterizing the way in which that crisis, associated with a unique origin country, affects the riskiness of businesses in other countries. This analysis shows that the beginning of the Global Financial Crisis (GFC) in the United States in 2008 and the beginning of the Coronavirus pandemic in China in the first quarter of 2020 are the two crises with the most severe global transmission in our sample. By contrast, the Greek Sovereign Debt Crisis of 2011 came with severe bilateral transmission of risk, predominantly to European countries that usually interact with Greece, but had a much smaller global transmission component. Similarly, we find that the Fukushima nuclear disaster engendered the crisis with the most irregular transmission pattern in our sample.

Finally, having demonstrated the importance of transmission of country risk across borders, we use our novel measures of country and global risk to explore the connection between global risk and exchange rates (Lustig et al., 2011). We demonstrate that heterogeneous loadings on our text-based measure of global risk explain a large fraction of the cross-sectional variation in exchange rate movements and currency returns. Most notably, we provide direct evidence that the US dollar, the euro, and the Japanese yen systematically appreciate when global risk perceptions spike. These results provide strong evidence for a prominent theoretical literature, where our new measures of perceived risk allow us to examine these theories more directly than was previously possible.

Related Literature This paper contributes to four strands of the literature. First, we contribute to the literature on international asset pricing and global risk. Colacito and Croce (2011) demonstrate that common long-run risk across countries can explain a number of international finance puzzles. Colacito et al. (2018) characterize how common risk to long-run growth news can reconcile the patterns of international capital flows with the data. Gourio et al. (2013) theoretically examine the implication for asset prices and exchange rates if countries have heterogeneous loadings on global risk. Gourio et al. (2015) examine how fluctuations in political risk can rationalize patterns in international capital flows. Bekaert et al. (2013) demonstrates that looser monetary policy reduces risk aversion and uncertainty. Rey (2015) and Miranda-Agrippino and Rey (2020) demonstrate how fluctuations in global risk generate common movement in asset prices and macroeconomic activity around the globe. Relative to the existing literature, we are able to precisely define and measure risk associated with a given country and use our micro-based measure to reexamine some of these classic questions.

The second branch of the literature studies the determinants of global capital flows and sudden stops. Calvo et al. (1996) demonstrated the importance of shocks emanating from global financial centers for fluctuations in capital flows to emerging markets, emphasizing the importance of "push factors" in the determination of global capital flows. Fratzscher (2012) examines the importance of these push and pull factors during the period of the global financial crisis. Forbes and Warnock (2012) and Broner et al. (2013) examine the determinants of movements in gross capital flows. We use our new measures of country risk to demonstrate the importance of the perceptions of country-specific risk in driving global capital flows, with these perceptions predominantly coming from firms and investors based in large developed countries. We therefore bridge the gap between these push-and-pull factors by showing the importance of a country-specific risk factor that comes from the measurement of the beliefs of a common set of global firms and investors.[2]

Third, a large empirical and theoretical literature studies the effects of micro and macro uncertainty on asset prices investment, employment growth, lobbying, and the business cycle within the United States and other countries (Bloom et al., 2007; Bloom, 2009; Bachmann et al., 2013; Jurado et al., 2015; Handley and Limao, 2015; Giglio et al., 2016; Koijen et al., 2016; Kelly et al., 2016; Mueller et al., 2017; Bloom et al., 2018; Besley and Mueller, 2018; Hassan et al., 2019; Bekaert et al., 2019). We add to this literature by showing that fluctuations in country risk account for substantial variation in international capital flows and asset prices across countries, and by tracing transmission of country risk across borders to granular exposures at the firm-level. In addition, our findings are consistent with a prominent narrative in the policy-oriented literature that foreigners' perceptions of country risk directly affect local outcomes, particularly in emerging markets.

Fourth, we contribute to the growing literature that applies natural language processing in macroeconomics and related fields. In particular, we contribute to the subset of this literature that generates measures of risk from text, for example, Baker et al. (2016) use newspapers to measure economic policy uncertainty by counting the daily number of newspaper articles featuring the words 'economic,' 'policy,' and 'uncertainty.' Hassan et al. (2019) use the transcripts of earnings conference calls to measure firm-level political and non-political risk

[2] Bekaert et al. (2014a) examine the role of political risk, estimated from sovereign spreads, drives the pattern of foreign direct investment.

in the United States, and Ahir et al. (2018) use the Economist Intelligence Unit (EIU) country reports to construct country-level indices of economic uncertainty by counting the frequency of synonyms for risk or uncertainty within these reports. We differ from these existing approaches in three respects. First, basing our measures on hundreds of thousands of firm-quarter-level documents allows us to flexibly decompose perceptions of domestic and foreign agents, and those of sub-groups of decision makers, for example those at financial and non-financial firms. Second, these decompositions then enable us to understand directly from the underlying text what events drive a given peak in risk, and to document the transmission of country risk across borders, by measuring this transmission directly at the firm-level. Third, using conditional rather than unconditional word-counts we are able to separate the role of risk (the second moment) from that of positive and negative shocks (the first moment).

Finally, we contribute to the literature on contagion and the international propagation of shocks. Forbes (2012) surveys this large literature, highlighting the challenge in a common definition of contagion. Forbes and Rigobon (2002) examine whether higher stock market correlations during crises represents contagion or high levels of interdependence. Bekaert et al. (2014b) examines equity market contagion during the global financial crisis. Huo et al. (2019) and Baqaee and Farhi (2019) explore the importance of country-specific shocks and the transmission of common shocks around the world. We introduce a new measure of the transmission of global risk by precisely measuring how much global decision makers talk about specific countries, and asking whether firms discussing foreign countries see their investment and employment respond more to fluctuations in perceptions of the riskiness of the country in question. By beginning with firm-level variation, we are able to explore the transmission of global risk at varying degrees of disaggregation. For instance, we are able to examine which types of country risk are more likely to affect financial firms and which are more likely to be transmitted to the non-financial corporate sector.

The structure of the paper is as follows. Section 2 formalizes how we will move from measurements of country risk at the micro level to macro aggregates. Section 3 introduces the data and the introduces the methodology for measuring country risk a the firm level. Section 4 aggregates the firm level measures to the macro level, validates the new measures, introduces a number of new stylized facts about the nature of country risk, and explores the explanatory power of our aggregate measure country risk for aggregate financial and macroeconomic patterns. Section 5 examines the transmission of risk at the firm and country level. Section 6 explores the connection between risk and exchange rate movements. Section 7 concludes.

2. Conceptual Framework

The starting point of our analysis is a measure of the risk that firm i headquartered in country $d(i)$ associates with country c during quarter t

$$CountryRisk_{i,c,t}. \tag{1}$$

Our goal is to use this micro, firm-based measure of country risk to achieve three core objectives: (i) aggregate to macroeconomic measures of country risk as perceived by different sets of firms and investors; (ii) assess how much overall foreign risks a given firm perceives at a given point in time, and (iii) examine the global transmission of risk from each origin to each destination. Our aggregations of this firm-level measure of country risk take the form

$$CountryRisk^{K}_{c,t} = \frac{1}{N_K}\sum_{i\in K} CountryRisk_{i,c,t} \tag{2}$$

where N_K is the number of firms of type K in the dataset. In other words, $CountryRisk^{K}_{c,t}$ captures the average perceived commercial risk emanating from country c at time t for the set of firms K. The power in this approach is that performing this type of aggregation for different sets of firms K will deliver measures of country risk capturing the risk-perception of different types of actors around the world. While our primary measure includes the full set of firms ($K = ALL$) for which we can measure $CountryRisk_{i,c,t}$, we consider different subsets of firms to examine whether their risk perceptions differ and, if they do, whose perceptions are the relevant drivers of macroeconomic and financial aggregates, as well as firm-level investment and employment decisions. For instance, we consider separately the perceptions of foreign firms (NHQ), domestic firms (HQ), financial firms (FIN), non-financial firms (NFC), American firms (US), and firms only in a particular industry. The promise of this approach going forward is that the set K can be defined to best answer the question at hand.

In addition, because our aggregate measure, $CountryRisk^{ALL}_{c,t}$, begins with firm-level data, we are able to perform two sets of exercises to uncover the sources of aggregate country risk. First, we can explore which types of firms drive specific fluctuations in aggregate country risk, for example, isolating episodes of particular concern for financial firms. Second, when we turn to our text-based approach for the actual measurement of $CountryRisk_{i,c,t}$, we can directly see what concerns firm i has about country c at time t that is driving the movements in their risk perceptions. We will explore the implications of these aggregate risk measures for financial and real outcomes in Section 4.

The second strand of our analysis explores the amount of foreign risk facing a particular firm. At the firm-quarter level, we can define

$$ForeignRisk_{i,t} = \sum_{c \neq d(i)} CountryRisk_{i,c,t}. \tag{3}$$

$ForeignRisk_{i,t}$ for firm i at time t is the sum of the risk the firm associates with all countries around the world, excluding its home country.[3] We use this micro-level measure of foreign risk to assess the firm-level spill-overs of foreign risks across borders, and to disentangle the effects of foreign vs domestic risks on firm-level outcomes.

Third, we can then use the same approach to measure the aggregate transmission of risk from each origin country to each destination country at each point in time:

$$TransmissionRisk_{o \rightarrow d,\tau} = \frac{1}{N_d} \sum_{i \in d} CountryRisk_{i,o,\tau} \tag{4}$$

This measure is calculated by summing over the risk that all firms based in country d perceive in country o at time τ, and it captures how much risk is transmitted from country o to country d.

To capture the general pattern of the transmission of risk across countries, we can average

[3] $DomesticRisk_{i,t}$, or the risk the firm associates with its home country, would simply be $CountryRisk_{i,c(i),t}$, where $c(i)$ denotes the home country c of firm i.

$TransmissionRisk_{o \to d,\tau}$ over time to calculate

$$\overline{TransmissionRisk}_{o \to d} = \frac{1}{T} \sum_{\tau} TransmissionRisk_{o \to d,\tau} \tag{5}$$

This bilateral, time-invariant transmission across countries shows the average pattern of transmission of risk across country pairs and can therefore provide a benchmark for examining whether the transmission of risk during a given crisis is different than other periods. We view this as examining whether the transmission of risk across risk constitutes interdependence or contagion in the terminology of Forbes and Rigobon (2002).

While the focus of the paper is on country risk, we conduct a similar measurement and aggregation exercise using the sentiment firm i has towards country c at time t ($CountrySentiment_{i,c,t}$) and the exposure firm i has towards country c at time t ($Exposure_{i,c,t}$) .

3. Measuring Country Risk at the Micro Level

In this section, we describe how we use natural language processing to measure $CountryRisk_{i,c,t}$ at the firm-country-quarter level. We begin with a description of the data and then turn to the methodology.

3.1. Conference Call Transcripts

The core of our dataset is the complete set of 306,589 English-language earnings conference call transcripts from Refinitiv EIKON from 2002-2020. These conference calls cover 11,865 firms that are headquartered in 82 countries. Generally, firms will have four calls per years, timed to coincide with earnings releases. A standard conference call takes the form of a management presentation followed by a question and answer session with the firm's analysts. On average, the calls last around 45 minutes. In order to prepare the earnings call transcripts for analysis, we first remove all metadata such as title, date, speaker names with the goal of keeping only spoken text from the earnings call transcripts. We also remove all non-alphabetic characters, but do not force words to be lower case in order to facilitate the subsequent country name matching.

Appendix Table 1 summarizes our country coverage. Of the 11,831 firms, 6,457 are headquartered in the United States. The next three countries with the highest coverage are Canada, the United Kingdom, and Australia with 885, 528, and 401 firms, respectively. This ordering reflects our focus on English language transcripts and, of course, firms headquartered in English-speaking countries are more likely to conduct their conference calls in English. Nevertheless, as seen in the table, there are 28 countries for which we cover at least 40 firms in sample, reflecting a wide range of coverage of our dataset. In addition, the largest firms are disproportionately likely to appear in our dataset. In this sense, one can best think of our measure as capturing the concerns of multinational firms and global investors.

3.2. Country-Specific Training Libraries

A key step in measuring country risk is to identify when the conference calls are focusing on particular countries. To do so, we assemble a training library $\mathbb{T}^c$ for each of our $c = 1, \ldots, C$ countries. The primary source for our training library is the Country Commerce Reports published by the Economist Intelligence Unit. The Economist describes these reports as follows: "This report is a practical guide to a country's business regulations and business practices. The service covers 56 countries' rules in critical areas such as setting up a business, human resources, incentives, taxes, and intellectual property. It will allow you to get to grips with all key regulations and also to assess how ongoing regulatory changes will affect your organisation."[4] The reports offer a number of important advantages. First, because the reports are designed to cover the country's key economic institutions, they include a range of terminology relevant to each country. Second, the reports take a standardized form, allowing us to reliably compare across country reports. Third, because the reports are released regularly, they allow us to add new terms to our training library as they enter into the discourse. Of the 56 countries for which Country Commerce Reports exist, we restrict our analysis to the largest 45 economies, collectively covering 90.6% of world GDP in 2014. For each of these 45 countries, we obtain all reports for 2002-2019, remove non-alphabetic characters, and collect the remaining text in a single training library.

To this library we append all variants of the name of the country (i.e. "United States" and "USA"), as well as the names of towns with more than 15,000 inhabitants in 2018, and all administrative subdivisions in the country from geonames.org. In addition, we include all adjectival and demonymic forms of the country name from Wikipedia and the CIA World

[4]See https://store.eiu.com/product/country-commerce.

Factbook. We then use these training libraries to identify adjacent two-word combinations (bigrams) most associated with discussions of a given country. To this end, we employ a simple pattern-based sequence-classification method, which identifies bigrams relating to a given country using the interaction two terms (Sparck, 1972; Salton and McGill, 1983; Salton and Buckley, 1988).[5] The first is the the bigram's relative frequency in the training library of country c; the second is the bigram's inverse frequency across training libraries – a penalty for bigrams that also appear in the training libraries of many other countries:

$$\omega(b, c) = \frac{f_{b,T^c}}{B_{T^c}} \times \log(45/f_{b,\mathbf{c}}), \tag{6}$$

where f_{b,T^c} denotes the frequency of bigram b in the training library of country c, B_{T^c} is the total number of bigrams in the same training library, and $f_{b,\mathbf{c}}$ is the number of training libraries in which b occurs at least once. The first term, commonly denoted 'term frequency' (tf), thus simply gives more weight to bigrams frequently used in C's training library. The second term, commonly denoted 'inverse document frequency' (idf), gives more weight to bigrams that are used predominantly in discussions of a given country and do not also occur in discussions of most other countries. For example, while the bigram "in Brussels" may be frequent in the training library for Belgium, it also appears in the training libraries of many other EU countries, so that we might deem this mention less informative about whether or not a given text excerpts contains discussions of Belgium.

Finally, to make allowance for the fact that countries and places are often described by single words (unigrams) and our training libraries may not contain all relevant combinations of these unigrams with other words, we separately construct a weight for all unigrams contained in the list of country and place names mentioned above using the same formula (6). We then use this (unigram-based) weight as a minimum weight for all bigrams that contain the unigram in question.

Table 1 gives intuition for the workings of our algorithm by showing the top 20 bigrams

[5] We could in principle substitute this approach with more advanced machine learning techniques which also allow researchers to infer how relevant a given phrase b is in discussions of country c. For example, Gentzkow et al. (2019) or Davis et al. (2020) use text inverse regression (developed by Taddy (2013, 2015) and further extended by Kelly et al. (2019)) to identify relevant phrases in a different context. We believe that in our context the more traditional approach is preferable because of its simplicity and the ease with which it allows us to directly analyze the underlying text.

by tf-idf in our training library for Greece, Turkey and Japan. While for each country the variants of country name are among the most important bigrams "Greek", "Turkey", "Japan"), we can see how successful the Economist Intelligence Country Commerce Reports are in identifying important country-specific phrases. For instance, in Panel A for Greece, we see that the fifth most important bigram is "ND government," a short-hand referring to the "New Democracy" center-right political party. Similarly, for Turkey we see that the third most important bigram is "Gazette No" and the sixth is "Official Gazette," capturing the Gazette, which is the official publication form in Turkey for new legislation and other official announcements. In the case of Japan, we see that the fifth and sixth bigrams for Japan are "Industry METI" and "the METI," references to the powerful Ministry of Economy Trade and Industry. In all of these cases, these phrases or short-hand would be obvious to experts in the area, but there would be no ex ante way to say which political parties or ministries would have their names abbreviated in conversation and which would be stated in full. Our approach is able to systematically extract the expertise embedded in the country commerce reports and then use them to identify the country in question far more extensively than simply waiting for a call participant to say "Greece" or "Japan."

3.3. *Measuring and validating Firm-Level Country Risk and Sentiment*

Measurement With our country-specific training libraries in hand, we can turn to the measurement of firm-level exposure to foreign countries and the risk and sentiment they associate with those foreign countries. Our simplest measure of country exposure counts the number of occurrences of bigrams indicative of conversation about country c, weights with $\omega(b,c)$, so that bigrams that we can more confidently ascribe to a given country receive more weight, and divides by the total number of bigrams in the transcript:

$$Exposure_{i,c,t} = \frac{1}{B_{it}} \sum_{b}^{B_{it}} \omega(b,c), \tag{7}$$

where $b = 0, 1, ...B_{it}$ are the bigrams contained in the earnings call of firm i at time t.

For our benchmark measure of country risk, we then build on the methodology of Hassan et al. (2019) by conditioning the count of bigrams indicative of conversations about country

c on being in close proximity to a synonym for risk or uncertainty:[6]

$$(8) \qquad CountryRisk_{i,c,t} = \frac{1}{B_{it}} \sum_{b}^{B_{it}} \{1[|b-r| \leq 10] \times \omega(b,c)\},$$

where r is the position of the nearest synonym of risk or uncertainty. Appendix Table 2 lists the top 100 risk synonyms.

Finally, we construct an equivalent measure of country sentiment, but instead of conditioning on the bigram appearing close to a synonym for risk, we count positive or negative tone words ("sentiment") used in conjunction with these country-specific bigrams

$$(9) \qquad CountrySentiment_{i,c,t} = \frac{1}{B_{it}} \sum_{b}^{B_{it}} \left\{ \left(\sum_{g=b-10}^{b+10} S(g) \right) \times \omega(b,c) \right\},$$

where where the function S assigns $+1$ to positive tone words and -1 to negative tone words included in the library of tone words provided by Loughran and McDonald (2011). Appendix Table 3 lists the top 100 positive and negative sentiment words.

Validation Before turning to our analysis of country risk, we validate our measures at the micro-level. In Table 2, we validate our firm-level exposure measure. In particular, we regress firm i's average exposure to country c $Exposure_{i,c} = (1/T)\sum_t Exposure_{i,c,t}$ on other firm-level variables that should correlate with a material exposure to a country. If our text-based exposure measure is systematically behaving as it should, we would it expect it to covary strongly with these variables. The first variable we consider is whether the firm in question is headquartered in country c as listed in Compustat (the most recent `loc` variable, which indicates the country of the headquarter of a firm). Second, we classify whether firm i reports sales to country c at any time. If a country is an important export market for a firm, we would expect them to discuss that particular country more during their earnings calls. To measure this variable, we use the Geographic Segment data from Worldscope. This data is extracted from annual reports, where under GAAP and IFSR accounting rules, firms need to report all sales destinations from which they earn more than 10% of their revenue or have a "material interest." We therefore classify the firm as having a segment data link

[6]We obtain all synonyms for risk, risky, uncertain, and uncertainty from Oxford Dictionary.

if the country is listed in this report in 2016.[7] Third, we use a firm's subsidiaries in 2016 as another observable exposure to a country. If firm i has a subsidiary in country c, we would expect it to discuss that country more during an earnings call. The regressions in Table 2 provide strong confirmation for our measure. Firms are 3.5 times more exposed to their headquarter country than other firms and firms with a sales link in the segment data are 1.2 times more exposed than other firms. In the third column, we repeat the exercise using a dummy variable for whether a firm has a subsidiary in a given country in Orbis. We once again find that the presence of a subsidiary dramatically increases firm level exposure to a country.

4. From Micro Measurement to Aggregate Country Risk

4.1. Aggregate Country Risk and Sentiment

Having constructed firm-level measures of country risk and sentiment, we next turn to aggregating these measures to the country level. For each aggregation of $CountryRisk_{c,t}^{K}$, we implement Equation 2. The widest definition, and the one we primarily use through the paper, is where $k = ALL$, that is, where we include all firms that hold a conference call in quarter t.[8]

Table 3 presents summary statistics for our various measures of country risk and country sentiment, including those where we restrict K to firms that are *not* headquartered in country c (*NHQ*), those were we restrict to domestic firms only (*HQ*), and those where we restrict to financial firms only (*FIN*). For our analysis of firm-level outcomes below, we also construct measures that condition only on firms in the same (SIC-1-digit) sector as the firm in question ($OWNIND$). To facilitate the interpretation of regression coefficients, we divide each measure by its standard deviation in the panel. In addition, the table presents summary statistics for the key financial and macroeconomic variables that we will use for the validation of our measures and the empirical analysis.

[7] However, this coarse measure will miss a lot of export markets, as a firm may choose, for instance, to report having 20% of its sales to "Asia" rather than reporting 9% to Japan, 9% to China, and 2% to Thailand. In this instance, the Worldscope data would not classify the firm as having sales links to China or Japan because these sales relationship would not necessarily be disclosed.

[8] Our analysis uses the headquarter country of a firm, rather than the legal incorporation to more closely map to economic decision-making. See Coppola et al. (2020) for a detailed discussion of these issues.

Properties of Country Risk and Sentiment With our quarterly time series in hand for 45 countries across 18 years, we now turn to establishing some stylized facts about the nature of country risk and sentiment. We begin by characterizing the mean of country risk and sentiment across countries. Recent work, such as Rey (2015) and Miranda-Agrippino and Rey (2020) has emphasized the co-movement of global risk across countries, where "risk" generally is measured as the common component of asset price movements. Here, we are able to take a more direct approach by measuring global risk: the mean of country risk. Figure 1 plots global risk. A number of features of global risk are immediately apparent. First, we identify two major spikes: the global financial crisis and the recent global pandemic. In addition, the Great Moderation (i.e Bernanke (2004), Galí and Gambetti (2009)) is visible in the time series, with global risk from 2002-2006 lower than the entire period since the Global Financial Crisis. In addition, the graph shows another spike during the European sovereign debt crisis in 2011. We do not mark it with a grey dot, however, because it is slightly below the somewhat arbitrary threshold of two standard deviations that we use to identify global "crises" (marked with the dashed red line).

An alternative approach to measuring global risk, marked with the light grey line, is simply to count the average use of synonyms for risk or uncertainty across all firms in our sample. Doing so produces a graph that is similar to our main specification, with a correlation of 81% between the two series.

We then directly measure the extent to which country risk covaries across countries. In particular, the first principal component of global risk explains 65.4% of country level variation. Similarly we find that that the first principal component of country sentiment explains 89% of the variation in country sentiment. We therefore provide strong evidence in favor of the arguments on the importance of common fluctuations in global risk. We return to this issue in section 6, where we show direct evidence that these global co-movements give rise to a strong factor structure in exchange rates.

Probing our data further, we find that the mean within-country correlation between $CountryRisk_{c,t}$ and $CountrySentiment_{c,t}$ is -0.28. As argued by Berger et al. (2020), we can thus confirm that the first moment (country sentiment) and second moment (country risk) are correlated, where higher risk is often associated with lower sentiment (that is, bad news). Consistent with this pattern, we also find that country risk is strongly countercyclical, with cyclicality measured using country level real GDP growth rates. By contrast, country sentiment is pro-cyclical.[9]

Nevertheless, the two series are not mirror images of each other, and they often diverge for economically important reasons. For instance, in Appendix Figure 1, we plot the time series of Country Risk and Country Sentiment (reversed) for Mexico. While the correlation between the two variables is 0.32, we note a major divergence between the two around the fourth quarter of 2016. At the time, the election of Donald Trump and his harsh rhetoric against Mexico caused a major spike in perceived risk in Mexico, yet Sentiment barely moved. We view this as validating our use of Sentiment as the first moment and Risk as the second moment: Trump's election did not change the mean economic outlook for Mexico, but it did dramatically increase its perceived volatility going forward. As we will show econometrically below, this example holds true more generally, where both measures have meaningful independent variation.

4.2. Country Risk and Crises

We now use our Country Risk measures to examine the recent history of each of the 45 countries in our sample. In doing so, we find it useful to use a standardized definition of when a country is in a "crisis," as perceived by global investors and executives. In particular, we consider a country to be in a crisis when its perceived level of country risk is at least 2 standard deviations above the sample mean. For each of these episodes we then read all high-impact snippets of text of the top 30 firms with the highest increase in risk they associate with the country, and label the episode to summarize firms' predominant concerns at the time. While the threshold of 2 standard deviations is clearly arbitrary, it is straightforward for future users of the data to change this threshold according to their specific research question or policy objective.

In Figure 2, we plot the aggregate time series of country risk of the 20 countries that have a local crisis according to our definition, with the ordering reflecting the number of local crises. Appendix Figure 2 reports the equivalent graphs for all countries without a local crisis.[10] A local crisis is defined as a period when the country in question is above the

[9]In addition we find that country risk and sentiment are quite persistent at the country level, with quarterly autoregressive coefficients of 0.922 and 0.933, respectively.

[10]We also consider countries having no local crisis if its only crisis is following a global crisis, where a

two standard deviation threshold but the world is not. In sample, the two global crises we have is the Global Financial Crisis (2008q4-2009q1) and the COVID-19 pandemic (2020q2-q3). If a country's time series is above the threshold of two standard deviations during these quarters, we mark those again with gray dots in the country's graph. In addition to identifying crises at the country level, we use a firm level regression to systematically classify each local crisis into whether they are disproportionately driven by concerns among financial firms or not. If we find such a disproportionate rise among financials we mark the local crisis with a hollow red circle, while all other local crises are marked with a solid red bullet.[11]

The figure shows a number of notable features. First, the time series for most countries show clearly the impact of the two global crises in our sample, although there is also substantial idiosyncratic variation. Second, for all but two of these thirty-four crises, a clear narrative emerges from reading the discussions between executives and investors, so that we are able to label the episodes. As expected, many of the countries with the largest number of local crises are emerging markets. The time series for China shows four crisis episodes. The first two in 2012 and 2015-16 both center on the risk of lower growth and financial volatility. These are followed in 2018 by uncertainty about trade policy and the escalating US-China trade war. The final one, in the first quarter of 2020 captures the onset of the Coronavirus pandemic (which becomes a global crisis in the second quarter according to our definition). Brazil records its first local crisis surrounding Latin American crisis of 2002 and the subsequent election of Lula da Silva, as well as a long-period of upheaval surrounding the corruption scandals and recession of 2015-2016. Great Britain records consecutive crises associated with the Brexit referendum, and then the possibility (and later execution) of a hard Brexit. Russia shows an economic crisis in 2011 and a long period of uncertainty surrounding the Crimean invasion 2014-15, and the concurrent sanctions and devaluation of the ruble. The United States record the onset of the Global Financial Crisis in 2008, which again later becomes a global crisis, and another spike in uncertainty around the S&P downgrade of the Federal credit rating and fiscal uncertainty surrounding the debt ceiling crisis. In Thailand, the flood of 2011-12 features prominently, followed by the coup of 2014. Other

global crisis is defined by global risk being above two standard deviations as in Figure 1.

[11]For a given crisis, we regress demeaned firm level Country Risk on an indicator of whether the firm is a financial firm, defined as having its SIC code between 6000 and 6800. If the coefficient on the dummy variable is positive and statistically significant, we say that the local crisis is disproportionately driven by financials.

headline-grabbing episodes picked up by our measures of country risk include the Hong Kong protests of 2019-20, the European Sovereign Debt Crisis, Middle East wars, the Egyptian revolution of 2011, and the Fukushima disaster.

Aside from these prominent episodes, we record a few episodes (notably for Norway and Poland), where firms discuss local risks that are not tied to a single event at all. We label these instances "co-occurrence of local concerns," where for example for Poland in 2020q1 Banca Comerical Portugues SA discusses higher capital charges related to currency risk from to mortgages issued in Swiss francs, Stock Spirits Group PLC worries about the possibility of an alcohol excise tax, and UNIQA Insurance Group AG lament the "fluctuating" competitive environment in Poland. Such seemingly random co-occurrences are of course more likely to sway measured country risk for smaller countries that have relatively fewer international firms doing business there.

Third, although none of the firms in our sample are based in Iran, and only two in Venezuela, we are nevertheless able to measure meaningful variation in commercial risk emanating from these countries, because some of our sample firms maintained commercial interests in these countries. The first of these is the 2003 oil strike in Venezuela, an attempt by the Venezuelan opposition to oust Hugo Chavez. The second is the failed Iranian Green Revolution of 2012.[12] These examples also highlight an important feature of our approach: because we rely on discussions of investors and executives at globally listed firms, all of our measures will only be sensitive to variation in risk that affects those global businesses. The less connected a country is to these businesses, the less sensitive we expect our measures to become.

4.3. Understanding the Source of Crises

Having documented the pattern of crises across countries, we now use subsets of the aggregate series along with the micro-data to validate the patterns and zoom in on their sources.

Figure 3 shows the time series of Greek country risk. The gray shaded area shows the average for Greek country risk using all firms in our sample, while the yellow shaded area shows only the part of the variation accounted for by financial firms. Below the graph,

[12] At 1.82 standard deviations, Country Risk of Iran is just below our threshold of two standard deviations in 2012q1; however, because of its clear spike we nevertheless include it in Figure 2.

we show key text snippets that have received a high weight in earnings calls of firms that showed a large increase in the risk they associate with Greece during each of these episodes.[13] In Figure 2 we made systematic use of these high-impact snippets of text to identify the macroeconomic or political events listed in the figure that contribute to each large spike in perceived country risk. Here, we show them in more detail and note that these snippets indeed highlight key events of the European debt crisis, beginning with the initial realization in the second quarter of 2010 that Greece had misreported its debts and that foreign banks are significantly exposed to a potential Greek default. The second peak coincides with the second bailout and imposition of a haircut for private holders of Greek debt in the fourth quarter of 2011; and the third with Syriza's referendum and the possibility of a Greek Exit from the European Monetary Union. Consistent with the financial nature of these crises, much of the increase in perceived Greek risk is driven by financial firms during each of these episodes.

We find similar success in Figure 4, where we turn to Thailand as our second example. In this case, we see the major spikes in Thai Risk come from the Global Financial Crisis, the severe flooding in late 2011, and the military coup in the third quarter of 2014. Interestingly, comparing the gray and yellow shaded areas shows that the political crisis surrounding the attempted coup caused relatively more concern among non-financial firms than financial firms – in sharp contrast with patterns we saw during the consecutive Greek sovereign debt crises. When we turn to the high-impact snippets reported below the table, we again see that the firms are actually discussing and concerned about the events in question.

As our third example, we examine the United States in Figure 5. The US occupies a unique position in our dataset as it is not only the economically largest country, but it is unique in that approximately half of the firms are based in the US and the remaining half are non-US. Therefore, for the US, it is particularly informative to compare aggregate Country Risk, $CountryRisk_{c,t}^{All}$ with American Country Risk as perceived by American firms, $CountryRisk_{c,t}^{HQ}$, and with American Country Risk as perceived by foreign firms, $CountryRisk_{c,t}^{NHQ}$. Again using our systematic reading of high-impact text snippets, the figure labels a number of additional spikes in US risk that fall below our "crisis" threshold

[13]We select these snippets from the top 30 snippets with the highest weight after pooling and sorting all snippets from the top 100 firms with the highest increase of $CountryRisk_{i,c,t}$ for country c in quarter t.

established above, but are nevertheless instructive. Most notably we see firms discussing risks associated with the Iraq War, the fiscal cliff negotiations in late 2011, and the election of Donald Trump in 2016. While for most of these episodes foreign and domestic perceptions of US Country Risk moved in lockstep, in other instances the perceptions diverged. In particular, the Iraq War, and to a lesser extent the election of Donald Trump, see a dramatic increase in foreigners' perceptions of US Country Risk, with the increase coming from American firms far more muted. By contrast, the concern around the Fiscal Cliff in 2012 was far more concentrated in American firms. We make more systematic use of this kind of systematic divergence in risk perceptions by different kind of firms in our econometric analysis below.

The final validation of the country-level data is to confirm that our measures co-move as expected with stock prices. In Panel A of Table 4, we demonstrate that when Country Risk increases and Country Sentiment decreases stock returns fall. In particular, in column 2, a one percent increase in country risk is associated with a 0.286 (s.e.=0.041) percentage point drop in the country's (MSCI) stock return index, while a one percent increase in country sentiment is associated with a 0.196 (s.e.=0.033) percentage point increase in stock returns. Similarly in line with expectations, Panel B shows that changes in realized volatility of these same indices is not significantly associated with changes in country sentiment (the first moment), but instead loads only on variation in country risk (the second moment). A one percent increase in country risk is associated with a 0.108 percentage point increase in realized volatility. In sum, countries' stock prices drop and become more volatile when they are perceived to become riskier.

4.4. The Aggregate Effects of Country Risk

Having examined and validated our aggregate measures, we now explore the relationship between country risk, capital flows, and sovereign default risk. In Panel A of Table 5, we examine country risk as a driver of global capital flows. A large literature, beginning with Calvo et al. (1996) studies the relative importance of push (i.e. global or source-country) factors and pull (i.e. recipient country specific) factors driving capital flows. Generally, the literature has found that capital flows contract in response to bad global news but with little of the variation explained by local factors.

Using our global and local measures of country risk, we are able to revisit this result. In column 1, we run a univariate regression of total capital inflows to a country scaled by the stock of foreign investment[14] on GlobalRisk (conditional on country fixed effects), and observe that inflows drop significantly when GlobalRisk is elevated. We view this as consistent with the importance of push factors, or the fickleness of capital flows discussed in Caballero and Simsek (2020). In column 2, we include CountryRisk – a local pull factor. The coefficient on GlobalRisk turns statistically insignificant, while the coefficient on CountryRisk is negative and statistically significant, demonstrating the importance of country specific variation in risk: A one standard deviation increase in a country's risk is associated with 0.8 percentage point drop in inflows – corresponding to a 47% reduction in inflows relative to the sample mean. In column 3, we control for country-specific GDP growth, a traditional pull factor. Consistent with the findings in the existing literature, this additional variable remains insignificant. By contrast, we see that the coefficient on CountryRisk remains largely unaffected and highly statistically significant. In column 4, we introduce quarter fixed effects and see that the effect of country risk on capital inflows is essentially unchanged, even when we condition out all possible global variation in push factors. In column 5, we add CountrySentiment to the specification. As expected, we find that more positive news about a country (more positive sentiment) is associated with a significant increase in capital inflows (0.729, s.e.=0.233). The coefficient on CountryRisk is reduced by about a third but remains strongly negative and statistically significant at the 5% level (-0.411, s.e.=0.184).

Panel B repeats this analysis, but now relates changes in the country's credit default swap (CDS) spread to *changes* in log country risk. The pattern is largely similar: increases in country risk are significantly associated with increases in the CDS spread, even after changes in global risk, changes in GDP growth and changes in country sentiment are accounted for. The coefficient in column 5 suggests that a doubling (100% increase) in country risk is on average associated with a 2.333 (s.e.=0.836) percentage point increase in the country's CDS spread.

In Table 6, we unpack our aggregate country risk series to better understand the sources of its explanatory power. In Panel A, we continue our examination of capital inflows.

[14] We measure total inflows as the sum of portfolio inflows, FDI inflows, and Other inflows from the Balance of Payments data. The outstanding stock of debt is defined equivalently using International Investment Position data.

The first column examines aggregate country risk, $CountryRisk_{c,t}^{ALL}$. Next, we look at the effect of country risk as perceived by all firms headquartered in the United States, $CountryRisk_{c,t}^{US\ firms}$. We find that the point estimate increases but is now slightly less precisely estimated. Column 3 looks only at financial firms and finds a lower point estimate, but no drop in explanatory power. Column 4 instead averages across all firms that do have their headquarters in the country of interest ("NHQ"), in this sense, focusing only on the perceptions of foreigners. We again find a similar coefficient (-0.587, s.e.=0.190). That is, conditioning only on the perceptions of decision makers at US or foreign firms makes little difference for the coefficient of interest.

In column 5, we introduce a new control: the average across all firms headquartered in c of the risk they face. We denote this variable by $\overline{FirmRisk_{i,t}}_{c,t} := (1/N)\sum_{i\in c(i)} FirmRisk_{i,t}$, where $FirmRisk_{i,t}$ is the normalized unconditional count of risk synonyms in firm i's earnings call during quarter t (Hassan et al., 2019). This captures the total risk as perceived by firms based in the country, regardless of where this risk is coming from. Remarkably, adding this control barely attenuates the coefficient on $CountryRisk^{NHQ}$, with $\overline{FirmRisk_{i,t}}_{c,t}$ also statistically significant and the R^2 increasing. This finding shows clearly that our procedure conditioning on which country executives and investors are talking about, rather than simply averaging mentions of risk by firms in a given country, is key for the informativeness of our measures.

In column 6, we instead control for country risk as perceived by the firms based in that particular country, by averaging $CountryRisk_{i,c,t}$ for all i with their headquarters in c. This variable is insignificant, demonstrating that, on average, the explanatory power for capital flows is coming from foreign rather than domestic risk perceptions. While it is entirely conceivable that this pattern arises because perceptions of domestic agents ($CountryRisk^{HQ}$ and $\overline{FirmRisk_{i,t}}_{c,t}$) are measured with more error than foreigners' perceptions of a country's riskiness ($CountryRisk^{NHQ}$), it also suggests that foreigners' perceptions may be an important variable in and of itself. That is, our results are consistent with the widely held view among policymakers that foreigners' perceptions of a country's riskiness (particularly those of decision makers at global firms) are important drivers of capital flows in and of themselves.

Finally, column 7 contrasts the information content of our measure of country risk with another text-based measure, the World Uncertainty Index (WUI) compiled by Ahir et al. (2018). Rather than operating on firm-level texts, this alternative measure counts the frequency of synonyms of risk and uncertainty directly in the Economist Intelligence Unit country reports. While this alternative measure is positively correlated with ours (the within-country correlation is 0.19), controlling for it changes our coefficient of interest only slightly.[15]

In Panel B of Table 6, we run the same set of regressions but with sovereign CDS spreads as the dependent variable. Once again, we find that the bulk of the explanatory power comes from firms based outside the country. This again speaks to the idea that both global capital flows and asset prices may partly be driven by perceptions of decision makers based outside the country in question.

Putting all this together, these results provide a more nuanced interpretation of the drivers of global capital flows than the canonical push-pull dichotomy. While we find very strong explanatory power coming from a country-specific variable, $CountryRisk_{c,t}$, it is a country specific variable capturing the perceptions of global firms and executives. Therefore, we do find that it is the country specific risk as perceived by foreigners that drives global capital flows, but whether to think of it as a pull factor, because it is recipient country specific, or a push factor, because it is capturing the beliefs and perceptions of a common set of investors outside of the country itself, is a matter of interpretation.

In Panel A of Table 7, we continue the exploration of the drivers of capital flows. In particular, we examine the relative explanatory power of the risk perceptions of financial and non-financial firms. While for total capital inflows, the two variables have similar point estimates, if we zoom on the portfolio inflow component of capital flows, we find that it

[15] Appendix Table 4 expands on this theme, comparing and contrasting the information content of $CountryRisk^{ALL}$ with that of both WUI and country-level indices of Economic Policy Uncertainty (EPU) (Baker et al., 2016), which are available for 22 countries.[16] Across specifications, we find that these alternative text-based measures also tend to correlate with capital inflows, CDS spreads, as well as the firm-level outcomes we discuss in detail below, with the the predicted sign. However, the table also shows that $CountryRisk^{ALL}_{c,t}$ is more strongly associated with all of these aggregate and firm-level outcomes and dominates when the alternative measures are controlled for. The reason for this better fit is likely twofold. First, both alternative text-based measures ultimately rely on the writings of journalists rather than on conversations between executives and investors at global firms, who may be more directly involved in decisions moving capital and investments. Second, both of WUI and EPU are constructed by counting the frequency of mentions of risk (or economic policy uncertainty) in national publications, allocating risk based on who is writing the text (a newspaper in a given country and the analyst at EIU responsible for a country, respectively), whereas our procedure isolates explicitly which country the speaker associates a given risk with. In this sense, both alternative measures are conceptually more similar to $\overline{FirmRisk_{i,t}}_{c,t}$ than $CountryRisk^{ALL}_{c,t}$.

is entirely driven by the risk perceptions of financial firms. We view this as supportive of the idea that hot money flows are driven by the risk perceptions of the financial sector. However, in Column 3, we find that the perceptions of financial and non-financial firms are both important for explaining changes in sovereign CDS.

4.5. The Firm-level Effects of Country Risk

Having demonstrated the robust relationship between Country Risk and the financial side of the economy, we now turn to examining its connection to the real side of the economy. In particular, we ask the question of whether increases in country risk coincide with declines in firm-level investment and employment. Importantly, we want to see whether country risk can account for firm level investment and employment decisions above and beyond the firm's perception of its own risk, $FirmRisk_{i,t}$. In columns 1 and 2 of Table 8, we run regressions of the form

$$y_{i,t} = \delta_i + \delta_t + \delta_c + \beta CountryRisk^{NHQ}_{c(i),t} + \gamma FirmRisk_{i,t} + X'\zeta + FE_{i,t} + \epsilon_{i,t} \tag{10}$$

where $y_{i,t}$ is either the log of firm i's investment rate at time t or the change in firm i's total employment between t and $t-1$, and δ_i, δ_c and δ_t stand for firm, country, and time fixed effects, respectively. We consider investment in Panel A and employment in Panel B of Table 8.

Column 1, includes country, sector, and year fixed effects. We see that both country risk and Firm Risk enter negatively and strongly significantly. In column 2, we replace the country and sector fixed effects with firm fixed effects. The coefficients remain quite stable. What is striking about this result is that this means that within-firm increases in country risk are associated with drops in employment and investment by firms based in the country in question *above and beyond* any risk perceptions of the firm itself. Even more striking, the country risk measure we are using is "*NHQ*" version, meaning it is entirely a measure of foreign investors perceptions that are covarying negatively with firm-level investment and employment decisions. The coefficient of interest in Column 2 implies that a one standard deviation increase in country risk is associated with a 19.3% decrease in the firm's investment rate and a 2.9% decrease in employment growth.

In sum, the evidence is consistent with the view that variation in country risk (particularly that as perceived by foreigners) affects real allocations, even when holding constant our measure of firm-level overall risk. One possible explanation for this pattern is of course the country-level variation in asset prices highlighted above: if aggregate variation in country risk affects capital flows and asset prices at the country-level, then this variation may well affect the ability of domestic firms to invest and hire, even if their own perception of risk remains unchanged.

5. The Transmission of Country Risk

5.1. The Transmission of Foreign Risk

Having demonstrated the importance of country risk as a driver of firm-level outcomes, we now examine whether *firm-level* perceptions of foreign risk also affect these firm level decisions. In particular, we now examine the explanatory power of $ForeignRisk_{i,t}$ as defined in equation (3) for firm-level outcomes.

Column 3 of Table 8 adds $ForeignRisk_{i,t}$ as defined in equation 3 to specification 10, while still controlling for overall $FirmRisk_{it}$. The coefficient on foreign risk is negative and statistically highly significant (−0.046, s.e.=0.01), suggesting that specifically foreign risks lower firm-level investment, over and above the effect of other risks unrelated to foreign countries. The transmission of risk across borders thus appears to have real effects on firm-level outcomes.

Though theoretically appealing, this very ambitious specification now measures each foreign country's level of risk with considerable error, based only on the conversation in a single earnings call. Moreover, both $ForeignRisk_{i,t}$ and $FirmRisk_{it}$ mechanically load on the frequency of mentions of synonyms for risk or uncertainty within that same transcript. To reduce measurement error, and to remove any mechanical correlation between the two variables, it may be more appealing to approximate

$$ForeignRisk^{*}_{i,t} = \sum_{c \neq c(i)} Exposure_{i,c,t} \times \widetilde{CountryRisk}_{c,t}$$

where $\widetilde{CountryRisk}^{NHQ}_{c,t}$ is the residual from a regression of $CountryRisk^{NHQ}_{c,t}$ on country and time fixed effects.

This variation of our foreign risk measure captures precisely the same information as our definition in Equation 3, but instead uses a weighted average of country risk in each country, where the weights correspond to that particular firm's exposure to risk in each country. Firm-level exposure to each country is measured using Equation 7. For example, consider the effect of a sharp increase in Turkey's country risk. Suppose there are two firms, one of them frequently refers to Turkish bigrams during its conference calls, but another firm rarely refers to Turkey. Then we will record a sharp increase in the Foreign Risk of the firm exposed to Turkey but little to no increase in the Transmission Risk of the firm that rarely refers to Turkey.

In column 4 of Table 8, we instead add $ForeignRisk^{*}_{i,t}$ as an explanatory variable for firm-level investment alongside foreign perceptions of domestic risk ($CountryRisk^{NHQ}_{c(i),t}$) and total firm-level risk $FirmRisk_{i,t}$. We find that elevated levels of perceived Foreign Risk at the firm level are again associated with depressed levels of hiring and investment. In column 5, we further tighten the specification to look within country-year by including $Country \times Year$ fixed effects. These fixed effects fully absorb $CountryRisk^{NHQ}_{c(i),t}$, yet the coefficient estimates on Foreign Risk remain largely unchanged. In column 6, we additionally show that controlling for $FirmRisk_{i,t}$ or not has little effect on the coefficient of interest. The estimate (-0.071, s.e.=0.011) implies that a one standard deviation increase in the firm's foreign risk reduces its investment rate by 7.1% – an effect quantitatively similar to that of other (overall) risk (-0.039, s.e.=0.007).

In columns 7 and 8 we re-estimate the latter two specifications, but include only firms with US headquarters in the regression. The coefficients estimated in this sub-sample tend to be somewhat larger than those in columns 3-5: We find that a one standard deviation increase in $ForeignRisk^{*}_{i,t}$ is associated with 12.8% decrease in the investment rate. All estimates remain statistically significant at the 1% level in this sub-sample of US firms.

Panel B shows similar results for firm-level employment growth, where increases in foreign risks are now clearly associated with decreases in hiring. The two most demanding specifications in column 6 imply that a one standard deviation increase a firm's foreign risks is associated with a 1.2% decrease in hiring. Crises abroad and fluctuations in risk associated with foreign countries thus appears to significantly affect firm-level outcomes in the United

States in a manner predicted by canonical theory.

There are potentially other ways to quantify foreign risk, and we explore them in detail in Table 9. In particular, we considers versions where instead of using our text-based Exposure weights, we construct alternative measures of Foreign Risk that use firm-level accounting data to weight the various countries. In the first alternate specification, examined in columns 2 and 3, we measure exposure to a given foreign country as the share of a firm's subsidiaries based in a particular country using the 2016 data from Orbis. For instance, if an American firm has 4 subsidiaries, one of which is in Canada and three of which are in Mexico, the weighting $ShareOrbisLinks_{i,CAN}$=0.25 and $ShareOrbisLinks_{i,MEX}$=0.75. In Columns 4 and 5, we replace our exposure weights with information from the Worldscope Geographic Segment data on the country's sales share, using the share of sales (converted to USD) in a given country as the weight. While the sign continues to be negative on this alternative version of Foreign Risk, it is statistically insignificant.

The greater explanatory power of $ForeignRisk^*_{it}$ constructed using our text-based exposure measure than accounting measures based on subsidiaries and sales speaks to the idea that the true nature of global interconnectedness is far more complicated that can be gleaned from accounting statements. It suggests a key advantage of measuring firm exposure using information on what the firms themselves discuss during their earnings calls. We expand on this theme below when we use our measures to typify the transmission of risk during crises.

To get some idea of the potential relevance of the international transmission of risk, it is useful to ask how much of the variation in overall firm-risk among our sample firms can be accounted for by foreign risk. In particular, we project firm-level risk on foreign risk and the risk associated with firm i's home country

$$FirmRisk_{it} = \alpha + \beta_i ForeignRisk_{i,t} + \gamma_i CountryRisk^{NHQ}_{c(i),t} + \epsilon_{i,t}.$$

We find that the incremental R^2 of the former variable is 18%, while both variables jointly account for 34% of the variation. That is, on average, risks transmitted from foreign countries collectively account for about as much of the variation in a firm's overall risk as does its own-country risk. It is thus perhaps not surprising that we have the statistical power to disentangle the marginal effects of these three types of risk on firm-level outcomes.

5.2. *The Average and Conditional Transmission of Country Risk*

Having studied the firm-level impact of foreign risks, we now turn to understanding the pattern of transmission of risks around the world more generally. We begin by examining the average flow or risks from a given origin country to a given destination country as defined in equation 4. We then examine how different types of crises deviate from this usual pattern by comparing average transmission to that in a given historical circumstance as defined in equation 5.

Average Transmission In Table 10, we zoom out from the firm-level analysis and look at the top origins and destinations of transmission risk for countries around the world. From a cursory glance over the table, we can see that firms tend to worry more about risks originating in countries geographically closer to them. In addition, one can immediately see the importance of language and historical ties, with Australia worrying not only about nearby New Zealand but also about the United Kingdom. In Appendix Table 5 we confirm this conjecture more systematically. Building on a large literature in trade and international finance, we run a gravity regression of bilateral transmission risk. With source and destination fixed effects, we find that distance, geographical contiguity, common official language, and a historical colonial relationship are all significant explanatory factors for the transmission of global risk.

To add texture to this analysis, Table 11 decomposes the aggregate flow of risk to the United States by showing the top five origins of transmission risk for ten sectors within the United States. The third column of the table lists the firm in the S&P 500 with the largest transmission risk from each origin as an example. We can observe a large degree of heterogeneity in the countries driving transmission to the US by industry.

For example, major source countries of transmission risk for firms in the US technology sector are Canada, Japan, Ireland, China, and Israel; while firms in the US energy sector are concerned with risks associated with Canada, Mexico, Saudi Arabia, and Venezuela. Looking into the underlying conference call transcripts paints a rich picture of the commercial links underlying this variation. For example, Devon Energy's Canadian exposure stems from large holdings of conventional and unconventional oil resources in the country that it acquired in the 1990s and has been selling off in recent years. Schlumberger provides services for oil exploration, drilling, and production in Saudi Arabia, and has recently opened a manufacturing facility there. Exxon Mobil's activities in Nigeria include exploration for oil and deepwater production, while Conoco Philips is involved in litigation trying to claw back assets expropriated in Venezuela.

Crisis Transmission These are some of the complex microeconomic links underlying the usual pattern of transmission in Table 10, and it is quite plausible that these microstructures transmit different crises in different ways. To explore this idea we make full use of our transmission data by constructing separate measures of $TransmissionRisk_{o\rightarrow d,\tau}$ for each of the crises listed in Figure 2 for each recipient country. We then compare the pattern of transmission during each crisis with the usual pattern of transmission from that origin country by averaging origin-to-destination-specific transmission risk from that origin country across all other (non-crisis) periods. We then run the following regression separately for each crisis

$$(11) \qquad TransmissionRisk_{o\rightarrow d,\tau} = \alpha_{o,\tau} + \beta_{o,\tau}\overline{TransmissionRisk}_{o\rightarrow d,t\notin S^c} + \epsilon_{o\rightarrow d,\tau},$$

where S^c is the set of time periods during which country c is in crisis. Each of these regression then returns an estimated intercept, slope, and R^2 — and we argue that these estimates (shown in Table 12) can serve as useful indices characterizing the way in which that crisis, associated with a unique origin country, affects the riskiness of businesses in other countries.

Panel A of Figure 6 plots the transmission patterns of two prominent crises for illustration: The start of the Global Financial Crisis (GFC) in the United states in 2008 versus the beginning of the Greek Sovereign Debt Crisis in 2010. For the GFC, the figure shows a large and positive intercept (0.61, s.e.=0.21) and a relatively flat slope of 0.95 (s.e.=0.13), implying that much of the transmission of risk from the United States during that period was global – it raised the risk of all receiving countries significantly, regardless of whether or not those countries usually import risk from the United States. The GFC stands out in this regard – only the beginning of the Coronavirus outbreak in China in the first quarter of 2020 has a higher $\alpha_{o,\tau}$ (0.70, s.e.=0.17). A high intercept is thus a marker of crises with an unusual degree of global transmission.

By contrast, the initial transmission of risk from Greek crisis has a much lower intercept (-1.41, s.e.=0.29) and a very steep slope (3.39, s.e.=0.34), signifying a relatively larger degree of bilateral rather than global transmission. That is, the initial transmission from Greece was not extraordinary in terms of which countries were affected: Greek risk usually affects firms in other European countries like Italy, Spain, and Germany – and these countries were also recipient countries of Greek risk during this crisis. Instead, the Greek Sovereign Debt crisis was extraordinary in terms of the degree of bilateral transmission, which was 3.39 times larger than during non-crisis times. The slope $\beta_{o,\tau}$ thus measures the degree of bilateral transmission to countries usually affected by the origin country's risk.

Finally, both the GFC and the Greek crisis of 2010 have in common a relatively low R^2 (0.63 for the former and 0.78 for the latter). That is, both of these crises may have been particularly dangerous due to their relatively irregular pattern of transmission. Panel B of Figure 6 gives another example irregular transmission: The blue line shows the pattern of transmission of risk from Japan during the Fukushima nuclear disaster of 2011 – the crisis with the lowest $R^2_{o,\tau}$ in our sample (0.32).[17] The plot shows relatively large dispersion and unusually large impacts in Germany and Taiwan, among others. Systematically examining high-impact snippets of text from German firms reveals the reason: The Fukushima disaster was the ultimate catalyst for the end of nuclear power in Germany and thus threatened the viability of an entire industry in this faraway location, including that of firms that have no observable commercial links with Japan whatsoever. Other outliers are attributable to the unusual effects this event had on supply chains, fishing, and the insurance industry, among others.

The yellow line contrasts this irregular transmission with the highly regular transmission of risk following the crisis surrounding the Hong Kong protests of 2019. In this case, all observations are close to the regression line, with an $R^2_{o,\tau}$ of 0.94 – the third highest in our sample. Risks emanating from Hong Kong during this period are elevated (with a slope of 1.47 (s.e.=0.05), but predictably affect firms in Singapore and China much more than those in the United States. Figure 7 illustrates these same patterns on a map.

[17] For a detailed analysis of the latter event also see Boehm et al. (2019), Hassan et al. (2020), and Carvalho et al. (2021).

In sum, our measures of transmission risk yield a useful characterization of how the transmission of risks during a given crisis differs from the regular flow of risk during non-crisis times. In this sense, all three of these measures capture the spirit of the Forbes and Rigobon (2002) definition of contagion: "a significant increase in cross-market linkages after a shock to one country." Given this definition, we may think of crises with a high degree of contagion as those with low $R^2_{o,\tau}$, a large $\alpha_{o,\tau}$, or a $\beta_{o,\tau}$ significantly larger than one.

6. Country Risk, Global Risk, and Exchange Rates

In this final section, we use our measures to revisit the link between exchange rates and risk around the world. A large literature in international macroeconomics (Meese and Rogoff (1983), Rossi (2013)) has found that traditional fundamentals that canonical models say should explain exchange rate movements are largely disconnected from currency movements in the data. A growing literature in international finance (Lustig et al. (2011), Lustig et al. (2014), Avdjiev et al. (2019), Jiang et al. (2018), Verdelhan (2018), and Lilley et al. (2019)) has instead focused on explaining exchange rate movements conditional on movements in global risk factors constructed from asset prices. This literature has shown ample evidence of a factor structure in exchange rates, with some exchange rates loading more or less on variation in these global risk factors. However, a remaining challenge to this literature is that the majority of the existing evidence is internal to asset prices, effectively explaining variation in exchange rates with risk factors that are themselves constructed from variation in asset prices. In this section, we explore the hypothesis that exchange rates fluctuate in response to changes in risk directly using our measures of country and global risk. That is, rather than using factors constructed from asset returns, we relate exchange rate movements to variation in our text-based measures of risk – relying on texts generated by global investors and executives.[18]

We begin in Table 13 with a panel regression framework, examining the ability of changes in our country risk and sentiment measures to explain changes in the quarterly exchange rate against the USD. In column 1, we run a univariate regression (conditional on country fixed effects) of changes in exchange rates on country risk and find that a one log point increase in

[18] Kalemli-Özcan and Varela (2021) examine the relationship between the failure of UIP and political risk.

country risk is associated with a 0.13 log point depreciation of the country's currency against the USD.[19] That is, currencies generally tend to depreciate against the US dollar when their countries become riskier. The regression in column 2 then adds the change in global risk. Consistent with the conventional view that the US dollar is a "safe haven" currency, we find that when global risk increases, all currencies tend to depreciate against the the US dollar (the base currency in this regression). In columns 3 through 5, we introduce year-quarter fixed effects, thereby absorbing the common variations through GlobalRisk. We see that increases in country risk continue to coincide with depreciations of the local currency against the USD in the panel. Column 4 controls for changes to country-specific sentiment, and shows that rises in country-specific sentiment additionally correlate with appreciations. Finally, in column 5, we ask whether it is truly country-specific risk that explains these patterns, or whether each country's risk may itself load heterogeneously on global risk, a possibility we cannot exclude despite controlling for time fixed effects. Instead, we run a series of regressions of

$$\Delta log(CountryRisk_{c,t}) = \alpha_c + \beta_c \cdot \Delta log(GlobalRisk_t) + \epsilon_{c,t}$$

and then extract the component of each country's risk that comes from this common loading, $\hat{\beta}_c \cdot \Delta log(GlobalRisk_t)$. In column 5, we control for this variable and continue to find a statically and economically significant role for country risk in explaining the pattern of bilateral exchange rate changes against the US dollar.

Having shown the significant explanatory power of country risk and sentiment for changes in exchange rates, we now return to the question of the explanatory power of heterogeneous loadings on global risk. In particular, we run a regression of the form

$$\Delta e_{c,t} = \alpha_c + \beta_c \cdot \Delta log(GlobalRisk_t) + \epsilon_{c,t}$$

where $\Delta e_{c,t}$ is the period-average change in the equal-weighted broad exchange rate.[20] We move from the bilateral exchange rate to a broad exchange rate to more easily see whether

[19] We use Germany's country risk for the euro and drop data on all other euro area currencies.

[20] Aloosh and Bekaert (2019) discuss the advantages of using the equal-weighted broad exchange rates, or "currency baskets."

currencies tend to appreciate or depreciate relative to all other currencies in response to spikes in global risk. Panel A of Figure 8 plots these β coefficients for each of the currency-specific regressions with standard error bands. We see a large degree of heterogeneity across countries, providing direct evidence for the heterogeneous loading of currencies on global risk. In Panel B of Figure 8, we plot these estimated β_c coefficients on the x-axis and the R^2 of the regression on the y-axis. We plot in gray the currencies that are relatively more managed or even pegged during the sample period.[21] We see that traditionally "risky" currencies, such as emerging market currencies like the Mexican peso and South African Rand as well as the carry currencies like the Australian dollar, have large negative betas on global risk, meaning they significantly depreciate when global risk increases. By contrast, among the floating currencies, it is only the Yen, Dollar, and Euro that have their broad exchange rate load positively on global risk. That is, these three "safe haven" currencies appreciate when risks as perceived by global investors and executives are high.

In panels (C) and (D) of Figure 8, we provide direct evidence for the idea that this heterogeneity in the loading on global risk can explain cross-country heterogeneity in nominal interest rates and excess returns. In particular, we see that currencies that depreciate in response to increases in global risk have significantly higher nominal interest rates. In addition, these heterogeneous loadings appear to be a priced risk factor, as those currencies that depreciate in response to spikes in global risk have earned significantly higher excess returns against the USD than do currencies that either appreciate or depreciate less. We view these results as providing direct evidence for theories emphasizing cross-country heterogeneity in loadings on global risk as explaining persistent differences in interest rates and excess returns across currencies (i.e. Lustig et al. (2011), Lustig et al. (2014), Verdelhan (2018), Hassan (2013) and Richmond (2019)).

In the Appendix Figures 3 and 4, we replicate Figure 8 for Global Sentiment and for each country's bilateral exchange rate against the US Dollar. We find a very similar cross-sectional pattern. In addition, we consider bivariate regressions, where we add the country-specific change in risk or sentiment in Equation 6. The results are reported in Appendix Tables 6, 7,

[21] We use the de facto exchange rate classifications from Ilzetzki et al. (2019). We report currencies in green if the average Ilzetzki et al. (2019) rating from 2003 to the present averages at least a 12 in their "fine" classification. That means the currencies rank as least "De facto moving band +/-5% Managed floating" and report them in gray. We classify the Euro as floating rather than looking at the individual country classifications.

and 8, for risk for the equal-weighted and US exchange rate, and for sentiment and the equal-weighted exchange rate, respectively. We see that heterogeneous loadings on global risk and sentiment explain a significantly larger amount of exchange rate changes than do country-specific changes in risk and sentiment. We see in these tables, and in Appendix Table 9, that country-specific sentiment changes explain a larger amount of the movements in individual currencies than does country-specific risk changes. Across all of these specifications, global risk and sentiment have similar explanatory power and a very similar cross-sectional pattern.

7. Conclusion

We present a methodology for measuring country risk at the micro-level and aggregating to the macro-level using natural language processing of conference call transcripts of firms around the world. These measures allow us to present a novel characterization of the sources and transmission of country risk and crises. Our new measures of country risk not only covary strongly with asset prices and country aggregates, but also help to explain firm-level variation in investment and employment. We use our new methodology to provide direct evidence for the ability of heterogeneous loadings on global risk to explain the pattern of currency risk premia.

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Table 1: Top 20 ngrams in the training library of Greece, Turkey, and Japan

Ngram	tf×idf	Frequency	Countries	Ngram	tf×idf	Frequency	Countries
PANEL A: GREECE							
Greece	607.84	3,246	34	the EA	76.30	119	1
Greek	607.84	2,897	15	The ND	73.09	114	1
Athens	339.68	640	2	New Democracy	69.89	109	1
Hellenic	249.74	649	5	Greeks	64.76	101	1
ND government	130.15	203	1	gov gr	61.55	96	1
Piraeus	127.91	241	2	Strategic Reference	61.55	96	1
Share sale	88.48	138	1	Attica	59.63	93	1
an AE	80.78	126	1	ministerial decisions	59.20	127	3
Thessaloniki	80.67	152	2	Alpha Bank	58.34	91	1
by Law	79.83	511	21	objective value	57.70	90	1
PANEL B: TURKEY							
Turkey	805.22	3,245	49	an AS	88.63	129	3
Turkish	805.22	2,738	16	the Undersecretariat	87.61	112	2
Gazette No	246.57	398	4	Izmir	82.21	87	1
Turk Eximbank	171.04	181	1	the Directive	76.56	135	5
Ankara	144.58	153	1	in prioritydevelopment	76.54	81	1
Official Gazette	131.89	495	18	prioritydevelopment regions	74.65	79	1
of Turkeys	128.48	187	3	in Turkeys	73.71	78	1
Istanbul	127.94	244	6	Undersecretariat of	71.18	91	2
the lira	114.34	121	1	Region VI	71.18	91	2
the GDFI	94.50	100	1	Patent Institute	70.01	113	4
PANEL C: JAPAN							
Japan	244.12	7,076	56	Standards Law	83.62	206	3
Economy Trade	215.37	466	2	Japanese	81.27	3,801	48
the JFTC	207.13	371	1	Tokyo	81.12	626	22
Health Labour	138.46	248	1	Antimonopoly Law	78.70	215	4
Industry METI	136.23	244	1	Labour Standards	75.77	207	4
the METI	115.57	207	1	AntiMonopoly Law	73.88	182	3
The JFTC	107.20	192	1	inhabitant tax	73.49	159	2
the JPO	86.54	155	1	Okinawa	72.02	129	1
the Diet	85.98	154	1	and Welfare	70.95	246	7
enterprise tax	84.58	183	2	Osaka	69.41	171	3

Notes: This table lists the top 20 ngrams when sorted on *tf*×*idf* in the training library for three selected countries. Column 2 shows the *tf*×*idf* of the ngram, which is the frequency of the ngram in its country-specific library divided by the total number of ngrams in that library (*tf*) multiplied by the log of the number of country libraries divided by the number of country libraries that contain the ngram (*idf*); column 3 shows the frequency of the ngram in the country-specific library; and column 3 shows the number of country libraries with that ngram. A country-specific training library consists of (1) all adjacent two-word combinations (bigrams) from the country's Economist Country Commerce Reports published between 2002 and 2019; (2) all unigrams and bigrams from the country-specific Geonames list of country names, region names, and city names of cities with more than 15,000 inhabitants in 2018; and (3) all adjectival demonymic forms of the country name from Wikipedia and the CIA World Factbook.

Table 2: Country Exposure correlates positively with measures of firm links

	$Exposure_{i,c}$ (*std.*)				
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}(Headquarter)_{i,c}$	2.586***			2.421***	3.200***
	(0.044)			(0.084)	(0.111)
$\mathbb{1}(Segement\ sale\ link)_{i,c}$		1.410***		1.119***	1.300***
		(0.027)		(0.027)	(0.031)
$\mathbb{1}(Subsidiary)_{i,c}$			0.640***	0.277***	0.319***
			(0.009)	(0.007)	(0.008)
R^2	0.113	0.064	0.057	0.167	0.206
N	664,440	268,856	387,225	168,840	168,840
Country FE	no	no	no	no	yes

Notes: This table shows coefficient estimates and standard errors from regressions at the firm-country level. All variables are as defined in Section 3. Column 4 includes country fixed effects. Standard errors are robust. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 3: Summary statistics

PANEL A: FIRM-COUNTRY	Mean	Median	St. Dev.	Min	Max	N
$CountryExposure_{i,c}$ *(std.)*	0.80	0.66	1.00	0.00	89.42	664,440
$\mathbb{1}(Headquarter)_{i,c}$	0.02	0.00	0.13	0.00	1.00	664,440
$\mathbb{1}(Segment\ sale\ link)_{i,c}$	0.05	0.00	0.22	0.00	1.00	268,856
$\mathbb{1}(Subsidiary)_{i,c}$	0.16	0.00	0.36	0.00	1.00	387,225
PANEL B: COUNTRY-QUARTER	**Mean**	**Median**	**St. Dev.**	**Min**	**Max**	**N**
$CountryRisk^{ALL}_{c,t}$ *(std.)*	3.72	3.53	1.00	2.12	10.04	3,240
$CountryRisk^{NHQ}_{c,t}$ *(std.)*	4.22	4.02	1.00	2.50	11.71	3,240
$CountryRisk^{FIN}_{c,t}$ *(std.)*	3.99	3.83	1.00	2.23	11.87	3,240
$CountryRisk^{NFIN}_{c,t}$ *(std.)*	3.32	3.08	1.00	1.86	9.65	3,240
$CountrySentiment^{ALL}_{c,t}$ *(std.)*	2.94	2.84	1.00	-0.28	7.66	3,240
$\overline{FirmRisk_{i,c,t}}_{c,t}$ *(std.)*	3.17	3.00	1.00	0.62	12.25	2,256
$Realized\ MSCI\ volatility_{c,t}$	0.10	0.09	0.06	0.02	1.16	2,961
$MSCI\ equity\ return_{c,t}$	0.02	0.03	0.10	-0.86	0.62	2,958
$Total\ inflows_{c,t}$ *(%)*	1.68	1.51	2.25	-16.11	18.62	2,792
$Sovereign\ CDS\ spread_{c,t}$ (pct)	1.87	0.74	3.92	0.01	28.98	2,713
$Real\ GDP\ growth_{c,t}$	0.93	1.05	5.89	-26.48	29.24	2,882
$\Delta \log spot\ rate_{c,t}$	-0.01	0.00	0.13	-3.66	0.37	2,592
PANEL C: FIRM-YEAR	**Mean**	**Median**	**St. Dev.**	**Min**	**Max**	**N**
$CountryRisk^{NHQ}_{c(i),t}$ *(std.)*	3.48	3.78	1.01	1.38	5.18	90,355
$CountryRisk^{FIN}_{c(i),t}$ *(std.)*	4.10	4.37	1.01	1.66	5.69	90,355
$CountryRisk^{OWNIND}_{c(i),t}$ *(std.)*	2.73	2.97	1.00	0.56	13.31	90,355
$FirmRisk_{i,t}$ *(std.)*	1.18	0.95	0.97	0.00	17.56	93,759
$\Delta \log(employment\ rate_{i,t})$	0.04	0.02	0.19	-0.71	0.75	70,963
$\log(investment\ rate_{i,t})$	-1.92	-1.89	0.94	-5.04	0.52	74,999
$ForeignRisk^{*}_{i,t}$	2.82	2.65	0.78	0.00	12.80	93,759
$ForeignRisk_{i,t}$	0.99	0.71	1.00	0.00	18.66	93,759

Notes: This table shows the mean, median, standard deviation, minimum, maximum, and number of observations of all variables that are used in the subsequent regression analyses. Panels A, B, and C show the relevant statistics for the regression sample at the firm-country, country-quarter and firm-year unit of analysis, respectively. In Panel A, $CountryExposure_{i,c}$ *(std.)* is the average over time of firm i's Country Exposure to country c, normalized by the standard deviation; and $\mathbb{1}(Headquarter)_{i,c}$, $\mathbb{1}(Segment\ data\ link)_{i,c}$, $\mathbb{1}(Subsidiary)_{i,c}$ are binary variables equal to one if firm i is headquartered in country c, reports sales to country c, or has a subsidiary in country c, respectively. In Panel B, $CountryRisk^{ALL}_{c,t}$ *(std.)* is the average for country c and quarter t of the Country Risk perceived by all firms as measured in their earnings call transcripts, normalized by the standard deviation in the panel; $CountryRisk^{NHQ}_{c,t}$ *(std.)*, $CountryRisk^{FIN}_{c,t}$ *(std.)*, and $CountryRisk^{NFIN}_{c,t}$ *(std.)* are the same but based on firms not headquartered in c at t, financial (SIC $\in [6000, 6800)$), and non-financial (SIC $\notin [6000, 6800)$) firms respectively; $CountrySentiment_{c,t}$ *(std.)* is the average for country c and quarter t of Country Sentiment perceived by all firms, normalized by the standard deviation in the panel; $\overline{FirmRisk_{i,c,t}}_{c,t}$ *(std.)* is the average over all firms headquartered in country c and quarter t of risk words per word mentioned by the firm during its earnings call (restricted to countries for which we have at least five firms); $Realized\ MSCI\ volatility_{c,t}$ is the standard deviation of the daily MSCI stock return index for country c during quarter t (based on local currency), $\Delta \log(MSCI\ return\ on\ index_{c,t})$ is the $t-1$ to t change in log of the end-of-quarter MSCI stock return index (based on local currency) for country$c$ and quarter t; $Total\ inflows_{c,t}$ *(%)* are inflows of equity and debt to country c during quarter t relative to the country's stock of capital in the previous quarter; $Sovereign\ CDS\ spread_{c,t}$ is the end-of-quarter 5-year sovereign CDS spread of country c and quarter t (in percent); $Sovereign\ bond\ yield_{c,t}$ is the end-of-quarter mid yield on a 1-year sovereign bond of country c and quarter t (in percent); and $Real\ GDP\ growth_{c,t}$ is the quarter-to-quarter percent change in real GDP of country c and quarter t. In Panel C, $CountryRisk^{NHQ}_{c(i),t}$ *(std.)* is Country Risk of the country of headquarter of firm i, $c(i)$, in year t as perceived by firms without headquarter in country c, normalized by its standard deviation in the panel; $FirmRisk_{i,t}$ *(std.)* is the number of risk words per word mentioned in any earnings call of firm i in year t; $\Delta \log(employment\ rate_{i,t})$ is the year-to-year difference in the log of employment, winsorized at the first and last percentile; $\log(investment\ rate_{i,t})$ is a the log of investment rate, which is calculated recursively using a perpetual-inventory method and winsorized at the first and last percentile; $ForeignRisk^{*}_{i,t}$ *(std.)* is the weighted sum over countries of residualized $CountryRisk^{NHQ}_{c,t}$ with weights given by the firm's Country Exposure to country c in quarter t, $CountryExposure_{i,c,t}$, normalized by its standard deviation in the firm-year panel; and $ForeignRisk_{i,t}$ *(std.)* is the sum over countries of $CountryRisk_{i,c,t}$, normalized by its standard deviation in the firm-year panel.

Table 4: Country Risk, Country Sentiment, and Stock Market Return and Volatility

Panel A	*MSCI equity return*$_{c,t}$	
	(1)	(2)
$\Delta \log(CountryRisk_{c,t}\ (std.))$	–0.403***	–0.286***
	(0.045)	(0.041)
$\Delta \log(CountrySentiment_{c,t}\ (std.))$		0.196***
		(0.033)
R^2	0.098	0.232
N	2,918	2,914

Panel B	Δ*Realized MSCI volatility*$_{c,t}$	
	(1)	(2)
$\Delta \log(CountryRisk_{c,t}\ (std.))$	0.097***	0.108***
	(0.018)	(0.022)
$\Delta \log(CountrySentiment_{c,t}\ (std.))$		0.006
		(0.006)
R^2	0.015	0.017
N	2,917	2,913

Notes: This table shows coefficient estimates and standard errors from regressions at the country-quarter level. All variables are as defined in Table 3. Standard errors are clustered at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 5: Drivers of Capital Flows and Sovereign Default Risk

PANEL A	*Total inflows$_{c,t}$ (%)*				
	(1)	(2)	(3)	(4)	(5)
CountryRisk$_{c,t}$ (std.)		–0.792***	–0.812***	–0.686***	–0.411**
		(0.191)	(0.185)	(0.152)	(0.184)
GlobalRisk$_{c,t}$ (std.)	–0.028***	–0.011	–0.010		
	(0.005)	(0.007)	(0.007)		
Real GDP growth$_{c,t}$			–0.007	0.023**	0.022**
			(0.008)	(0.010)	(0.010)
CountrySentiment$_{c,t}$ (std.)					0.729***
					(0.233)
R^2	0.093	0.109	0.116	0.271	0.281
N	2,792	2,792	2,657	2,657	2,657
PANEL B	Δ*CDS spread$_{c,t}$*				
	(1)	(2)	(3)	(4)	(5)
Δ log(*CountryRisk$_{c,t}$ (std.)*)		2.248**	2.293**	2.352***	2.333***
		(0.836)	(0.871)	(0.841)	(0.836)
Δ log(*GlobalRisk$_{c,t}$ (std.)*)	7.652***	5.379***	4.530***		
	(1.838)	(1.579)	(1.351)		
Real GDP growth$_{c,t}$			–0.005	–0.001	–0.001
			(0.004)	(0.004)	(0.004)
Δ log(*CountrySentiment$_{c,t}$ (std.)*)					–0.485
					(0.349)
R^2	0.069	0.082	0.078	0.159	0.162
N	2,626	2,626	2,444	2,444	2,440
Country FE	yes	yes	yes	yes	yes
Year-quarter FE	no	no	no	yes	yes

Notes: This table shows coefficient estimates and standard errors from regressions at the country-quarter level. All variables are defined as in Table 3. Standard errors are clustered at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 6: Decomposing Country Risk

PANEL A	Total inflows$_{c,t}$ (%)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$CountryRisk^{ALL}_{c,t}$ (std.)	–0.735***						
	(0.155)						
$CountryRisk^{US\ firms}_{c,t}$ (std.)		–0.901***					
		(0.196)					
$CountryRisk^{FIN}_{c,t}$ (std.)			–0.555***				
			(0.104)				
$CountryRisk^{NHQ}_{c,t}$ (std.)				–0.587***	–0.511**	–0.542***	–0.563***
				(0.190)	(0.191)	(0.192)	(0.190)
$\overline{\text{FirmRisk}_{i,t}}_{c,t}$ (std.)					–0.184**		
					(0.090)		
$CountryRisk^{HQ}_{c,t}$ (std.)						0.009	
						(0.075)	
$World\ Uncertainty\ Index_{c,t}$ (std.)							–0.087
							(0.055)
R^2	0.253	0.248	0.253	0.250	0.332	0.276	0.251
N	2,792	2,792	2,792	2,792	2,079	2,589	2,792

PANEL B	Δ CDS spread$_{c,t}$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\Delta\log(CountryRisk^{ALL}_{c,t}$ (std.))	2.253***						
	(0.789)						
$\Delta\log(CountryRisk^{US\ firms}_{c,t}$ (std.))		2.074**					
		(0.875)					
$\Delta\log(CountryRisk^{FIN}_{c,t}$ (std.))			0.992**				
			(0.466)				
$\Delta\log(CountryRisk^{NHQ}_{c,t}$ (std.))				2.241***	2.007***	2.321***	2.242**
				(0.754)	(0.682)	(0.791)	(0.859)
$\Delta\log(\overline{\text{FirmRisk}_{i,t}}_{c,t}$ (std.))					0.198*		
					(0.115)		
$\Delta\log(CountryRisk^{HQ}_{c,t}$ (std.))						0.057*	
						(0.032)	
$\Delta\log(World\ Uncertainty\ Index_{c,t}$ (std.))							0.058*
							(0.033)
R^2	0.163	0.159	0.155	0.161	0.147	0.169	0.163
N	2,626	2,626	2,626	2,626	1,906	2,330	1,866

Notes: This table shows coefficient estimates and standard errors from regressions at the country-quarter level (panel A) and firm-year level (panel B). All variables are defined as in Table 3. All regressions include country and year-quarter fixed effects. Standard errors are clustered at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 7: Decomposing Country Risk: Financial vs non-financial

PANEL A	*Total inflows*$_{c,t}$ *(%)*	*Portfolio inflows*$_{c,t}$ *(%)*	Δ*CDS spread*$_{c,t}$
	(1)	(2)	(3)
$CountryRisk^{FIN}_{c,t}$ *(std.)*	–0.453***	–1.011**	
	(0.100)	(0.445)	
$CountryRisk^{NFIN}_{c,t}$ *(std.)*	–0.347**	0.049	
	(0.167)	(0.245)	
$\Delta\log(CountryRisk^{FIN}_{c,t}$ *(std.)*$)$			0.762*
			(0.400)
$\Delta\log(CountryRisk^{NFIN}_{c,t}$ *(std.)*$)$			1.476**
			(0.586)
R^2	0.255	0.133	0.162
N	2,792	2,936	2,626
Year-quarter FE	yes	yes	yes
Country FE	yes	yes	yes

PANEL B	$\log($*investment rate*$_{i,t})$	$\Delta\log($*employment*$_{i,t})$
	(1)	(2)
$CountryRisk^{FIN}_{c(i),t}$ *(std.)*	–0.205***	–0.030***
	(0.025)	(0.005)
$CountryRisk^{ONWNIND}_{c(i),t}$ *(std.)*	–0.017	0.006
	(0.015)	(0.004)
R^2	0.512	0.235
N	66,735	55,833
Year-quarter FE	yes	yes
Firm FE	yes	yes

Notes: This table shows coefficient estimates and standard errors from regressions at the country-quarter level. All variables are defined as in Table 3. Standard errors are clustered at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 8: The Transmission of Country Risk

	All firms						US firms	
Panel A	log(*investment rate*$_{i,t}$)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ForeignRisk^{*}_{i,t}$ *(std.)*				–0.071***	–0.072***	–0.070***	–0.132***	–0.128***
				(0.011)	(0.010)	(0.010)	(0.017)	(0.017)
$ForeignRisk_{i,t}$ *(std.)*			–0.046***					
			(0.010)					
$CountryRisk^{NHQ}_{c(i),t}$ *(std.)*	–0.249***	–0.193***	–0.191***	–0.194***				
	(0.022)	(0.021)	(0.021)	(0.021)				
$FirmRisk_{i,t}$ *(std.)*	–0.051***	–0.043***	–0.008	–0.041***		–0.039***		–0.049***
	(0.008)	(0.007)	(0.010)	(0.007)		(0.007)		(0.010)
R^2	0.074	0.512	0.512	0.512	0.525	0.526	0.498	0.499
N	72,493	71,673	71,673	71,673	73,771	73,771	47,186	47,186
Panel B	Δ log(*employment*$_{i,t}$)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ForeignRisk^{*}_{i,t}$ *(std.)*				–0.012***	–0.011***	–0.011***	–0.024***	–0.023***
				(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
$ForeignRisk_{i,t}$ *(std.)*			–0.004*					
			(0.002)					
$CountryRisk^{NHQ}_{c(i),t}$ *(std.)*	–0.032***	–0.029***	–0.028***	–0.029***				
	(0.005)	(0.005)	(0.005)	(0.005)				
$FirmRisk_{i,t}$ *(std.)*	–0.009***	–0.009***	–0.006***	–0.009***		–0.009***		–0.011***
	(0.001)	(0.001)	(0.002)	(0.001)		(0.001)		(0.002)
R^2	0.026	0.233	0.233	0.234	0.244	0.244	0.236	0.237
N	68,375	67,266	67,266	67,266	69,509	69,509	45,775	45,775
Country FE and Sector FE	yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Firm FE	no	yes	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	n/a	n/a	yes	yes
Country×Year FE	no	no	no	no	yes	yes	n/a	n/a

Notes: This table shows coefficient estimates and standard errors from regressions at the firm-year level. All variables are defined as in Table 3. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 9: Comparing $Exposure_{i,c,t}$ and alternative measures of firm-country links in $ForeignRisk_{i,t}$

	log(*investment rate*$_{i,t}$)				
	(1)	(2)	(3)	(4)	(5)
$ForeignRisk^*_{i,t}$ *(std)*	–0.072***		–0.072***		–0.072***
	(0.010)		(0.010)		(0.010)
$\sum_{c \neq c(i)} ShareOrbisLinks_{i,c} \times \widetilde{CountryRisk}^{NHQ}_{c,t}$ *(std.)*		–0.004	0.011		
		(0.088)	(0.087)		
$\sum_{c \neq c(i)} SegmentSale_{i,c} \times \widetilde{CountryRisk}^{NHQ}_{c,t}$ *(std)*				–0.020	–0.013
				(0.029)	(0.030)
R^2	0.525	0.524	0.525	0.524	0.525
N	73,771	73,771	73,771	73,771	73,771
	Δ log(*employment*$_{i,t}$)				
	(1)	(2)	(3)	(4)	(5)
$ForeignRisk^*_{i,t}$ *(std)*	–0.011***		–0.011***		–0.011***
	(0.002)		(0.002)		(0.002)
$\sum_{c \neq c(i)} ShareOrbisLinks_{i,c} \times \widetilde{CountryRisk}^{NHQ}_{c,t}$ *(std.)*		–0.022	–0.019		
		(0.016)	(0.016)		
$\sum_{c \neq c(i)} SegmentSale_{i,c} \times \widetilde{CountryRisk}^{NHQ}_{c,t}$ *(std)*				–0.004	–0.003
				(0.005)	(0.004)
R^2	0.244	0.243	0.244	0.243	0.244
N	69,509	69,509	69,509	69,509	69,509
Year FE	n/a	n/a	n/a	yes	yes
Firm FE	yes	yes	yes	yes	yes
Country×Year FE	yes	yes	yes	n/a	n/a

Notes: This table shows coefficient estimates and standard errors from regressions at the firm-year level. $\sum_{c \neq c(i)} \mathbb{1}(ShareOrbisLinks_{i,c}) \times \widetilde{CountryRisk}^{NHQ}_{c,t}$ *(std.)* is defined similarly as $ForeignRisk^*_{i,t} := \sum_{c \neq c(i)} CountryExposure_{i,c,t} \times \widetilde{CountryRisk}^{NHQ}_{c,t}$ but with $\mathbb{1}(ShareOrbisLinks_{i,c})$ replacing $CountryExposure_{i,c,t}$, where $\mathbb{1}(ShareOrbisLinks_{i,c})$ is firm i's equal-weighted share in country c of its subsidiaries in any country. $\sum_{c \neq c(i)} \mathbb{1}(SegmentSale_{i,c}) \times \widetilde{CountryRisk}^{NHQ}_{c,t}$ *(std.)* is defined analogously but instead of a dummy it uses the average sales (in USD) of firm i to country c. The remaining variables are defined as in Table 3. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 10: Top five origins and destinations of transmission risk for selected countries

Firms headquartered in	Worry most about	Firms that worry about	Are headquartered in
United States	China	China	Hong Kong
	Canada		Singapore
	Mexico		Taiwan
	Japan		South Korea
	Brazil		Japan
Canada	United States	Greece	Belgium
	China		Austria
	Mexico		Italy
	Australia		Spain
	United Kingdom		France
United Kingdom	Ireland	Russia	Finland
	China		Austria
	United States		Turkey
	Australia		Denmark
	Spain		Italy
Australia	New Zealand	Brazil	Chile
	China		Spain
	United Kingdom		Mexico
	United States		Norway
	Singapore		France
China	Hong Kong	Turkey	Greece
	United States		Austria
	Japan		Italy
	Taiwan		Russia
	Thailand		South Korea
India	China	United Kingdom	Ireland
	United Kingdom		Australia
	United States		France
	Brazil		Sweden
	South Africa		Denmark
Japan	China	Argentina	Chile
	Thailand		Spain
	United States		Mexico
	Indonesia		Brazil
	India		Italy
Germany	China	Egypt	Greece
	Russia		Turkey
	United States		Italy
	Spain		France
	Turkey		Netherlands
Sweden	Norway	Iran	Turkey
	China		Russia
	Russia		South Africa
	Poland		Japan
	United States		Greece
Brazil	China	Japan	South Korea
	Argentina		Hong Kong
	Mexico		Israel
	Colombia		Singapore
	United States		China

Notes: This table lists for ten countries where firms are headquartered (column 1), the top five countries those firms worry most about (column 2); it also lists for ten countries that firms worry about (column 3), the top five countries those firms are headquartered (column 4). The countries in columns 1 and 3 are hand selected from the countries where most firms are headquartered and from the countries with most crises in Table 2, respectively. The rankings in columns 2 and 4 are based on averaging the relevant components in the sum of $ForeignRisk^{*}_{i,t} := \sum_{c \neq c(i)} CountryExposure_{i,c,t} \times \widetilde{CountryRisk}^{NHQ}_{c,t}$ for country-country pairs, and sorting the resulting lists. For example, for country-country pair $(c(i), c)$, we take the average over all firms headquartered in country $c(i)$ of the relevant components about country c: $(1/N_{c(i)}) \sum_{i \in c(i), c=c} CountryExposure_{i,c,t} \times \widetilde{CountryRisk}^{NHQ}_{c,t}$.

Table 11: Top five origins of transmission risk for ten selected US sectors

Firms in US sector	Worry most about	S&P 500 firm in sector with highest worry
Basic Materials	China	Celanese Corp (Chemicals)
	Brazil	Mosaic Co (Chemicals)
	Canada	Dow Inc (Chemicals)
	Mexico	WRKCO Inc (Applied Resources)
	Turkey	Nucor Corp (Mineral Resources)
Consumer Cyclicals	China	Yum! Brands Inc (Cyclical Consumer Services)
	Canada	TJX Companies Inc (Retailers)
	Mexico	Autozone Inc (Retailers)
	Japan	Tapestry Inc (Retailers)
	Brazil	Whirlpool Corp (Cyclical Consumer Products)
Consumer Non-Cyclicals	Canada	Molson Coors Brewing Co (Food & Beverages)
	China	Estee Lauder Companies Inc (Personal & Household Products & Services)
	Mexico	Walmart Inc (Food & Drug Retailing)
	Brazil	Corteva Inc (Food & Beverages)
	Russia	Philip Morris International Inc (Food & Beverages)
Energy	Canada	Devon Energy Corp
	Mexico	Concho Resources Inc
	Nigeria	Exxon Mobil Corp
	Saudi Arabia	Valero Energy Corp
	Brazil	National Oilwell Varco Inc
Financials and Real Estate	Canada	Kimco Realty Corp (Real Estate)
	United Kingdom	Unum Group (Insurance)
	China	Weyerhaeuser Co (Real Estate)
	Greece	State Street Corp (Banking & Investment Services)
	New Zealand	Arthur J Gallagher & Co (Insurance)
Healthcare	Japan	Edwards Lifesciences Corp (Healthcare Services & Equipment)
	China	Agilent Technologies Inc (Healthcare Services & Equipment)
	Canada	Laboratory Corporation of America Holdings (Healthcare Services & Equipment)
	United Kingdom	Cerner Corp (Healthcare Services & Equipment)
	Ireland	West Pharmaceutical Services Inc (Healthcare Services & Equipment)
Industrials	China	A. O. Smith Corp (Industrial Goods)
	Canada	W W Grainger Inc (Industrial Goods)
	Mexico	Kansas City Southern (Transportation)
	Brazil	Fleetcor Technologies Inc (Industrial & Commercial Services)
	Australia	L3Harris Technologies Inc (Industrial Goods)
Technology	China	Qorvo Inc (Technology Equipment)
	Japan	F5 Networks Inc (Software & IT Services)
	Canada	CDW Corp (Software & IT Services)
	United Kingdom	CDW Corp (Software & IT Services)
	Philippines	Maxim Integrated Products Inc (Technology Equipment)
Utilities	Canada	NiSource Inc
	Mexico	Sempra Energy
	United Kingdom	PPL Corp
	Pakistan	Atmos Energy Corp
	New Zealand	Ameren Corp

Notes: This table lists for for nine US sectors (column 1) the country they worry most about (column 2), and the S&P firm in that sector with the highest worry (column 3). The ranking in column 2 is based on averaging the relevant components in the sum for $\mathit{ForeignRisk}^{*}_{i,t} := \sum_{c \neq c(i)} \mathit{CountryExposure}_{i,c,t} \times \widetilde{\mathit{CountryRisk}}^{NHQ}_{c,t}$ for sector-country pairs, and sorting the resulting countries for a given sector. For example, for sector-country pair (s, c), we take the average over all firms in sector s of the relevant components about country c: $(1/N_{i \in s}) \sum_{i \in s, c=c} \mathit{CountryExposure}_{i,c,t} \times \widetilde{\mathit{CountryRisk}}_{c,t}$. The firm with the highest worry in column 3 is obtained similarly. The sector classification is from Thomson Eikon.

Table 12: Properties of Transmission Risk

Where, what, and when	Intercept	Slope	R^2
China			
Risk of downturn (2012q3-12q4)	0.11** (0.05)	1.20*** (0.03)	0.979
Economic uncertainty (2015q3-16q1)	−0.14 (0.11)	1.72*** (0.07)	0.951
US-China trade dispute (2018q4-19q3)	0.12 (0.10)	1.42*** (0.06)	0.935
Start of Coronavirus outbreak (2020q1)	0.70*** (0.17)	2.10*** (0.10)	0.918
Turkey			
FX volatility (2016q1)	0.14 (0.12)	1.04*** (0.14)	0.617
Attempted coup against Erdogan (2016q3)	0.27 (0.22)	1.41*** (0.24)	0.504
Currency and debt crisis (2018q4-19q1)	−0.23 (0.18)	1.76*** (0.20)	0.669
FX volatility (2019q4, 2020q4)	0.20** (0.09)	0.88*** (0.10)	0.667
Greece			
Sovereign debt crisis, first bailout (2010q2)	−1.41*** (0.29)	3.39*** (0.34)	0.779
Sovereign debt crisis, second bailout (2011q1-12q3)	−0.60*** (0.20)	2.03*** (0.22)	0.719
Grexit referendum, third bailout (2015q3)	−0.19 (0.21)	2.06*** (0.24)	0.687
Brazil			
Deep recession, political turmoil (2015q1-16q2)	−0.20** (0.08)	1.58*** (0.07)	0.934
Spain			
European sovereign debt crisis, elections (2011q4)	−0.26*** (0.08)	1.50*** (0.08)	0.913
Rising government yields, bailout (2012q3)	−0.49*** (0.10)	1.81*** (0.11)	0.896
United Kingdom			
Brexit referendum (2016q3-16q4)	0.03 (0.10)	1.46*** (0.10)	0.873
Risk of no-deal Brexit, general election, Brexit (2019q1-20q1)	0.08 (0.07)	1.15*** (0.07)	0.882
Ireland			
European sovereign debt crisis (2011q4)	−0.02 (0.07)	1.09*** (0.07)	0.876
Brexit (2020q1)	0.15* (0.09)	0.99*** (0.09)	0.756
Russia			
Economic uncertainty (2011q4)	−0.00 (0.10)	1.19*** (0.10)	0.826
Oil price drop, Crimean crisis, economic crisis (2014q3-15q3)	−0.62*** (0.12)	2.39*** (0.12)	0.926
Thailand			
Flood disaster (2011q4-12q1)	−1.39*** (0.34)	3.57*** (0.40)	0.724
Coup d'état by military (2014q3)	−0.17* (0.09)	1.55*** (0.11)	0.860
United States			
Lehman; start of GFC (2008q1-09q2)	0.61*** (0.21)	0.95*** (0.13)	0.636
S&P downgrade; uncertainty about fiscal policy (2011q3-q4)	0.08 (0.15)	1.03*** (0.10)	0.796
Egypt			
Egyptian revolution (2011q1)	−1.26*** (0.13)	3.22*** (0.17)	0.920
Hong Kong			
Protests against extradition bill (2019q3-20q1)	−0.22*** (0.05)	1.47*** (0.05)	0.949
Iran			
Green Revolution (2012q1)	0.01 (0.12)	1.21*** (0.18)	0.596
Italy			
European sovereign debt crisis (2011q4)	−0.11* (0.06)	1.24*** (0.08)	0.897
Japan			
Fukushima disaster (2011q2-11q3)	0.33 (0.49)	1.88*** (0.50)	0.322
Mexico			
Trump, trade risks (2017q1)	0.02 (0.12)	1.44*** (0.12)	0.803
Poland			
Coocurrence of local concerns (2020q1)	0.19*** (0.05)	0.79*** (0.06)	0.802

Notes: This table shows for each of the crises defined in Figure 2 the intercept (s.e.), slope (s.e.), and R2 from the regression (defined in (5.2))

$$TransmissionRisk_{o\to d,\tau} = \alpha_{o,\tau} + \beta_{o,\tau}\overline{TransmissionRisk}_{o\to d,t\notin S^c} + \epsilon_{o\to d,\tau}, \quad (12)$$

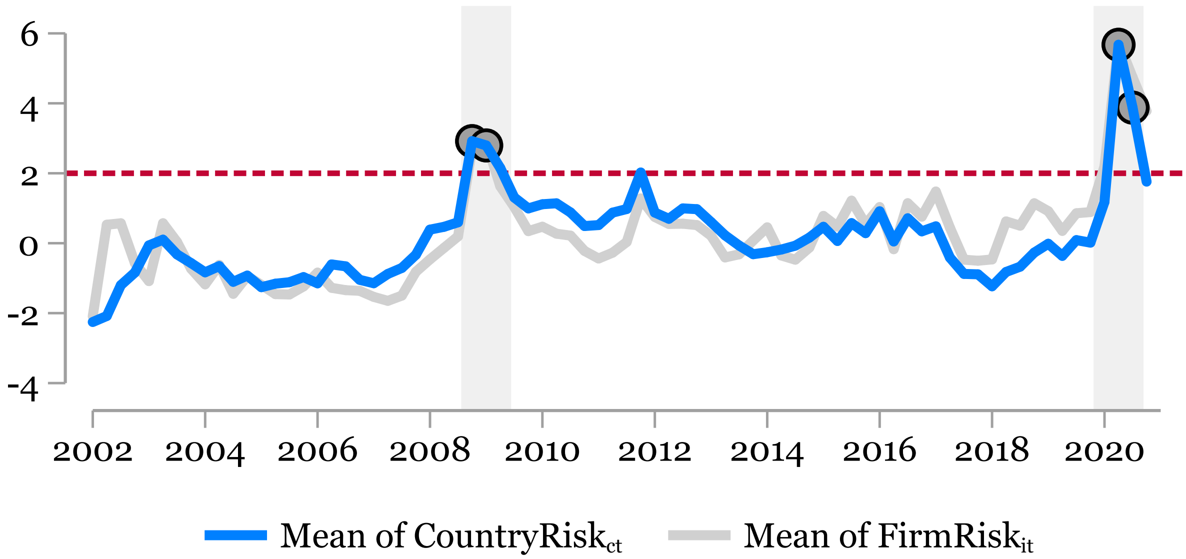
where $TransmissionRisk_{o\to d,\tau}$ is the average transmission of risk from o as perceived by firms in d at time τ, and $\overline{TransmissionRisk}_{o\to d,t\notin S^c}$ is defined similarly but over all τ that are not a crisis, as defined in (4) and (5).

Table 13: Country Risk and Spot Exchange Rates

	$\Delta\log(Spot\ rate_{c,t})$				
	(1)	(2)	(3)	(4)	(5)
$\Delta\log(CountryRisk_{c,t}\ (std.))$	–0.133***	–0.062**	–0.063**	–0.053**	–0.066**
	(0.025)	(0.027)	(0.024)	(0.024)	(0.029)
$\Delta\log(GlobalRisk_{c,t})$		–0.262***			
		(0.059)			
$\Delta\log(CountrySentiment_{c,t}\ (std.))$				0.041*	
				(0.021)	
$\widehat{\beta}_c * \Delta\log(GlobalRisk_t)$					0.130
					(0.315)
R^2	0.151	0.156	0.214	0.214	0.214
N	2,556	2,556	2,556	2,554	2,556
Country FE	yes	yes	yes	yes	yes
Year-quarter FE	no	no	yes	yes	yes

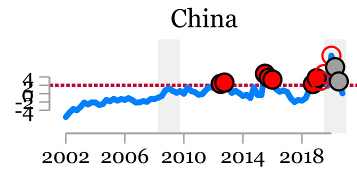
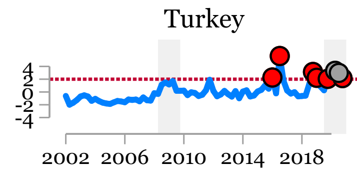
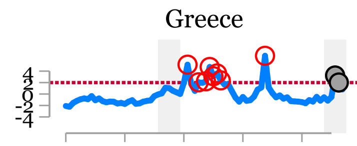
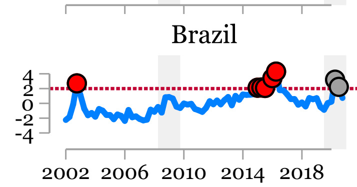
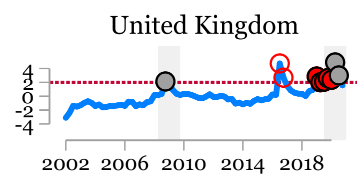
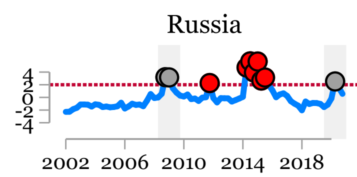
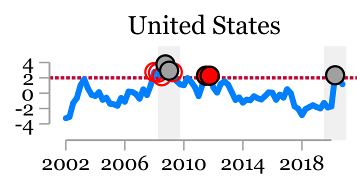
Notes: This table shows coefficient estimates and standard errors from regressions at the country-quarter level. All variables are defined as in Table 3. Standard errors are clustered at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Figure 1: Time series of $GlobalRisk_t$



Notes: This figure shows the time series of $GlobalRisk_t$ defined as the mean of $CountryRisk_{c,t}$. Marked in gray are the quarters above two standard deviations (the red horizontal dashed line), which we define as global crises. For each t, $GlobalRisk_t$ is defined as the average across all countries of $CountryRisk_{c,t}$. The coefficients are standardized to have mean zero and standard deviation one for 2002q1-2019q4. NBER-based recession quarters are shaded in grey.

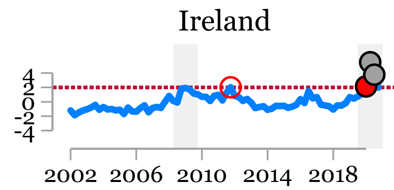
Figure 2: Identifying country crises

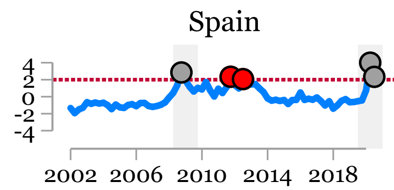
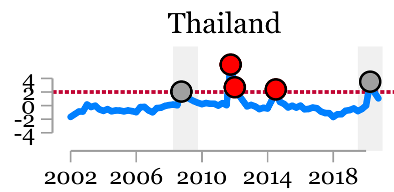
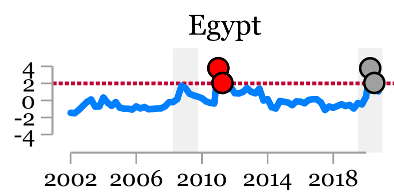
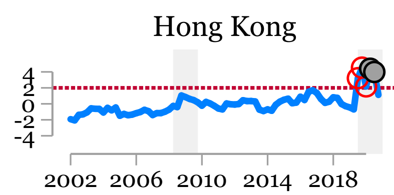
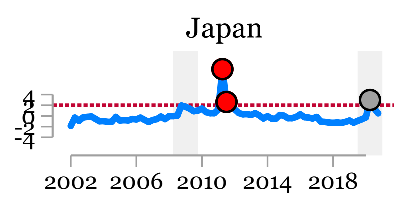
Where and when	Description	Time series
China		
2012q3-q4	Risk of downturn	
2015q3-16q1	Economic uncertainty, equity market volatility	
2018q4-19q3	US-China trade dispute	
2020q1	Start of Coronavirus outbreak	
Turkey		
2016q1	FX volatility	
2016q3	Attempted coup against Erdogan	
2018q4-19q1	Currency and debt crisis	
2019q4, 2020q4	FX volatility	
Greece		
2010q2	Sovereign debt crisis, first bailout	
2011q1-12q3	Sovereign debt crisis, second bailout	
2015q3	Grexit referendum, third bailout	
Brazil		
2002q4	Political uncertainty from elections, economic crisis	
2015q1-16q2	Deep recession, political turmoil	
Great Britain		
2016q3-q4	Brexit referendum	
2019q1-20q1	Risk of no-deal Brexit, general election, Brexit	
Russia		
2011q4	Economic uncertainty	
2014q2-15q3	Oil price drop, Crimean crisis, ruble devaluation, financial crisis	
United States		
2008q1-09q2	Lehman, start of GFC	
2011q3-q4	S&P downgrade, uncertainty about fiscal policy	

● Global crisis
● Local crisis
○ Local crisis with disproportionate rise among financials

Notes: This table describes and plots country crises based on $CountryRisk_{c,t}$ for the country indicated in column 1. A global crisis is defined as $GlobalRisk_t$ being above two standard deviations (see also Figure 1); a local crisis is defined as the country's $CountryRisk_{c,t}$ being above two standard deviations in the panel (the red horizontal dashed line); and a local crisis with disproportionate rise among financials is defined as a local crisis for which a dummy for financial firms is positive and statistically significant in a firm level regression on the crisis quarter with demeaned $CountryRisk_{i,c,t}$ as the outcome. For Greece, we assume that 2011q2, which is just below the threshold of two standard deviations, is nevertheless part of the crisis that started in 2011q1; similarly for 2015q4 and Brazil. The descriptions are based on reading the highest-ranking snippets from the 30 highest-ranking firms when sorted on Country Risk in the indicated time period.

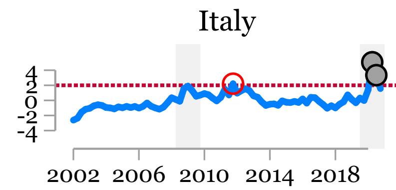
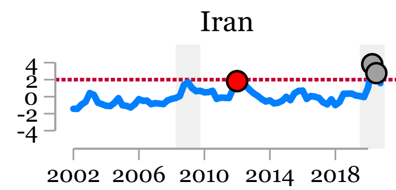
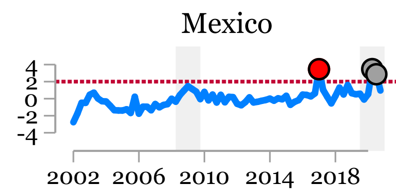
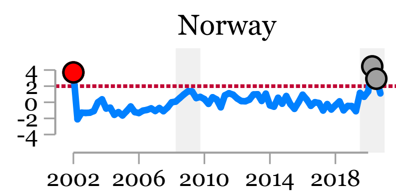
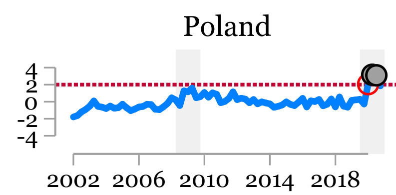
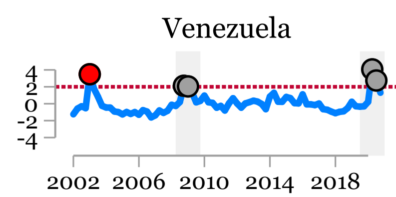
Figure 2: Identifying country crises (continued)

<table>
<tr><th>Where and when</th><th>Description</th><th>Time series</th></tr>
<tr><td>Ireland
2011q4
2020q1</td><td>
European sovereign debt crisis
Brexit</td><td></td></tr>
<tr><td>Spain
2011q4

2012q3</td><td>
European sovereign debt crisis; elections
Rising government yields; bailout</td><td></td></tr>
<tr><td>Thailand
2011q4-12q1
2014q3</td><td>
Flood disaster
Coup d’état by military</td><td></td></tr>
<tr><td>Egypt
2011q1</td><td>
Egyptian revolution</td><td></td></tr>
<tr><td>Hong Kong
2019q3-20q1</td><td>
Protests against bill allowing extradition to China</td><td></td></tr>
<tr><td>Japan
2011q2-q3</td><td>
Fukushima disaster</td><td></td></tr>
</table>

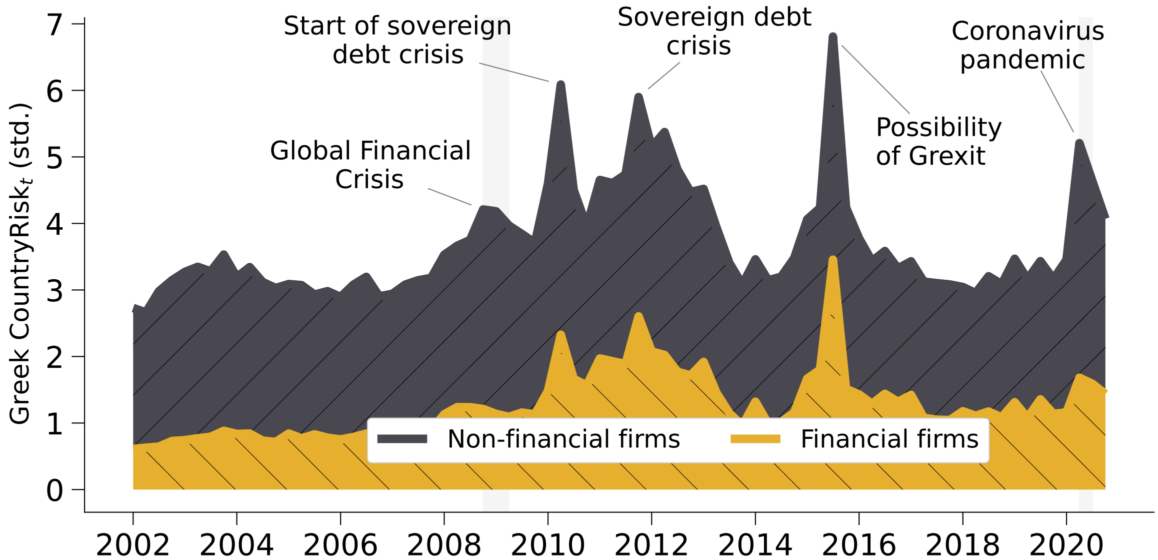
● Global crisis
● Local crisis
○ Local crisis with disproportionate rise among financials

Figure 2: Identifying country crises (continued)

Where and when	Description	Time series
Italy		
2011q4	European sovereign debt crisis	
Iran		
2012q1	Green Revolution	
Mexico		
2017q1	Trump; trade risks	
Norway		
2002q1	Cooccurrence of local concerns	
Poland		
2020q1	Coocurrence of local concerns	
Venezuela		
2003q1	Aftermath of oil strike	

● Global crisis
● Local crisis
○ Local crisis with disproportionate rise among financials

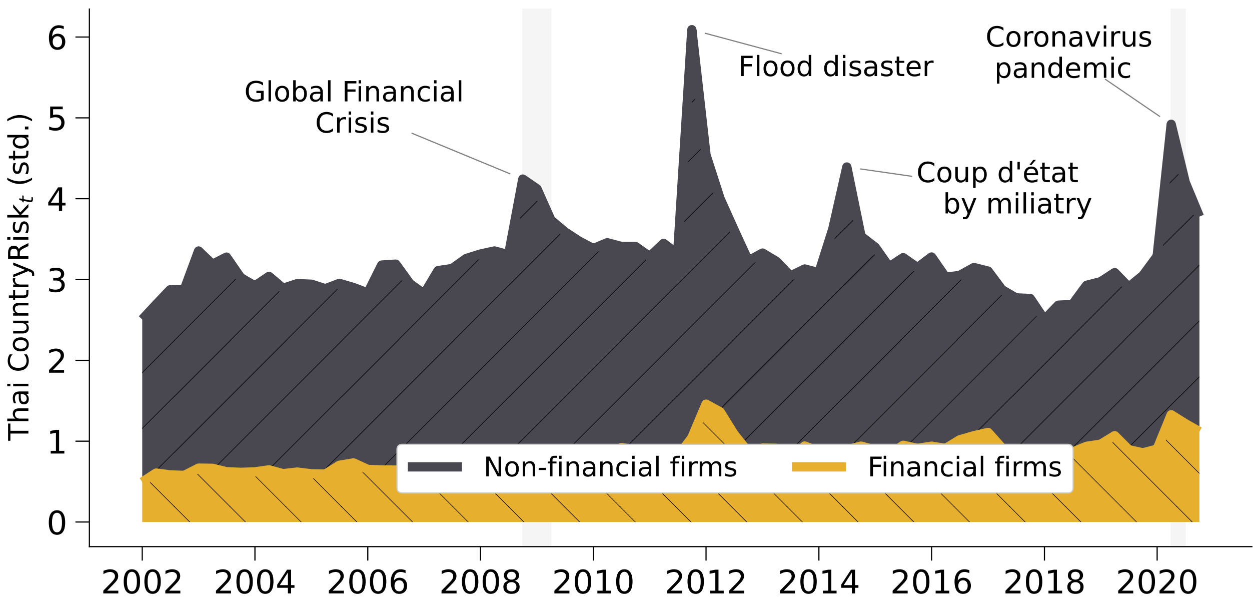
Figure 3: Time series of Greek Country Risk



Summary	Example text excerpts from high-impact snippets
Possiblity of Grexit (2015q3)	“[...] concern related to the possible impact of a Greek eurozone exit has led to persistent volatility in currencies [...]” (BlackRock Inc, July 15, 2015) “[...] we operate in Europe despite the uncertainties you know notably in Greece we are gradually witnessing a gradual acceleration in economic activity [...]” (Societe Generale SA, August 5, 2015)
Start of sovereign debt crisis (2010q2)	“Continued concerns about default risk in Greece and other countries in Europe will only cause more volatility [...]” (Eagle Rock Energy Partners LP, May 6, 2010) “[...] of exposure to banking and sovereign risk in Greece, Italy, Spain, Portugal, and Ireland combined [...]” (National Bank of Canada, May 28, 2010)
Sovereign debt crisis (2011q4)	“[...] the European sovereign debt crisis and the likelihood of a Greek default It is critical that a concerted effort is carried out [...]” (Bankinter SA, October 21, 2011) “[...] ’sovereign debt crisis producing gutwrenching market gyrations The threat of a Greek Spain and Italy default European Bank recapitalizations and financial contagion [...]” (Pzena Investment Management Inc, Oct 26, 2011)

Notes: This figure plots the time series of Greek $CountryRisk_{c,t}$ as defined in equation (2) but decomposed into Country Risk as perceived by non-financial and financial firms, respectively. The latter are firms whose four-digit SIC code is in 6000−6800. The text excerpts are selected from the highest-ranking snippets among all snippets from the top 30 highest-ranked firms when sorted on Country Risk for Greece.

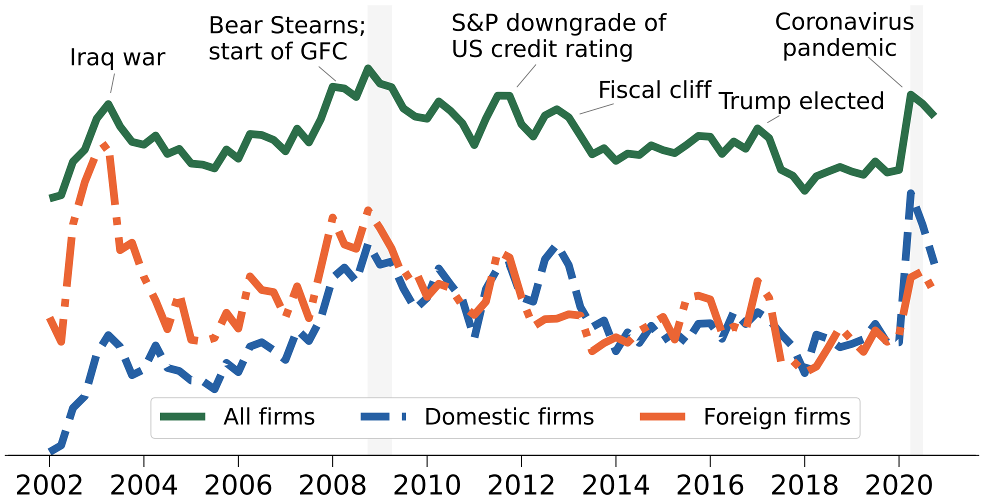
Figure 4: Time series of Thai Country Risk



Summary	Example text excerpts from high-impact snippets
Flood disaster (2011q4-12q1)	"[...] follow the disk drive industry know the ((severe)) flooding in Thailand has created substantial ((disruption)) and uncertainty for the entire hard disk [...] (Hutchinson Technology Inc; November 1, 2011) "[...] about the potential credit impacts of the unfortunate events in Thailand At Scotia Capital I can (assure) you that the variable compensation [...]" (Bank of Nova Scotia; December 2, 2011) "[...] risk of supply constraints resulting from the recent flooding in Thailand Working capital decreased by approximately million to million during the first [...] (March Networks Corp, December 9, 2011)
Coup d'ètat by military (2014q3)	"[...] which accounts for a major proportion of our sales In Thailand sales volume decreased due to political instability following the coup detat [...]" (Mitsubishi Motors Corp; July 30, 2014) "[...] sales and margins However JECs joint venture with Trane in Thailand was negatively affected by the political uncertainty there that has led [...]" (Jardine Matheson Holdings Ltd; August 3, 2014) "[...] the BRICs was offset by losses in other countries including Thailand which was pressured by geopolitical risk On a yeartodate basis we [...] (International Flavors & Fragrances Inc)

Notes: This figure plots the time series of Thai $CountryRisk_{c,t}$ as defined in equation (2) but decomposed into Country Risk as perceived by non-financial and financial firms, respectively. The latter are firms whose four-digit SIC code is in 6000−6800. The text excerpts are selected from the highest-ranking snippets among all snippets from the top 30 highest-ranked firms when sorted on Country Risk for Thailand.

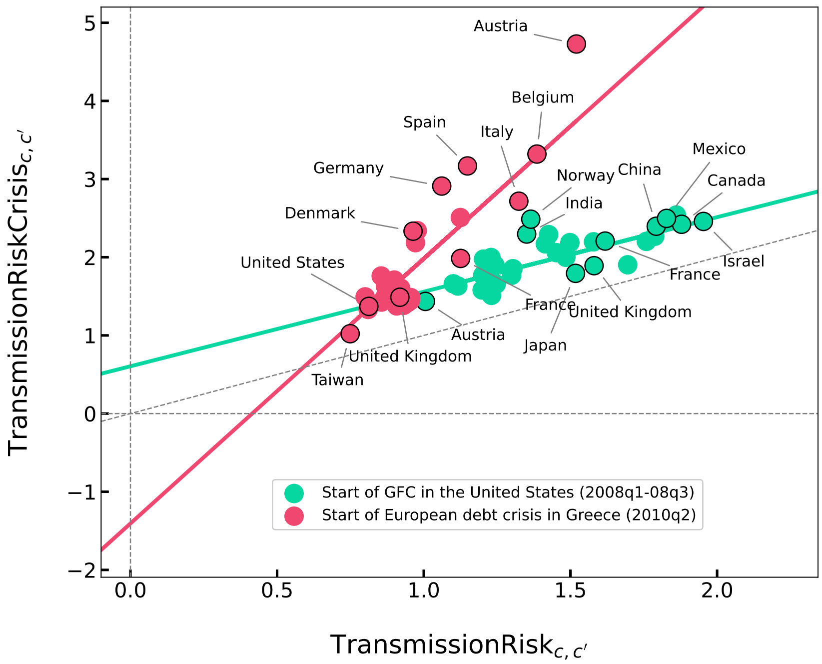
Figure 5: Time series of United States' Country Risk



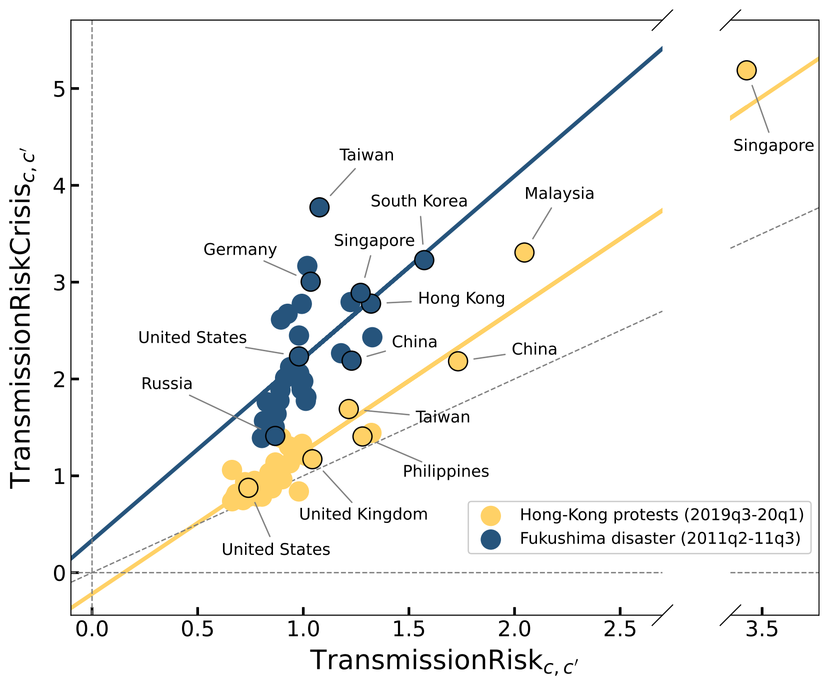
Summary	Example text excerpts from high-impact snippets
Iraq war (2003q1)	"[...] the US and other parts of the world and related US military action overseas For further descriptions of these risks and uncertainties [...]" (Charles River Laboratories International Inc, February 4, 2003) "[...] 'experiencing in the capital markets the slower recovery in the US and the geopolitical uncertainty Turning to slide three youll see we [...]" (Bank of Montreal, February 25, 2003)
Great Financial Crisis (2008q1 onwards)	"[...] tightening of global credit markets The economic uncertainties in the US and the volatility in equity markets that has resulted from those [...]" (Canaccord Genuity Group Inc, February 7, 2008) "[...] uncertainties in growing economies including high oil prices inflation and US subprime financial crisis We may expect continued paucity of the market [...] (Samsung Electronics Co Lt, April 24, 2008)
S&P downgrade (2011q3)	"[...] recovering with uncertainty and instability Especially recently Standard Poors ((downgraded)) US credit rating from AAA to AA which resulted in stock market [...]" (PetroChina Co Ltd, August 25, 2011) "[...] macro uncertainty and particularly the fiscal uncertainty here in the US I was hoping you could comment on how if at all [...]" (Calamos Asset Management Inc, August 2, 2011)
Fiscal cliff (2012q4)	"[...]the US fiscal cliff and all the macros in the US coupled with EU uncertainty and coupled with maybe some growth uncertainty [...]" (Jefferies Group LLC, Dec. 18, 2012) "[...] fiscal cliff the challenges in the Eurozone the uncertainty of US tax policy and the unknown impact of the US elections all [...]" (Equity One Inc, Nov. 2, 2012)
Trump elected (2016q4)	"[...] the regulatory uncertainty around Affordable Care Act linked to the US election cycle as well as certain uncertainties around MA and enrollment [...]" (Syntel Inc, October 20, 2016) "[...] the overall state of the economic climate primarily in the US and the possibility of changing international trade policies worldwide Thank you [...]" (Collectors Universe Inc, February 2, 2017

Notes: This figure plots the time series of United States $CountryRisk_{c,t}$ as defined in equation (2), decomposed into Country Risk as perceived by all, domestic, and foreign firms, respectively. The text excerpts are selected from the highest-ranking snippets among all snippets from the top 30 highest-ranked firms when sorted on Country Risk for the United States.

Figure 6: Crisis Transmission



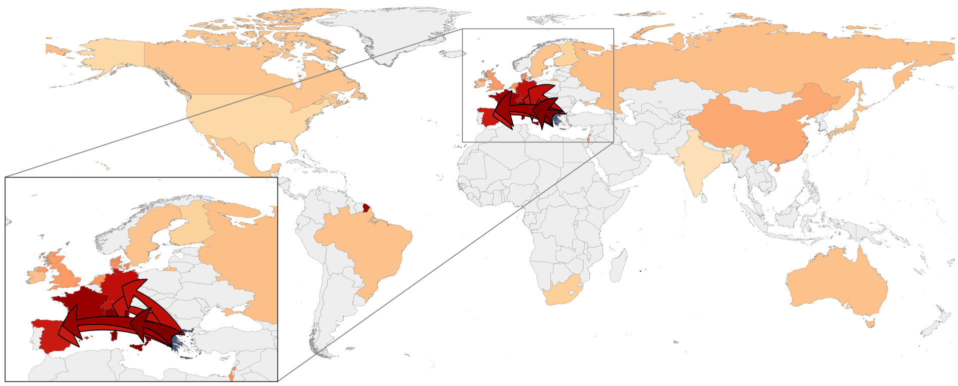
(a) Global Financial Crisis (US) and European sovereign debt crisis (Greece)



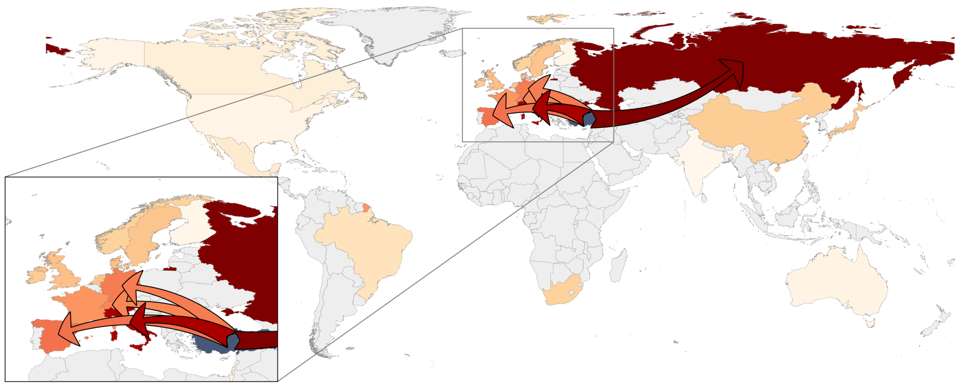
(b) Hong Kong protests (Hong Kong) and Fukushima disaster (Japan)

Notes: This figure illustrates four examples based on regressions defined in equation (5.2) and whose estimates we show in Table 12. Both panels plot $TransmissionRisk_{o\to d,\tau}$ against $\overline{TransmissionRisk}_{o\to d,t\notin S^c}$ together with the OLS prediction line for selected crisis episodes τ. The light grey dashed lines show the the two axes and the 45 degree line.

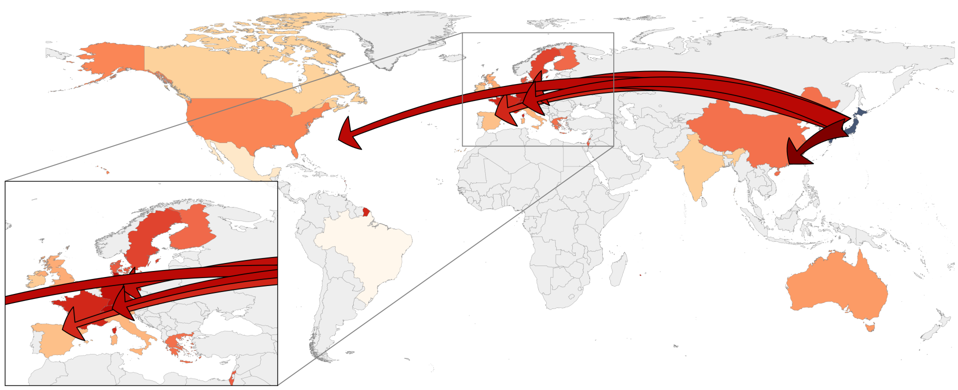
Figure 7: Country Risk transmitted through firm exposures: Three examples



(a) Greek crisis (2010-2012)



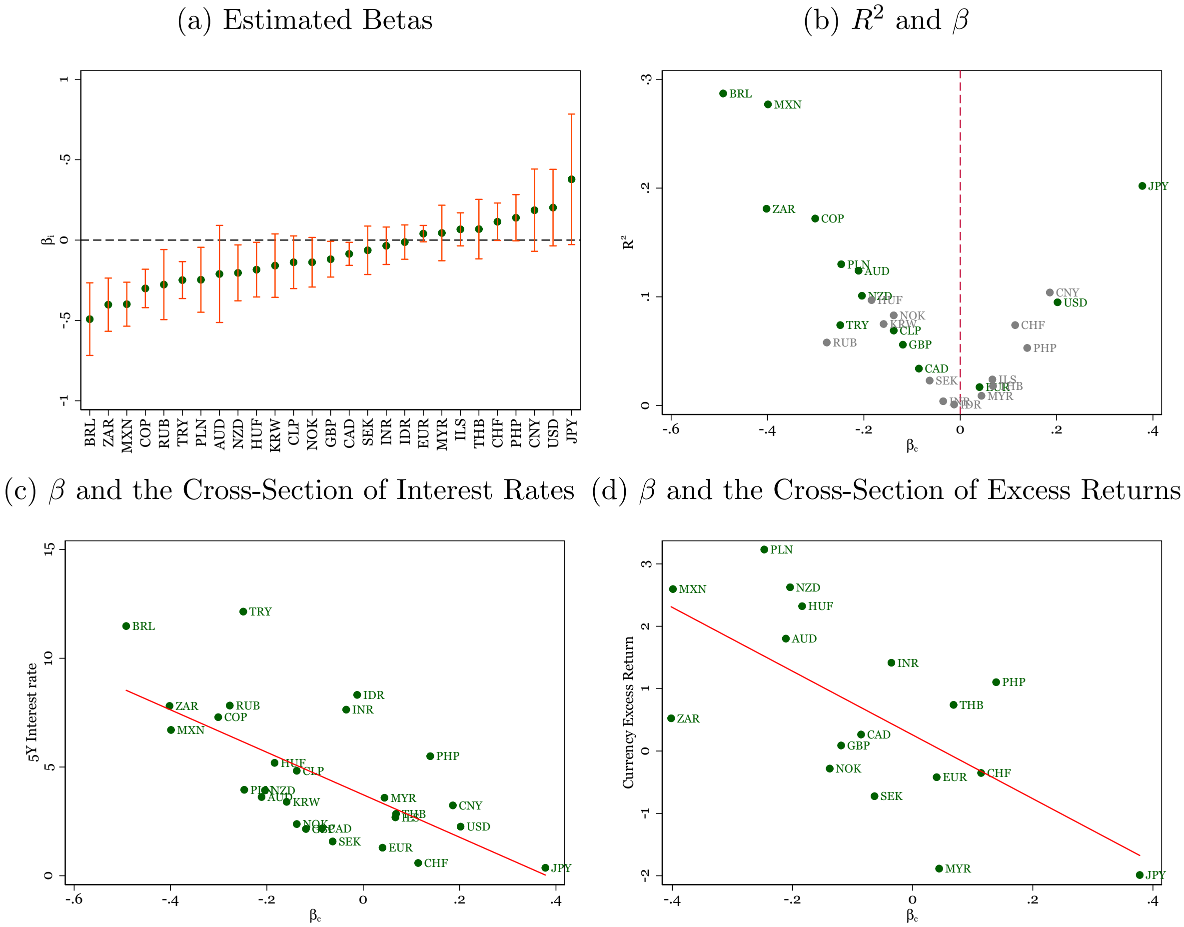
(b) Turkish coup (2016)



(c) Fukushima disaster (2011)

Notes: This figure plots the countries in which firms have the highest average $TransmissionRisk_{i,t}$ during the following three crisis episodes selected from Table 2: the Greek crisis in 2010-2012, the Turkish coup in 2016, and the Fukushima disaster in 2011. We also plot arrows to the top 5 countries with firms that have the highest average $TransmissionRisk_{i,t}$. For the Greek crisis, these are Italy, France, Germany, Switzerland, and Spain; for the Turkish coup, these are Russia, Italy, Spain, Germany, and Switzerland; and for the Fukushima disaster these are Hong Kong, Switzerland, Bermuda, Germany, and France. Darker colors indicate higher $TransmissionRisk_{i,t}$. Countries in grey indicate that we do not have > 25 firms headquartered in that country during the episode.

Figure 8: Exchange Rates and Global Risk: Equal-Weighted Broad Exchange Rate



Notes: This figure plots the coefficient β_i for regressions of the form

$$\Delta e^B_{i,t} = \alpha_i + \beta_i \Delta \log GlobalRisk_t + \epsilon_{i,t}$$

against a number of variables. Panel (a) reports the point estimates and two standard error bands. Panel (b) plots the point estimates of β_i on the x-axis and the R^2 of the regression on the y-axis . The dashed vertical line denotes $\beta_i = 0$. If a marker is in gray, it indicates that on average over the sample period, the exchange rate was less flexible than a "managed float" in the Ilzetzki et al. (2019) classification. Panel (c) plots the β_i against the average 5-year government nominal interest rates from Du et al. (2018). Panel (d) plots the β_i against the average excess return against the USD from Hassan and Zhang (2020).

Appendix

Appendix Table 1: Number of firms linked to countries

Country	HQ	Sales	Country	HQ	Sales
United States	6,457	1,319	New Zealand	51	85
Canada	885	886	Taiwan	49	179
United Kingdom	528	990	South Korea	45	233
Australia	401	385	Belgium	41	120
China	325	738	Greece	40	27
India	299	193	Chile	31	88
Japan	227	595	Poland	30	86
Germany	214	698	Turkey	27	61
Sweden	178	118	Thailand	23	74
Brazil	168	272	Malaysia	21	112
France	158	405	Argentina	20	94
Switzerland	120	145	Indonesia	18	66
Hong Kong	112	113	Philippines	18	61
Israel	108	74	Colombia	16	67
Italy	105	247	Nigeria	14	29
Netherlands	102	207	Egypt	8	28
Mexico	96	308	Czech Republic	6	57
South Africa	94	96	Hungary	4	40
Norway	89	102	Pakistan	3	8
Ireland	73	90	Saudi Arabia	2	31
Spain	73	199	Venezuela	2	36
Russia	53	101	Iran	0	0
Singapore	52	208			

Notes: This table shows for the 45 countries for which we have text-based measures of country exposure, risk and sentiment and the number of firms that are headquartered in the country (column 1) or report part of their sales to the country (column 2). The headquarter of a firm is from Compustat and based on the `loc` variable and sales are from the Worldscope segment data.

Appendix Table 2: Top 100 risk synonyms

Synonym	Frequency	Synonym	Frequency
risk	3,839,353	skepticism	8,674
risks	1,033,976	unresolved	8,461
uncertainty	921,751	jeopardy	6,761
variable	816,649	risking	6,414
uncertainties	549,476	suspicion	6,359
possibility	484,545	hesitating	4,354
pending	426,103	halting	4,334
uncertain	382,217	peril	4,259
chance	360,536	risked	4,126
doubt	285,218	unreliable	3,971
prospect	211,168	insecurity	3,105
exposed	176,667	undetermined	3,092
variability	175,526	apprehension	2,881
likelihood	159,348	undecided	2,715
threat	133,385	wager	2,678
probability	132,931	precarious	2,577
bet	110,781	torn	2,563
varying	85,282	unsafe	2,470
unknown	83,956	unforeseeable	2,305
unclear	75,460	debatable	2,178
doubtful	74,169	wavering	1,798
unpredictable	67,065	riskiest	1,788
speculative	58,116	dicey	1,764
fear	51,378	endanger	1,547
hesitant	47,043	faltering	1,530
reservation	47,003	changeable	1,527
risky	44,332	indecision	1,505
sticky	39,321	hazy	1,476
instability	36,955	iffy	1,269
tricky	33,849	ambivalent	1,255
dangerous	26,551	riskiness	1,248
tentative	26,126	insecure	1,189
fluctuating	26,070	oscillating	1,075
gamble	22,149	quandary	1,022
hazardous	21,836	dubious	957
hazard	21,580	hairy	884
queries	20,899	treacherous	753
danger	18,695	unreliability	626
unstable	18,396	perilous	565
erratic	14,325	tentativeness	479
vague	14,030	chancy	461
unpredictability	13,853	wariness	439
query	13,559	vagueness	375
unsettled	12,563	dodgy	318
jeopardize	12,528	indecisive	262
riskier	11,650	menace	239
irregular	10,161	equivocation	224
dilemma	9,660	vacillating	198
hesitancy	9,342	imperil	191
unsure	8,715	vacillation	159

Notes: This table lists the top 100 synonyms of risk, risky, uncertain, and uncertainty sorted by their frequency in the earnings call transcripts in 2002-2019. The synonyms are taken from the Oxford Dictionary.

Appendix Table 3: Top 100 positive and negative sentiment words

Positive	Frequency	Positive	Frequency	Negative	Frequency	Negative	Frequency
strong	17,221,419	enable	886,239	loss	6,235,657	discontinued	487,232
good	16,375,745	encouraged	884,693	decline	6,154,079	unfavorable	479,038
better	7,991,201	achieving	796,439	negative	3,647,119	unfortunately	453,610
positive	7,751,315	strengthen	784,057	restructuring	2,684,909	volatile	453,414
opportunities	7,192,361	tremendous	779,182	against	2,659,956	nonperforming	437,280
able	6,702,060	exciting	744,928	difficult	2,659,392	adverse	429,524
improvement	6,673,141	strengthening	715,638	losses	2,556,652	closure	411,024
great	6,563,803	enhanced	708,264	declined	2,545,940	recession	395,192
improved	5,348,573	innovative	699,642	closed	1,726,966	disclose	378,916
progress	5,029,603	encouraging	688,923	late	1,709,514	slowing	378,514
opportunity	4,914,614	gaining	575,582	challenging	1,584,998	missed	370,918
benefit	4,543,771	easy	570,340	challenges	1,574,903	slowed	368,101
improve	4,378,622	stability	541,004	closing	1,507,678	lag	357,819
pleased	3,884,671	exceptional	528,189	force	1,318,218	termination	352,703
profitability	3,607,335	strongest	511,179	critical	1,170,235	bridge	351,936
best	3,544,899	collaboration	504,330	volatility	1,158,349	disruption	343,899
despite	2,824,225	positively	480,821	declines	1,061,590	worse	340,022
improving	2,764,809	impressive	455,572	weak	1,052,269	lose	333,493
effective	2,744,475	easier	453,072	impairment	1,034,395	severe	332,344
strength	2,675,074	enabled	440,147	slow	1,010,332	stress	325,392
success	2,638,992	excellence	431,839	recall	947,283	downward	322,255
gain	2,598,697	progressing	430,567	concerned	946,866	deterioration	317,373
gains	2,569,678	strengthened	422,980	bad	907,228	chargeoffs	298,441
greater	2,481,712	benefiting	412,070	claims	900,164	doubt	285,218
stable	2,436,356	superior	409,739	break	873,699	unemployment	283,048
improvements	2,424,249	gained	409,422	lost	821,492	shut	282,167
successful	2,410,367	winning	394,088	weakness	806,320	drag	281,006
achieved	2,372,811	exclusive	388,657	negatively	803,988	losing	280,300
achieve	2,357,358	enhancing	376,798	problem	786,382	wrong	274,826
confident	2,328,839	advantages	373,082	challenge	773,386	closures	265,476
efficiency	2,208,954	perfect	357,260	weaker	764,882	opportunistic	254,129
favorable	2,026,078	efficiently	351,828	slowdown	738,435	difficulties	249,851
stronger	2,016,286	stabilized	351,444	difficulty	738,121	slowly	248,400
leading	1,984,440	enables	350,678	slower	735,585	impairments	247,091
advantage	1,842,244	satisfaction	350,091	cut	734,201	challenged	238,877
profitable	1,702,117	valuable	349,853	declining	730,136	poor	235,879
attractive	1,556,455	enabling	336,446	litigation	685,502	absence	235,696
innovation	1,391,174	alliance	316,024	crisis	680,481	serious	230,349
leadership	1,387,836	stabilize	313,098	problems	616,975	shutdown	225,476
excited	1,374,945	rebound	307,477	delay	570,659	complicated	224,854
excellent	1,299,652	easily	287,979	downturn	563,302	bankruptcy	220,373
happy	1,258,276	favorably	280,433	opposed	563,195	divestiture	215,695
optimistic	1,215,776	enjoy	278,973	delays	562,781	attrition	215,068
highest	1,128,349	boost	268,376	dropped	549,988	shortfall	214,061
efficiencies	1,087,947	satisfied	266,476	disclosed	535,594	weakening	213,005
efficient	1,086,825	enhancements	264,166	concern	522,931	disappointing	211,210
enhance	1,078,709	achievement	261,148	lack	515,471	erosion	210,240
successfully	1,048,883	improves	259,611	breakdown	510,491	caution	208,764
benefited	928,965	accomplished	258,083	delayed	508,852	broken	206,668
win	904,122	strengths	252,403	concerns	489,061	writeoff	203,273

Notes: This table lists the top 100 positive (columns 1-4) and negative (columns 5-8) tone words sorted by their frequency in the earnings call transcripts in 2002-2019. The tone words are from Loughran and McDonald (2011).

Appendix Table 4: Comparison with WUI and EPU

	Total inflows$_{c,t}$ (%)				
	(1)	(2)	(3)	(4)	(5)
CountryRisk$_{c,t}$ *(std.)*	–0.735***		–0.707***		–0.598***
	(0.155)		(0.155)		(0.179)
World uncertainty index$_{c,t}$ *(std.)*		–0.118**	–0.076		
		(0.057)	(0.054)		
EPU national$_{c,t}$ *(std.)*				–0.192*	–0.094
				(0.093)	(0.104)
R^2	0.253	0.241	0.254	0.370	0.382
N	2,792	2,792	2,792	1,455	1,455

	Δ *CDS spread*$_{c,t}$				
	(1)	(2)	(3)	(4)	(5)
Δ log(*CountryRisk*$_{c,t}$ *(std.)*)	2.253***		2.471***		2.539**
	(0.789)		(0.863)		(1.140)
Δ log(*World uncertainty index*$_{c,t}$ *(std.)*)		0.055*	0.055*		
		(0.033)	(0.032)		
Δ log(*EPU national*$_{c,t}$ *(std.)*)				0.135	0.113
				(0.108)	(0.105)
R^2	0.163	0.149	0.168	0.162	0.188
N	2,626	1,866	1,866	1,378	1,378
Country FE	yes	yes	yes	yes	yes
Year-quarter FE	yes	yes	yes	yes	yes

	log(*investment rate*$_{i,t}$)				
	(1)	(2)	(3)	(4)	(5)
CountryRisk$^{NHQ}_{c(i),t}$ *(std.)*	–0.193***		–0.189***		–0.159***
	(0.021)		(0.022)		(0.024)
World uncertainty index$_{c,t}$ *(std.)*		–0.022***	–0.005		
		(0.005)	(0.005)		
EPU national$_{c,t}$ *(std.)*				–0.069***	–0.040***
				(0.010)	(0.010)
R^2	0.512	0.511	0.512	0.510	0.511
N	71,673	72,927	71,673	66,204	66,204

	Δ log(*employment*$_{i,t}$)				
	(1)	(2)	(3)	(4)	(5)
CountryRisk$^{NHQ}_{c(i),t}$ *(std.)*	–0.029***		–0.031***		–0.031***
	(0.005)		(0.005)		(0.006)
World uncertainty index$_{c,t}$ *(std.)*		–0.000	0.003**		
		(0.001)	(0.001)		
EPU national$_{c,t}$ *(std.)*				–0.005**	0.001
				(0.002)	(0.002)
R^2	0.233	0.232	0.233	0.232	0.232
N	67,266	68,534	67,266	62,333	62,333
Firm FE	yes	yes	yes	yes	yes
Year-quarter FE	yes	yes	yes	yes	yes

Notes: This table shows coefficient estimates and standard errors from regressions at the country-quarter level (Panels A and B) and at the firm-year level (Panels C and D). Standard errors are clustered at the country level in Panels A and B and at the firm level in Panels C and D.

Appendix Table 5: $\mathit{TransmissionRisk}_{c(i),c}$ follows a gravity structure

	log($\mathit{TransmissionRisk}_{c(i),c}$)		
	(1)	(2)	(3)
Log of distance (km)$_{c(i),c}$		–0.163***	–0.125***
		(0.010)	(0.011)
$\mathbb{1}$(Contiguity$_{c(i),c}$)		0.215***	0.156***
		(0.058)	(0.052)
$\mathbb{1}$(Common language$_{c(i),c}$)		0.184***	0.177***
		(0.025)	(0.026)
$\mathbb{1}$(Ever in colonial relationship$_{c(i),c}$)		0.061*	0.060
		(0.032)	(0.037)
$\mathbb{1}$(Log of trade flows in 2019$_{c(i),c}$)			0.037***
			(0.005)
R^2	0.980	0.986	0.986
N	3,466	3,417	2,316
Source×destination FE	yes	yes	yes

Notes: This table shows coefficient estimates and standard errors from regressions at the country-country level. Similar to Table 10, $\mathit{TransmissionRisk}_{c(i),c}$ is defined as the sum over the relevant components of $\mathit{ForeignRisk}_{i,t} := \sum_{c \neq c(i)} \mathit{CountryExposure}_{i,c,t} \times \widetilde{\mathit{CountryRisk}}_{c,t}$ for country-country pairs. For example, for country-country pair $(c(i), c)$, we take the sum over all firms headquartered in country $c(i)$ of the relevant components about country c: $\sum_{i \in c(i), c=c} \mathit{CountryExposure}_{i,c,t} \times \widetilde{\mathit{CountryRisk}}_{c,t}$. Standard errors are robust. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Appendix Table 6: Global Risk and Local Risk: EW-Broad

	$\Delta log\left(\widetilde{Risk_{C,t}}\right)$	R^2	$\Delta log\left(GlobalRisk_t\right)$	R^2	$\Delta log\left(\widetilde{Risk_{C,t}}\right)$	$\Delta log\left(GlobalRisk_t\right)$	R^2
AUD	0.179	0.048	-0.216	0.106	-0.211	0.171	0.149
BRL	-0.126	0.045	-0.347***	0.175	-0.357***	-0.139	0.230
CAD	0.0327	0.032	-0.0164	0.004	-0.0292	0.0374	0.043
CHF	0.134	0.009	0.206**	0.175	0.203*	0.0780	0.178
CLP	-0.0932	0.034	-0.0599	0.018	-0.102*	-0.135	0.079
CNY	-0.00171	0.000	0.258*	0.217	0.281**	0.108	0.236
COP	0.233**	0.081	-0.247***	0.171	-0.215**	0.139	0.197
EUR	0.0861	0.005	0.135***	0.132	0.134***	0.0700	0.135
GBP	-0.195	0.058	-0.0138	0.001	0.00243	-0.196	0.058
HUF	-0.0529	0.008	-0.0825	0.021	-0.0860	-0.0584	0.031
IDR	0.0879	0.019	0.0704*	0.038	0.0794**	0.109	0.067
ILS	-0.0827	0.030	0.156***	0.157	0.174***	-0.120***	0.219
INR	-0.0483	0.005	0.0712	0.032	0.0736	0.00943	0.032
JPY	-0.105***	0.029	0.549*	0.288	0.538*	-0.0779**	0.304
KRW	0.0559	0.001	-0.0486	0.010	-0.0535	-0.0330	0.010
MXN	-0.0719	0.033	-0.321***	0.335	-0.330***	-0.0884*	0.384
MYR	-0.0967	0.013	0.167**	0.161	0.167**	-0.00388	0.161
NOK	0.0333	0.024	-0.203***	0.257	-0.199***	0.00938	0.259
NZD	0.159	0.023	-0.156	0.093	-0.146	0.102	0.102
PHP	-0.181	0.041	0.253***	0.289	0.266***	0.0534	0.292
PLN	-0.0227	0.003	-0.102	0.026	-0.113	-0.0386	0.033
RUB	-0.122	0.021	-0.175	0.041	-0.156	-0.0925	0.052
SEK	0.0279	0.004	0.0271	0.005	0.0242	0.0241	0.007
THB	0.0160	0.005	0.217**	0.212	0.218**	-0.00403	0.212
TRY	0.0218	0.005	-0.132**	0.036	-0.129**	0.0177	0.039
USD	0.0802	0.014	0.275**	0.232	0.272**	0.0239	0.234
ZAR	-0.0770	0.002	-0.396***	0.272	-0.404***	-0.176	0.283
Mean	-.004	.0219	-.004	.1297	-.003	-.007	.1491

Notes: This table plots the coefficient β_i and R^2 for three regressions of the form

$$\Delta e^B_{i,t} = \alpha_i + \beta_{i,1}\Delta \log \widetilde{Risk}_{i,t} + \beta_{i,2}\Delta \log GlobalRisk_t + \epsilon_{i,t}$$

The first regression includes only $\Delta \log \widetilde{Risk}_{i,t}$, the second includes only $\Delta \log GlobalRisk_t$ and the third includes both. The row "Mean" is the equal-weighted mean of all the β_i and R^2_i.

Appendix Table 7: Global Risk and Local Risk: USD

	$\Delta log\left(\widetilde{Risk_{C,t}}\right)$	R^2	$\Delta log\left(GlobalRisk_t\right)$	R^2	$\Delta log\left(\widetilde{Risk_{C,t}}\right)$	$\Delta log\left(GlobalRisk_t\right)$	R^2
AUD	0.125	0.015	-0.376	0.152	0.112	-0.372	0.164
BRL	-0.0794	0.008	-0.689***	0.326	-0.105	-0.697***	0.341
CAD	-0.0183	0.002	-0.264**	0.159	0.00763	-0.266**	0.159
CHF	-0.174	0.012	-0.107	0.031	-0.163	-0.105	0.042
CLP	-0.0437	0.003	-0.340*	0.187	-0.207*	-0.408**	0.237
CNY	-0.0243	0.004	-0.0391**	0.021	-0.0422	-0.0474*	0.033
COP	0.312**	0.057	-0.480***	0.254	0.105	-0.454***	0.260
EUR	0.193	0.010	-0.181	0.070	0.195	-0.181	0.080
GBP	-0.166	0.021	-0.309*	0.193	-0.115	-0.302*	0.203
HUF	-0.0604	0.004	-0.408**	0.175	-0.0843	-0.414**	0.184
IDR	0.0479	0.002	-0.252*	0.146	-0.00497	-0.253**	0.146
ILS	-0.0609	0.011	-0.155*	0.084	-0.0417	-0.150*	0.089
INR	0.160	0.031	-0.245***	0.185	-0.0264	-0.252***	0.186
JPY	-0.0560	0.018	0.140	0.042	-0.0492	0.133	0.056
KRW	0.511***	0.050	-0.354*	0.222	-0.0219	-0.357	0.222
MXN	-0.0191	0.001	-0.572***	0.441	-0.0188	-0.572***	0.442
MYR	0.120	0.013	-0.175***	0.112	0.0275	-0.171***	0.112
NOK	0.0808	0.033	-0.354**	0.176	0.0396	-0.336**	0.183
NZD	0.184	0.014	-0.389**	0.171	0.0961	-0.381*	0.174
PHP	-0.0279	0.001	-0.0353	0.007	-0.0741	-0.0536	0.014
PLN	0.0128	0.000	-0.420*	0.167	-0.0438	-0.433**	0.171
RUB	-0.296	0.058	-0.458***	0.128	-0.217	-0.413***	0.158
SEK	-0.0328	0.002	-0.270	0.103	0.0137	-0.272	0.103
THB	-0.0180	0.010	-0.122***	0.098	-0.00705	-0.119***	0.100
TRY	0.0388	0.006	-0.452***	0.178	0.0236	-0.448***	0.180
ZAR	0.0326	0.000	-0.634***	0.297	-0.0636	-0.636***	0.298
Mean	.0285	.0148	-.305	.1586	-.025	-.306	.1668

Notes: This table plots the coefficient β_i and R^2 for three regressions of the form

$$\Delta e_{i,t}^{USD} = \alpha_i + \beta_{i,1}\Delta\log\widetilde{Risk}_{i,t} + \beta_{i,2}\Delta\log GlobalRisk_t + \epsilon_{i,t}$$

The first regression includes only $\Delta\log\widetilde{Risk}_{i,t}$, the second includes only $\Delta\log GlobalRisk_t$ and the third includes both. The row "Mean" is the equal-weighted mean of all the β_i and R_i^2.

Appendix Table 8: Global Sentiment and Local Sentiment: EW-Broad

	$\Delta log\left(\widetilde{Sent_{C,t}}\right)$	R^2	$\Delta log\left(GlobalSent_t\right)$	R^2	$\Delta log\left(\widetilde{Sent_{C,t}}\right)$	$\Delta log\left(GlobalSent_t\right)$	R^2
AUD	0.177*	0.053	0.0596	0.104	0.0557	0.152*	0.143
BRL	0.229***	0.217	0.101***	0.190	0.0678	0.169***	0.288
CAD	0.0287*	0.041	-0.00216	0.001	-0.0352**	0.0817**	0.129
CHF	0.520***	0.138	-0.0578**	0.178	-0.0426	0.260	0.200
CLP	0.0695	0.021	-0.00907	0.005	-0.00456	0.0648	0.022
CNY	-0.141	0.018	-0.0771*	0.250	-0.0990***	-0.393**	0.372
COP	-0.124	0.015	0.0623***	0.140	0.0634***	-0.142	0.159
EUR	0.378***	0.132	-0.0382***	0.136	-0.0243	0.232	0.167
GBP	0.318*	0.039	0.000887	0.000	0.0172	0.418*	0.051
HUF	0.150	0.041	0.0382	0.058	0.0466	0.194	0.124
IDR	0.0764	0.009	0.00370	0.001	0.00571	0.0847	0.013
ILS	-0.0255	0.001	-0.0451***	0.169	-0.0451***	-0.0206	0.170
INR	0.137	0.036	-0.0218	0.039	-0.0263**	0.167*	0.090
JPY	0.0256***	0.015	-0.149*	0.273	-0.150*	0.0287***	0.293
KRW	0.0347	0.001	0.00687	0.003	0.0219	0.216	0.012
MXN	0.191*	0.152	0.0724**	0.220	0.0568**	0.110**	0.260
MYR	0.0780	0.005	-0.0533**	0.211	-0.0585**	-0.134	0.224
NOK	0.0760**	0.056	0.0501***	0.202	0.0474***	0.0583*	0.234
NZD	-0.0485	0.002	0.0562	0.157	0.0561	-0.00873	0.157
PHP	0.309***	0.132	-0.0778***	0.354	-0.0739***	0.0473	0.356
PLN	0.123	0.046	0.0564	0.101	0.0546	0.114	0.140
RUB	0.349**	0.189	0.0575*	0.056	0.0372	0.324*	0.211
SEK	0.0701	0.018	0.00417	0.001	0.00296	0.0690	0.018
THB	0.00380	0.001	-0.0615**	0.221	-0.0616**	0.00446	0.222
TRY	0.209**	0.110	0.0379**	0.038	0.0409***	0.215**	0.154
USD	-0.167	0.026	-0.0808**	0.259	-0.0998**	0.210	0.286
ZAR	-0.131	0.002	0.110***	0.269	0.114***	0.257	0.277
Mean	.1079	.0561	.0016	.1346	-.001	.1029	.1767

Notes: This table plots the coefficient β_i and R^2 for three regressions of the form

$$\Delta e^B_{i,t} = \alpha_i + \beta_{i,1}\Delta \log \widetilde{Sentiment}_{i,t} + \beta_{i,2}\Delta \log GlobalSentiment_t + \epsilon_{i,t}$$

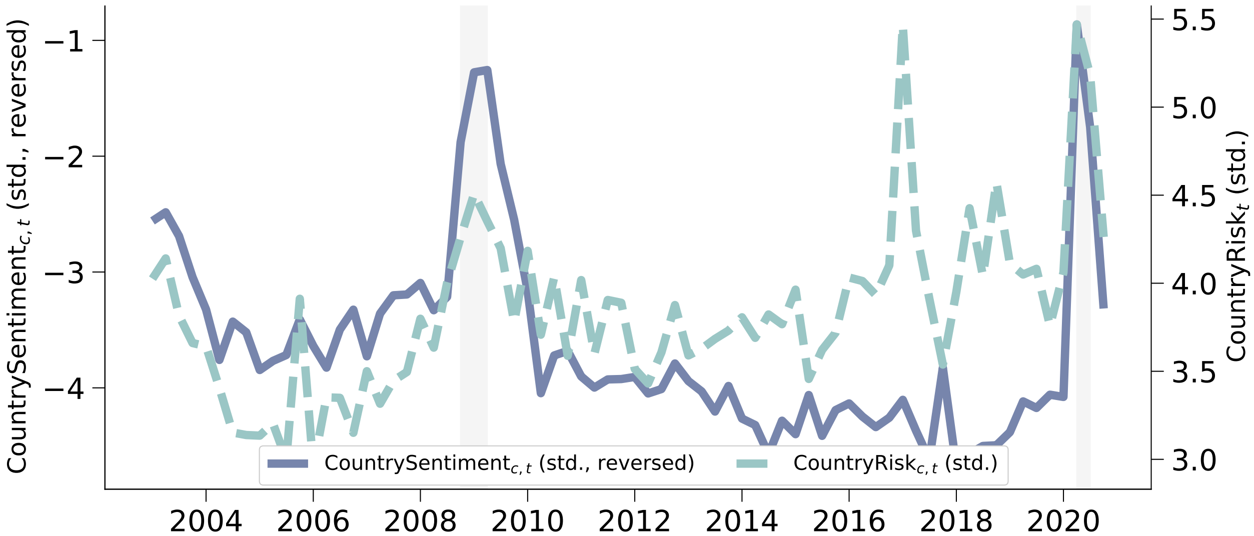
The first regression includes only $\Delta \log \widetilde{Risk}_{i,t}$, the second includes only $\Delta \log GlobalRisk_t$ and the third includes both. The row "Mean" is the equal-weighted mean of all the β_i and R^2_i.

Appendix Table 9: Exchange Rates, Risk, and Sentiment

	(1) $\Delta e^{USD}_{i,t}$	(2) $\Delta e^{USD}_{i,t}$	(3) $\Delta e^{USD}_{i,t}$	(4) $\Delta e^{USD}_{i,t}$	(5) $\Delta e^{B}_{i,t}$	(6) $\Delta e^{B}_{i,t}$	(7) $\Delta e^{B}_{i,t}$	(8) $\Delta e^{B}_{i,t}$
$\Delta log\left(\widetilde{Risk_{C,t}}\right)$	-0.017	-0.022			-0.013	-0.013		
	(0.019)	(0.015)			(0.016)	(0.016)		
$\Delta log\left(GlobalRisk_t\right)$	-0.306***				-0.006			
	(0.032)				(0.028)			
$\Delta log\left(\widetilde{Sent_{C,t}}\right)$			0.052***	0.056***			0.052***	0.053***
			(0.020)	(0.015)			(0.015)	(0.015)
$\Delta log\left(GlobalSent_t\right)$			0.084***				0.001	
			(0.009)				(0.007)	
Constant	-0.001	-0.004***	-0.003**	-0.004***	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	1,713	1,713	1,713	1,713	1,431	1,431	1,431	1,431
R-squared	0.158	0.539	0.163	0.548	0.059	0.059	0.075	0.076
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes

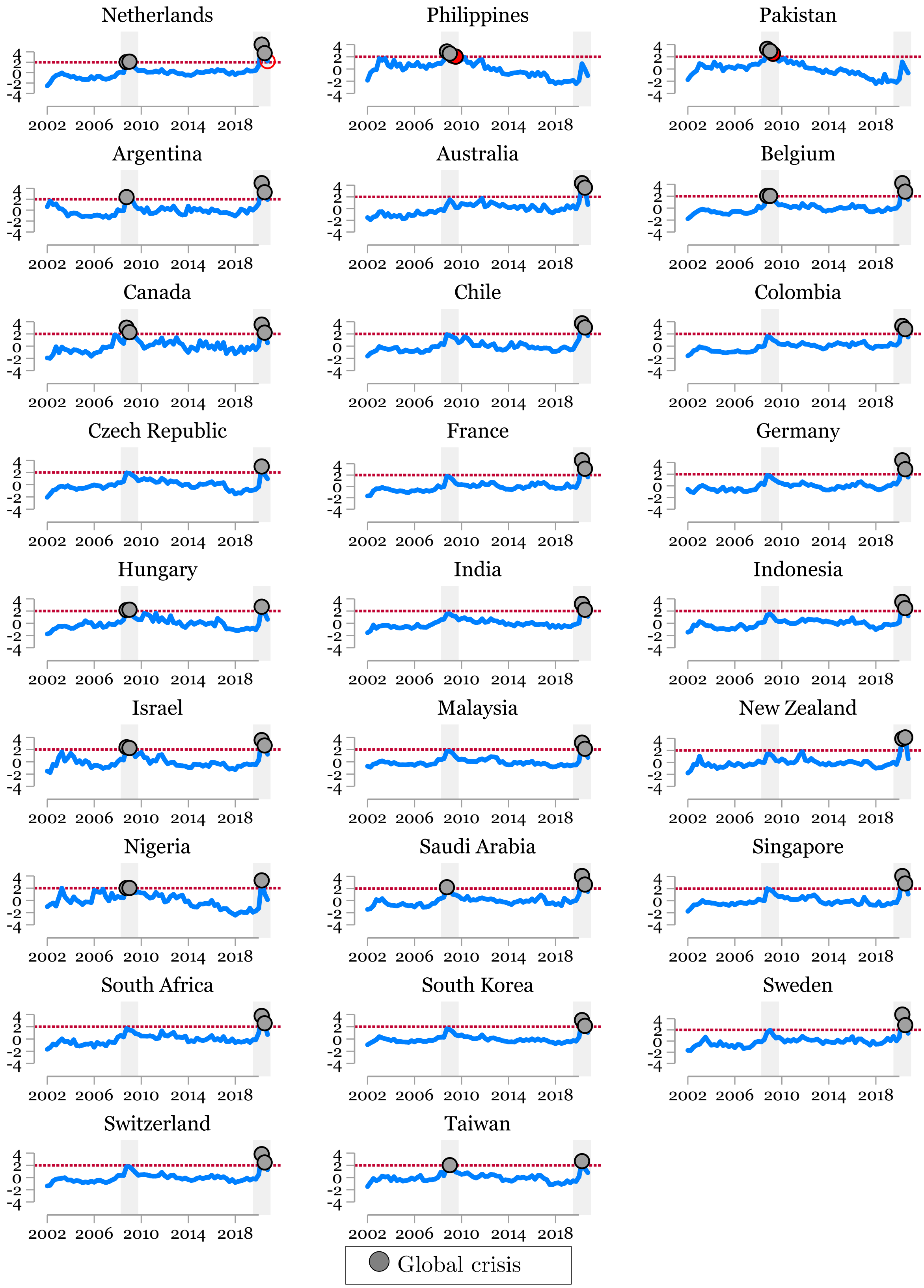
Notes: $\Delta e^{USD}_{i,t}$ denotes the quarterly log change in the exchange rate of country i against the USD, with an increase indicating an appreciation of currency i. Δe^{B}_{it} is the equal-weighted broad exchange rate of currency i.

Appendix Figure 1: Time series of Mexican $CountryRisk_{c,t}$ and $CountrySentiment_{c,t}$



Notes: This figure shows the time series of $CountrySentiment_{c,t}$ *(std.)* and $CountryRisk_{c,t}$ *(std.)*. The time series for $CountrySentiment_{c,t}$ is reversed (multiplied by -1) to facilitate a direct comparison with $CountryRisk_{c,t}$. The coefficients are standardized to have mean zero and standard deviation one for 2002q1-2019q4. NBER-based recession quarters are shaded in grey.

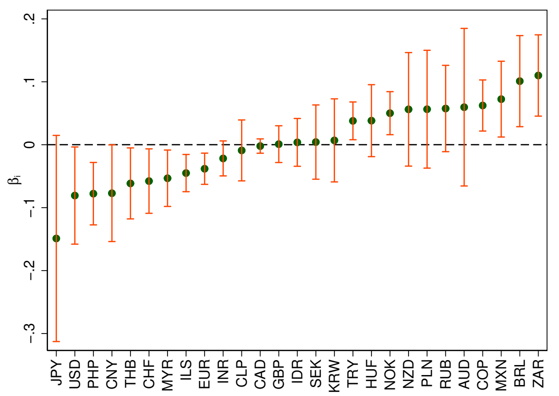
Appendix Figure 2: Countries with no local crises



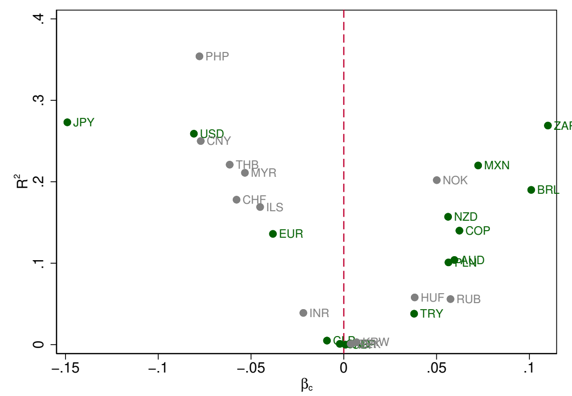
Notes: This table shows the time series of $CountryRisk_{c,t}$ for all countries that do not have local crises as defined in Figure 2.

Appendix Figure 3: Exchange Rates and Global Sentiment: Equal-Weighted Broad Exchange Rate

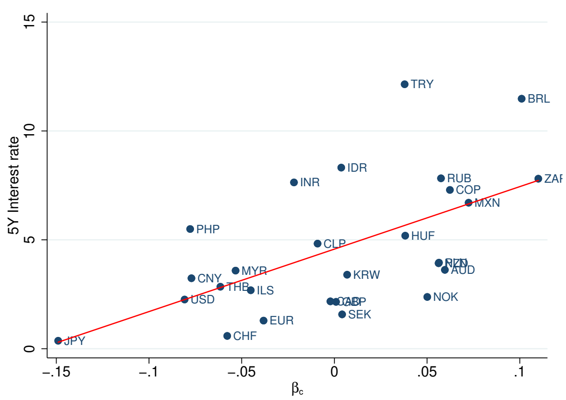
(a) Estimated Beta



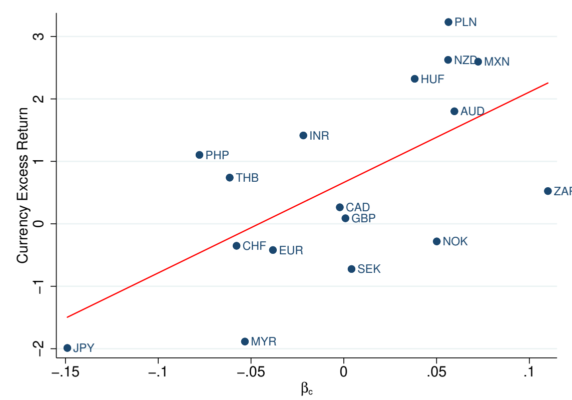
(b) R^2 and β



(c) Equal Weighted



(d) β and exccess return against USD

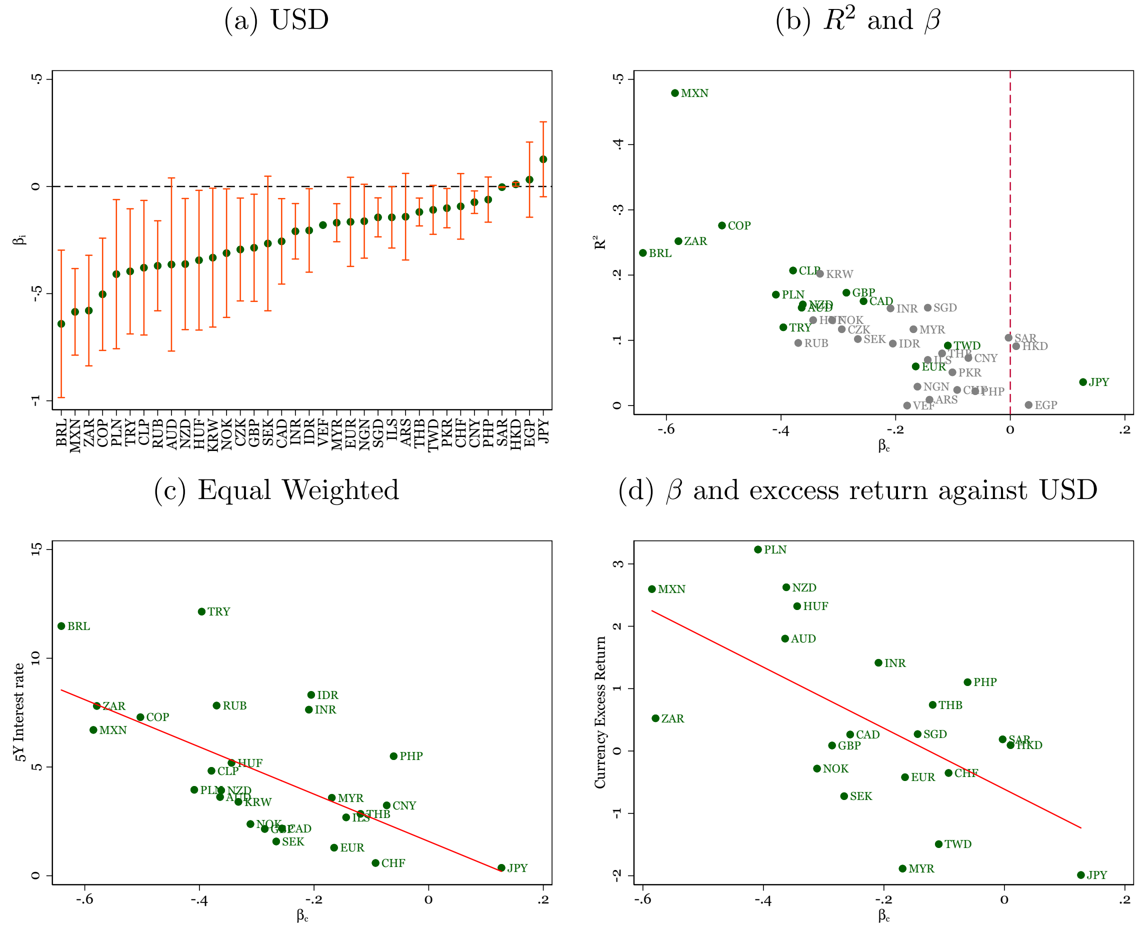


Notes: This figure plots the coefficient β_i for regressions of the form

$$\Delta e^B_{i,t} = \alpha_i + \beta_i \Delta \log GlobalSentiment_t + \epsilon_{i,t}$$

against a number of variables. Panel (a) reports the point estimates and two standard error bands. Panel (b) plots the point estimates of β_i on the x-axis and the R^2 of the regression on the y-axis . The dashed vertical line denotes $\beta_i = 0$. If a marker is in gray, it indicates that on average over the sample period, the exchange rate was less flexible than a "managed float" in the Ilzetzki et al. (2019) classification. Panel (c) plots the β_i against the average 5-year government nominal interest rate from Du et al. (2018). Panel (d) plots the β_i against the average excess return against the USD from Hassan and Zhang (2020).

Appendix Figure 4: Exchange Rates and Global Risk: Bilateral against USD



Notes: This figure plots the coefficient β_i for regressions of the form

$$\Delta e_{i,t}^{USD} = \alpha_i + \beta_i \Delta \log GlobalSentiment_t + \epsilon_{i,t}$$

against a number of variables. Panel (a) reports the point estimates and two standard error bands. Panel (b) plots the point estimates of β_i on the x-axis and the R^2 of the regression on the y-axis . The dashed vertical line denotes $\beta_i = 0$. If a marker is in gray, it indicates that on average over the sample period, the exchange rate was less flexible than a "managed float" in the Ilzetzki et al. (2019) classification. Panel (c) plots the β_i against the average 5-year government nominal interest rate from Du et al. (2018). Panel (d) plots the β_i against the average excess return against the USD from Hassan and Zhang (2020).