Geopolitical Risk and Corporate Investment*

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Abstract

Shocks to geopolitical risk are known to adversely affect real activity, as well as a flight to safety by invested capital. In this study we explore the channels via which this occurs. We find that firms respond to geopolitical risk by cutting back on capital investments. This effect is stronger for firms with more irreversible investments and foreign operations. Geopolitical threats appear to influence investments more than geopolitical acts do, perhaps because acts are perceived as resolving uncertainty. Dividends, another use of cash by firms, are not adversely affected by changes in geopolitical risk, indicating finite half-lives for geopolitical shocks.

"… geopolitical risks had been all too real, but financial markets had been lulled into a false sense of security by bountiful liquidity." Ferguson (2008).

1. Introduction

We examine the link between geopolitical risk and firm-level capital investments. Geopolitical risk is broadly defined as the risk associated with war, political upheavals, inter-country tensions and terrorism, and captures both the occurrence of such events and the escalation of the probability of such events occurring. It is distinct from standard macroeconomic risk in financial economics in two ways. First, geopolitical risk is based on rare but cataclysmic events that may go undetected for decades (Guttentag & Herring 1997). Because of this, finite-horizon managers may rationally choose to ignore it. Second, the assessment of geopolitical risk is fraught with uncertainty – for instance, predicting terrorist acts is difficult even when alert levels are high.

Modern data aggregation techniques provide a reasonable mechanism for estimating a time series of geopolitical risk. One such series is constructed by Caldara and Iacoviello (2018) using particular word and phrase searches posited to correlate with geopolitical acts and threats. The GPR series appears to work well – Caldara and Iacoviello (2018) document a significant link between their measure of geopolitical risk and real economic activity and stock market returns, as well as with a flight to safety by invested capital.

In this study, we explore the channels via which the effects of geopolitical risk originate and propagate. One plausible channel is based on the study by Bloom *et al.* (2007), who show that uncertainty reduces the responsiveness of capital investments to demand shocks. Such a response is also consistent with real option theory, where an increase in ex ante uncertainty can rationally lead to a “wait and see” approach as the uncertainty is resolved over time.

As our primary proxy for GPR, we use the time series from Caldara and Iacoviello (2016, C&I hereafter). They construct the series using word search from English language newspapers in the U.S., the U.K., and Canada. They select words and phrases that are related to geopolitical risk such as terrorism, war, threats of war etc. Their GPR series starts in 1985 and has been used by many institutions, including the Bank of England, in assessing geopolitical risk levels. For instance, based on the C&I GPR series, geopolitical risk levels underwent a regime shift on 9/11, with post event levels remaining at roughly twice the magnitude of the pre-event levels for an extended period (see Carney (2016)).

We find an inverse association between changes in geopolitical risk and firm level capital investment. The effect is long-lived in the sense that GPR shocks display a significant negative correlation with capital investments for up to four quarters. In order to understand the managerial reasoning behind reducing planned investments in response to elevated GPR, we exploit the cross-sectional variation in firm level sensitivity to GPR. Our purpose is to explore the determinants, such as asset characteristics, of the sensitivity of firm level capital investment to changes in GPR.

In the simplest case, we sort firms based on the ratio of fixed to total investments, under the belief that fixed investments such as property plant and equipment are harder to recover and repurpose vis-à-vis more mobile and intangible capital. Put simply, firms recognize that moving fixed assets under the threat of geopolitical risk is more costly than relocating and safeguarding intangible assets. Our results show that the degree of nonreversibility of investments (idiosyncratic investments as in Williamson (1979, 1984)) explains the sensitivity of firm level capital investments to GPR. Specifically, we find that firms with more fixed investments display a higher sensitivity to GPR, indicating a higher risk of loss for these assets.

We also find that firms with a higher fraction of foreign earnings are more sensitive to GPR. There are two explanations for this finding. First, managers may simply postpone capital investments until the extra uncertainty created by elevated levels of GPR is attenuated. This behaviour is consistent with real options theory. The other possibility is that capital is globally deployed, and uncertainty that is localised due to GPR deflects investments to safer havens. This too is well established in the flight to safety literature.[1] Our results support the former in that we do not observe an increase in capital investments domestically to compensate for the cuts abroad when GPR increases.

It is possible that GPR is intertwined with policy uncertainty or that GPR may act via policy uncertainty. We repeat the cross-sectional tests by explicitly including an economic policy uncertainty proxy and find that while the policy uncertainty variable has the predicted negative sign on capital investments, the GPR coefficient remains significant in these specifications. Indeed, the coefficient of GPR is two to three times as large as that on policy uncertainty.

We also find strong industry effects on the relation between GPR and investments. Using Fama-French industry classification, we find that large capital-intensive industries

[1] See, for e.g., work by Caballero and Krishnamurthy (2008), for a theoretical description of crisis-driven Knightian uncertainty and how it is associated with a flight to safety.

tend to be more sensitive to GPR. The two exceptions are utilities and the defence sector, both have strong positive coefficients – it appears that geopolitical risk is good for the defence sector. Utilities may benefit because of rate of return regulation – when GPR risk is heightened, investors may prefer the safety of regulated domestic utilities. Furthermore, utilities may have less overseas exposure.

We replace capital investments with dividends and find no relation between GPR and dividends. To the extent dividend changes respond to permanent shifts in earnings, these results indicate that GPR risk does not pose a long-term threat to the economy. To gain a better understanding of geopolitical risk, we decompose GPR into geopolitical acts (GPA) and geopolitical threats (GPT), per Caldara and Iacoviello (2018). We find that threats matter more than actual acts in influencing firm level capital investment. These results indicate that the resolution of uncertainty precipitates investment decisions that otherwise are held in limbo till the geopolitical threat recedes. We confirm the findings estimating a vector autoregression (VAR) with the average corporate investment, the geopolitical risk index, and macroeconomic controls including proxies for mispricing, market liquidity, and implied stock market volatility. We find that a one standard deviation increase in the overall GPR index is associated with a 13.2 percent decrease in the average firm investment level over the subsequent five quarters. We also find that geopolitical threats reduce the average corporate investment more than geopolitical acts. A one standard deviation increase in the GPT index is associated with a 14.6 percent drop in firm investment, whereas a one standard deviation increase in the GPA index is associated with only a 6.7 percent drop in firm investment over the subsequent six quarters. Moreover, we find no evidence of a subsequent increase in corporate investment.

The rest of the paper is organized as follows. In section 2, we review the literature on geopolitical risk, including more recent trends in its measurement. In section 3, we describe our data sources. In section 4, we present our key hypotheses. Section 5 provides the baseline results. Section 6 explore the effects of geopolitical threats and geopolitical acts. Concluding statements are provided in section 7.

2. Literature Review

That crises matter is neither surprising nor unknown to economists. For instance, Berkman *et al.* (2011) document a strong link between international political crises and stock returns – the channel appears to originate in stock prices reacting negatively to the crisis news, as well as an increase in volatility at the beginning of the crisis. News of the crises precipitates a decline in stock prices, generating negative event returns, and is followed by negative shocks to consumption. Not surprisingly, forward measures of expected returns, such as the Earnings to Price ratio, or Dividend Yield, indicate higher expected returns during crisis events. The crises span a period of 1918-2006 and are recorded with start and end dates in the ICB database.

In contrast, the more recent time series collated by Caldara and Iacoviello (2018) begins in 1985 and is based on risk perceptions rather than actual acts alone. The threat perception is constructed using word search from English newspapers in the U.S., the U.K., and Canada with words and phrases searched based on perceived correlations with geopolitical risk. They construct the series using word search from English language newspapers in the U.S., the U.K., and Canada. They select words and phrases that are related to geopolitical risk such as terrorism, war, threats of war etc. C&I calibrate their GPR time series against known crises and find a strong and persistent correlation between the two. For e.g., in the immediate aftermath of 9/11, GPR levels remain very high in the C&I series. They report strong correlations of their GPR series with stock returns and real economic activity, as well as with capital flight from emerging markets to safe havens.

Interestingly, when they decompose the series into actual acts (events) and threats, it is the latter that seem to have a larger impact on both stock returns and real activity. This raises interesting questions about exactly what sort of risk is captured by GPR. Perhaps geopolitical acts reduce the Knightian uncertainty surrounding GPR; or that investors display ambiguity aversion and geopolitical acts generally are not as bad as the worst-case scenario envisioned by such investors. The prominent historian, Ferguson (2008), notes that given the infrequency of catastrophic geopolitical acts, investors, especially younger ones with short memories, may well disregard such risk. In any event, the conclusion in C&I is that an elevation in threat matters a great deal more than actual realizations of GPR. In the Berkman *et al.* (2011) study, the focus is on actual crises rather than on changes in the threat emanating from future crises.

While extant studies have found evidence of a negative link between GPR and macro-economic indicators, there is little work on how managers at the firm level react to changes in GPR.[2] There are two reasons this lack of attention is important. First, we do not know how agent-managers, with finite horizons, rationally respond to GPR. If elevated GPR affects the probability of war or terrorism in the distant future, or with a very low probability, rational

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[2] Examples of existing studies in an international setting include Bekaert *et al.* (2014); Giambona *et al.* (2017); Giambona *et al.* (2018).

agent-managers may well choose to ignore it. Second, we would like to know if at the firm level, managers cater to investor sentiment, and cut investments even when the half-life of the GPR shock is short (in other words, when the GPR shock is quickly reversed). Such catering would lead to investment cuts even when none was warranted. Finally, establishing the changes in firm level capital investments is response to GPR changes tells us something about the channel via which macro-economic variables respond to GPR shocks. Our paper is the first to examine how managers, at the firm level, revise their capital investment targets in response to GPR shocks.

3. Data

3.1 Financial data

The data in the empirical analysis is from the quarterly Compustat data files from January 1985 to December 2017. We use the 1985 starting point to match the availability of the geopolitical index. We exclude observations with non-positive book assets, sales or book equity. We require firms to have at least 12 quarters valid observations to be included in our sample. It leaves us 485, 004 firm-quarter observations. We winsorize all financial variables at 1 and 99 percentile to avoid impact from outliers.

3.2 Geopolitical risk measure

For all specifications, we require an exogenous measure of geopolitical uncertainty. While a handful of firms publish measures of geopolitical uncertainty,[3] the indicators suffer from several shortcomings. First, a majority of the indicators use broad definitions of geopolitical risks which includes major economic crises, political crises and climate change. Additionally, most geopolitical uncertainty measures are difficult to replicate, and some are publicly unavailable. Clearly, broadly defined indicators and private indices are not suitable for this study. To mitigate such concerns, we use the geopolitical risk index developed by Caldara and Iacoviello (2018).

C&I define geopolitics as situations in which the power struggles of agents over territories cannot be resolved peacefully and democratically. This definition is specific and is appropriate for this study. Geopolitical risk captures both the risk that these events materialize, and the new risks associated with an escalation of existing events. Such events increase the probability of rare disaster risk. Specifically, there are six categories of risks; these include geopolitical threats, nuclear threats, war threats, terrorist threats, war acts, and terrorist acts. The first four categories are related to geopolitical threats and tensions, whereas the last two capture geopolitical events and acts. The index capturers time-series variation in such risks, which approximate geopolitical uncertainty from the perspective of U.S. corporations.

[3] Notable examples include Marsh-McLennan, Control Risks Online, Zurich Insurance, Cambridge Econometrics, U.S. Energy Stream, Aon plc, Verisk Maplecroft, CSO Online, Euler Hermes, Risk Advisory, and Strategic Risk.

The geopolitical risk index is constructed by counting the number of occurrences in leading English-language newspapers of articles discussing the geopolitical events and risks. In fact, the methodology of using newspaper articles to construct uncertainty measures have been used in the recent literature (see, for e.g., Saiz and Simonsohn (2013) and Baker *et al.* (2016)). C&I conduct an automated text-search of the electronic archives of 11 newspapers: *The Boston Globe*, the *Chicago Tribune*, *The Daily Telegraph*, the *Financial Times*, *The Globe and Mail*, *The Guardian*, the *Los Angeles Times*, *The New York Times*, *The Times*, *The Wall Street Journal*, and the *Washington Post*. The final index is the ratio of the total number of articles discussing geopolitical risks scaled by the total number of published articles. The index spans 1985 to 2017.

Figure 1 shows the geopolitical index. The index exhibit spikes around events that are ex ante expected to increase disaster risk. For example, there are clear spikes around the Kuwait invasion, the Gulf war, the Iraq disarmament crisis in 1998, the 9/11 terrorist attacks, the Iraq invasion, the 11/15 terrorist attacks in Paris. In fact, terror threats remain at elevated levels since the 9/11 attacks. The graph shows that the frequency counts provide valuable information about geopolitical uncertainty.

To validate the geopolitical index, the authors conduct an audit process which includes human reading of 16,000 newspapers articles and comparisons to external proxies. C&I find that the computer index lines up well with an index that could be constructed by human readings. As a final check, the authors construct variants of the GPR index based on a broader and narrower set of articles. They find that the geopolitical index is robust to the inclusion and exclusion of specific phrases and synonyms. In empirical tests, we use indexes based on both the broader and narrower set of articles to test the robustness of our results to measurement error.

Table 1 presents the summary statistics of the dependent variable firm investment, the geopolitical risk index and its sub-components, economic policy uncertainty and general macroeconomic uncertainty indexes, set of controls for variations in macroeconomic forces, and the set of firm level control variables. Statistics of all our measures are comparable to other papers. On average, firms made 26.173 million quarterly investments, which is about 1.4 percent of total book value of assets. Firms on average have 1.1 percent cash flows to assets, 27.2 percent of assets are tangible, and sales grows at 17.7 percent quarterly.

4. Hypothesis development

The research design is based on multi-variate panel regressions. The following hypotheses are tested against the data.

Hypothesis 1. Firms reduce (increase) planned capital investments in response to an increase (decrease) in geopolitical risk (GPR).

Explanation: As geopolitical risk increases, firms react in two ways. First, the increase in GPR lowers the sensitivity of capital investments to demand shocks, per Bloom *et al.* (2007). Second, the increase uncertainty associated with elevated GPR increases the real option value of waiting, ceteris paribus.

Hypothesis 2. Foreign income correlates positively with the capital investment-GPR sensitivity.

Explanation: US firms that derive most of their earnings domestically will be less sensitive to GPR shocks since geopolitical risk in our sample period originated outside the U.S. A larger share of income derived from overseas therefore reflects a greater sensitivity to elevated levels of GPR. An implication is that capital investments by MNCs are more sensitive to GPR.

Hypothesis 3. Firms with a higher proportion of fixed (irreversible) investments will be more sensitive to changes in GPR.

Explanation: This is based on Williamson (1984) transaction cost economics arguments. Specifically, Williamson argues that the degree of irreversibility of investments determines how specialized assets are (asset specificity). Higher degrees of asset specificity increase the vulnerability of investments to contractual strain. An implication is that GPR has a disproportionate impact on firms in industries characterized by a high degree of asset specificity. A similar argument is made in Klein *et al.* (1978), who define appropriable quasi-rents based on an asset's current value and its value under the next highest valuing user. Asset specificity, by definition, renders higher appropriable quasi-rents.

We next decompose geopolitical risk (GPR) into geopolitical threats (GPT) and geopolitical acts (GPA). We hypothesize that threats matter more than acts.

Hypothesis 4. Lagged geopolitical threats (GPT) influence current GPR more so than lagged geopolitical acts do.

Explanation: The above hypothesis is based on the notion that acts tend to resolve uncertainty, whereas threats tend to prolong it. So long as geopolitical acts do not portend higher levels of GPR in the future, the occurrence of the acts is seen as a resolution of uncertainty. On the other hand, if geopolitical acts increase the threat levels, it is possible that their occurrence leads to an increase in GPR. In the end, we believe the relative importance of acts vs. threats in influencing future GPR levels is an empirical matter, and we let the data rule in or rule out the above hypothesis.

Hypothesis 5. GPR is not expected to influence payout policies in an adverse way.

Explanation: Dividends are well known to react to permanent changes in earnings (Lintner 1956; Lambrecht & Myers 2012; Lambrecht & Myers 2017). To the extent GPR does not alter the long-run earnings of firms, dividends ought to be unaffected by GPR. On the other hand, to the extent GPR reduces future earnings, dividends can also decline following a positive shock to GPR. Finally, the cash flow identity facing firms augurs favourably for non-negative changes to dividends in the face of postponement of capital investments. In the next section, we present a series of regressions to test the above hypotheses.

Hypothesis 6. GPR has a greater impact on capital investments than economic policy uncertainty does.

Explanation: While policy uncertainty is also likely to suppress capital investments, investors understand that policy uncertainty has a well-defined end date by when such uncertainty is tends to get resolved. By contrast, geopolitical uncertainty by its very nature has an uncertain half-life. On the other hand, policy uncertainty has the potential to disrupt not just foreign, but also domestic demand, and hence may carry greater weight in affecting capital investments. In the end, we let the data tell us which of the two has the greater effect on firm level capital investment.

5. Empirical evidence

5.1. Effects of geopolitical risk on investment

We begin our empirical analysis by testing *hypothesis 1,* whose main prediction is a cutback in capital investments in the face of elevated GPR levels. We estimate the following regression to test H1:

$$I_{i,t+1} = a_i + q_t + b_1.GPR_t + b_2.I_{i,t} + \sum_n c_n.z_{n,i,t} + e_{i,t}, \qquad \text{Eq(1)}$$

where I represents scaled capital investment, b_1, and b_2 are the coefficient estimates on geopolitical risk (GPR) and lagged capital investment, c_n are coefficient estimates for a set of n control variables(z), i and t represent firm and year subscripts. The a_i's are firm fixed effects and q_t's are fiscal quarter dummy variables which control for seasonality in capital investments. e is the error term. Standard errors are clustered at the year and firm levels.[4]

Since GPR_t is a time-series variable, we cannot use time fixed effects in our model. Including time fixed effects would mechanically absorb all the explanatory power of the geopolitical risk index. Following Gulen and Ion (2015), we include a set of controls for variations in macroeconomic forces, denoted by ψ_t. In this specification, we control for the real GDP growth rate to proxy for current demand conditions. Finally, we include a set of firm level controls, $\Gamma_{i,t}$, which are commonly used in the corporate investment literature.[5]

[4] Following Petersen (2009), we use two-way clustered standard errors at the firm and quarter level to correct for potential cross-sectional and serial correlation in the error term.
[5] Similar firm level controls are used in the corporate investment literate. See, for e.g., Julio and Yook (2012), Kim and Kung (2016), and Jens (2017).

The firm level controls consist of Tobin's Q, cash-flow to assets (ROA), tangible assets, debt leverage ratio, and natural logarithm of market capitalization.

Since there is likely to be persistence in capital expenditure adjustments, we examine the responses in each of the following subsequent four quarters. We normalize all variables by their standard deviation to facilitate easy comparison. The economic magnitudes are straightforward to compute in this framework; each coefficient is the change in the proportion of the standard deviation of the dependent variable associated with a unit standard deviation increase in the independent variable. The coefficient b_1 is the number of standard deviations by which investment changes when geopolitical risk increases by 100%.

Table 2 reports the results from our baseline specification. Column (I) suggests that when geopolitical risk increases by 100 percent, firms on average reduce investment by 0.032 standard deviations. This is approximately a 7bp reduction in capital investment, which is equivalent to 4.8 percent of the average investment level for the sample. Column (II) to (IV) indicate that investment is significantly reduced, on average, for the subsequent three quarters. The results support the *hypothesis 1* that firms reduce planned capital investments in response to an increase GPR. The significant results in all the four quarters imply that geopolitical risk innovations tend to have long half-lives. Finally, the other coefficients have the expected signs. For e.g., the coefficient on cash flow to assets is significantly positive, as are the coefficients on the various proxies for growth such as Tobin's q and sales growth, while financing constraints such as leverage ratios has a negative coefficient. Overall, the estimates presented in Table 2 indicates that GPR directly influences firm-level capital investments. The magnitude of the coefficient on GPR suggests that the effect is comparable to the coefficient on cash flows.

5.2. Foreign operations risk

In the baseline results, we established a negative association between geopolitical threats and corporate investment. We further investigate this association by examining the propagation mechanisms through which geopolitical risk affects investment. In *hypothesis 2*, we conjecture the possibility of a heterogenous effect between multinational corporations versus domestic corporations on the grounds that MNCs are disproportionately affected by GPR vis-à-vis purely domestic firms.

To test the hypothesis, we introduce an interaction term between GPR and a firm's foreign operational risk. The first proxy is a dummy variable, *Multinational*, which equals 1 if a firm has international operating segment, and zero otherwise. The *Multinational* proxy can be used to directly test whether multinational firms reduce investment more than purely domestic firms. For robustness, we use a second proxy that focuses on the multinational corporation's foreign income. Specifically, we use the dummy variable, *Foreign_Income*, which equals 1 if a firm has foreign pre-tax income (PIFO) in last three years, and zero otherwise as our second measure of a firm's foreign cashflow exposure.[6] According to the *hypothesis 2*, the coefficients on the interaction terms, $GPR_t * Multinational_t$ and $GPR_t * Foreign\_Income_t$ should both be negative.

[6] See the data appendix for details of the construction of the indicator variables.

Table 3 reports the results. The dependent variable, as in table 2, is next quarter's capital investment scaled by sales. Columns (I) shows the results using the *Multinational* dummy variable. We find that, on average, multinational firms have significantly higher levels of capital investment per dollar of sales relative to domestic firms. However, during times of high geopolitical uncertainty, multinational firms reduce investment more so than domestic firms. Specifically, a multinational firm reduces investment by 5.6 percent in the subsequent quarter, whereas a domestic firm reduces investment by 3.0 percent in the subsequent quarter. Hence, multinational firms cut investment significantly more than firms operating only in the domestic market.[7]

Column (II) confirms *hypothesis 2* using the *Foreign Income* dummy variable; firms with foreign income reduce investment by 7.5 percent in the subsequent quarter, whereas firms without foreign income reduce investment by 3.0 percent in the subsequent quarter. The difference in investment is both statistically and economically significant; the reduction in investment following an increase in GPR by firms with foreign income is more than double relative to firms with only domestic income. The results suggest that foreign operational risk is a mechanism through which GPR affects firm investment decisions.

5.3. Investment irreversibility

Investment irreversibility is another mechanism through which GPR may affect investment. Specifically, we test *hypothesis 3* that firms with a higher proportion of fixed investments are more sensitive to changes in GPR. Intuitively, firms that could reverse investment at relatively low cost have lower benefit from waiting for resolution of

[7] The difference in investment is both economically and statistically significant for all the following quarters.

uncertainty compared to high investment irreversibility firms (Gulen & Ion 2015). To test this hypothesis, we introduce an interaction term between GPR and a firm's investment irreversibility. The literature has commonly use asset tangibility as a measure of investment irreversibility (see, for e.g., Cooper (2006)). Hence, we use a firm's tangible assets scaled by total assets, *tangible*, to proxy investment irreversibility. Under *hypothesis 3*, we expect the coefficient on the interaction term in (3), $GPR_t * tangibile_{\ t}$, to be negative.

Table 4 reports the results of regressions. The results are indeed striking. We find that during times of high geopolitical uncertainty, firms with high investment irreversible reduce investment significantly more than low investment irreversible firms. Specifically, high investment irreversible firms reduce investment by 7.5 percent, whereas low investment irreversible firms reduce investment by only 2.3 percent in the subsequent quarter. For the following three quarters, all the variation in investment is captured by firms with high investment irreversibility. The results are indicative of the importance of investment irreversibility for the geopolitical risk and corporate investment nexus and are consistent with the predictions of Williamson (1984).

6. Geopolitical threats versus geopolitical acts

In the previous section, we established a link between geopolitical risk and firm investment. In addition, we showed the importance of foreign operation risk and investment irreversibility as important channels through which GPR is transmitted to corporations. In this section, we further examine the link by decomposing GPR into geopolitical acts (GPA) and geopolitical threats (GPT), per C&I.

6.1. Do geopolitical threats influence GPR more than acts?

So far, we used the overall index of GPR, which comprises of both geopolitical acts and threats. Here, we scrutinize the findings by examining the effects of geopolitical acts (GPA) and geopolitical threats (GPT) separately. H*ypothesis 4* states that lagged GPT influence current GPR more so than lagged GPA. If so, geopolitical threats, which precede most realized acts of aggression, should be more important for a firm's investment decisions. To test *hypothesis 4,* we estimate the effects of geopolitical threats and geopolitical acts separately using the corresponding components of the geopolitical risk index. We test hypothesis by estimating the following time-series regression:

$$GPR_{t+1} = a + b_1 . GPT_t + b_2 . GPA_t + e_{t+1}, \qquad \text{Eq(2)}$$

where b_1 and b_2 are the coefficient estimates on geopolitical threats and geopolitical acts, respectively. In the above equation, *hypothesis 4* predicts that $b_1 > b_2$. We estimate (2) using monthly data from January 1985 to April 2018. For accuracy, we use standard errors based on Newey and West (1987, 1994) heteroskedasticity and autocorrelation consistent covariance matrix estimator constructed using the Bartlett kernel.

Table 5 reports the results. Specification (I) shows that GPT positively predicts GPR next period. The effects of GPA are negligible controlling for GPT. To avoid concerns with serial correlation between GPT and GPA, we also estimate GPT and GPA using univariate regressions in specifications (II) and (III), respectively. We find that the effects of GPT are substantially higher relative to the effects of GPA. The results confirm our hypothesis that lagged GPT influence current GPR more so than lagged GPA.

6.2. Do geopolitical threats influence corporate investment more than acts?

We explore the effects of GPT and GPA on firm investment. Specifically, we replace the GPR index in the baseline model in (1) with the GPT index and the GPA index, respectively. Table 6 reports the results from the modified regressions. Specifications (I) show the results for GPT index, and specifications (II) show the results for GPA index. When geopolitical threats increase by 100 percent, firms reduce investment by 0.034 standard deviations, which is equivalent to a reduction of 5.1 percent of the average investment level.[8] On the other hand, when geopolitical acts increase by 100 percent, firms reduce investment by 0.017 standard deviations, which is equivalent to 2.6 percent of the average investment level. Hence, firms cut investment significantly more in response to GPT compared to GPA. The evidence supports the notion that geopolitical threats depress corporate investment activity more than realized acts. The results are also in accordance with theoretical models in which agents act as if they evaluate plans using a worst-case probability drawn from a set of multiple beliefs (e.g., Ilut and Schneider (2014)).

6.3. Are the effects of geopolitical risk short-term?

To confirm our findings, we examine how the average level of firm investment responds to a shock in GPR, a shock in GPT, and a shock in GPA by estimating a vector autoregression (VAR). Afterwards, we compute orthogonalized impulse response function (IRF) of the mean firm investment level, corresponding to a one standard deviation shock in

[8] We also find that the reduction in investment following a positive shock to GPT is highly significant for the following four quarters. On the other hand, we find that the reduction in investment following a shock to GPA is statistically insignificant for the following four quarters. Hence, GPT has longer consequences for firm investment.

geopolitical risk. To estimate the VAR, we use quarterly data from 1985 to 2017. The VAR takes the following specification:

$$Y_t = v + A_1.Y_{t-1} + B_1.X_t + u_t, \qquad \text{Eq(3)}$$

where Y_t is a vector of endogenous variables, X_t is a vector of exogenous variables, and v, A_1, and B_1 are vectors of parameters. The endogenous set contain the following variables in order: (1) the natural logarithm of the geopolitical risk measure (GPR, GPT, or GPA), (2) the VXO implied volatility index from the Chicago Board Options Exchange (CBOE) as a measure of general economic uncertainty, (3) the excess returns on the value-weighted market portfolio to control for general economic conditions, (4) the spread between the Baa rate and the federal funds rate as a measure of market liquidity, (5) Robert Shiller's cyclically adjusted price earnings ratio (CAPE), and (6) the natural logarithm of mean corporate investment.[9] We include an exogenously defined linear time trend. In this set-up, we assume that the contemporaneous changes in the endogenous system variables have no effect on the geopolitical risk index.

Figure 4 shows the response of average corporate investment and their corresponding bootstrapped standard error bands at the 95 percent significance level. The top panel shows the IRF following a one-standard deviation shock to GPR. A positive shock to GPR significantly reduces the average investment for five quarters. In terms of the economic magnitude, a one-standard deviation increase in GPR drops the average corporate investment by 13.2 percent over the subsequent five-quarters. The middle and the bottom

[9] Our endogenous controls are motivated by Bonaime *et al.* (2018). We find that our orthogonalized IRFs are robust to a wide array of other causal ordering. The results are available upon request.

panel show the IRFs for a one-standard deviation increase in GPT and GPA, respectively. The responses are strikingly different. On one hand, a one-standard deviation shock to GPT significantly reduces the average corporate investment for six quarters. Over the six quarters, firms reduce investment by 14.6 percent. On the other hand, a one-standard deviation shock to GPA significantly reduces the average corporate investment for only one quarter. Over six quarters following a GPA shock, firms cut investment by 6.7 percent. Hence, a shock to GPT has an effect on investment that is more than twice that of a shock to GPA. The results are highly consistent with the panel regression results in the previous section.

7. Discussion

In the previous section, we provide evidence that a shock to GPR reduces firm investment in the short-run. If managers view GPR shocks as transitory, they are less likely to alter the corporate payout policies. On the other hand, managers may alter the payout policies if they perceive changes to GPR as permanent. Hence, in this section, we explore whether GPR influences a firm's payout policies. We also perform a number of robustness tests. In particular, we examine whether the results are robust to controlling for both economic policy uncertainty (EPU) and macroeconomic uncertainty (MEU). We also examine whether our findings are robust at the industry level.

7.1. GPR and Payout Policies

Literature has long shown that payout follows Lintner (1956) target adjustment model. Lambrecht and Myers (2012) formalizes the Lintners model and show that *i)* a firm's payout is smoothed because managers smooth their flow of rents, *ii)* rents depend on permanent income, the present value of all future net income, and *iii)* payouts to transitory changes in net income is an order of magnitude less than the response to changes in permanent income. Lambrecht and Myers (2017) show that changes to debt acts as a buffer to absorb transitory shocks, whereas permanent shocks lead to changes in firm payouts. Since GPR does not alter the long-run earnings of firms, dividends should be unaffected by GPR shocks.

To test *hypothesis 6*, we estimate the following panel-regression:

$$Div\ Yield_{i,t+s} = a_i + q_t + b_1.GPR_t + \sum_n c_n.z_{n,i,t} + e_{i,t}, \qquad \text{Eq(3)}$$

Where s=1,2,3,4, b_1 is the coefficient estimate on the geopolitical risk (GPR), c_n are coefficient estimates for a set of n control variables(z), i and t represent firm and year subscripts. The a_i's are firm fixed effects, q_t's are fiscal quarter dummy variables which control for seasonality in capital investments, and the e represents the error term. Standard errors are clustered at the year and firm levels.

Table 7 shows the results from estimating (3). We find that a shock to the GPR has no effect on the dividend yield over the following four quarters. The results support *hypothesis 5* that GPR does not alter the long-run earnings of firms, hence dividends remain unaffected. It seems that managers ascribe finite half-lives to GPR shocks.

7.2. Controlling for Economic Policy Uncertainty and Macroeconomic Uncertainty

Policy makers and business executives are generally concerned about three types of uncertainty; *i)* uncertainty related to geopolitical risk, *ii)* economic policy uncertainty, and *iii)* general macroeconomic uncertainty. However, firm managers understand that economic policy uncertainty (EPU) and macroeconomic uncertainty (MEU) are short lived and have a well-defined end date by when such uncertainty is usually resolved. Based on this intuition, our *hypothesis 6* states that GPR has a greater impact on capital investments than EPU and MEU.

It is also possible that geopolitical risks such as wars, terrorist threats and attacks, and nuclear tensions may also increase policy uncertainty. Government policies may change in response to geopolitical risks. Hence, GPR may capture part of the effects from elevated levels of economic policy uncertainty. Similarly, albeit to a lesser degree, the effects of GPR may be driven by spurious correlations with macroeconomic uncertainty.

To address this identification issue, we directly control for measures of economic policy uncertainty and macroeconomic uncertainty. Gulen and Ion (2015) show a strong negative association between capital investment and the aggregate level of uncertainty associated with future policy and regulatory outcomes. Following Gulen and Ion (2015), we use the Baker *et al.* (2016), henceforth BBD, news-based index to proxy economic policy uncertainty.

Firstly, for a visual inspection, we plot the geopolitical risk index and the BBD news-based index in Figure 2. It should be noted that the GPR index and the BBD index have common spikes in 1991, at the time of the Gulf War, in 2001, after the 9/11 terrorist attacks, and the Iraq war.[10] This is likely because the BBD index captures uncertainty about policy

[10] It is likely that we see a few common spikes between BBD index and the geopolitical uncertainty measure since BBD has a national security component.

responses to events associated to national security. However, the GPR index better captures other spikes in geopolitical risk compared to the BBD index. Importantly, we find that GPR index lacks spikes during periods of high policy uncertainty such as the black Monday, Clinton election, Bush election, Euro crisis, and the Debt ceiling uncertainty.

Secondly, we test *hypothesis 6* by adding the BBD news-based index in our baseline specification (1). Specification (I), Table 8, shows the results of the baseline model controlling for EPU. Geopolitical uncertainty remains significant controlling for policy uncertainty. In fact, the results suggest that when GPR increases by 100 percent, firms on average reduce investment by 0.03 standard deviations controlling for policy uncertainty measure. This is equivalent to 4.5 percent of the average investment level in the sample. Our results also confirm Gulen and Ion (2015) finding that policy uncertainty is an important determinant of firm investment. When EPU increases by 100 percent, firms on average reduces investment by 0.014 standard deviations controlling for geopolitical risk. This is equivalent to 2.1 percent of the average investment level in the sample. Hence, an increase in GPR has a significantly greater impact on capital investments than an increase in EPU. Overall, the results underscore the importance of both GPR and EPU for a firm's investment decisions.

To examine whether the GPR index captures information beyond general macroeconomic uncertainty, we augment our baseline specifications with two variables commonly used in the literature. Our first proxy for MEU is the volatility index based on the trading of S&P 100 options (VXO index) from the Chicago Board Options Exchange, which captures equity market volatility. As our second proxy of MEU, we use the comprehensive time-varying index developed by Jurado *et al.* (2015). This measure excludes the forecastable portion of each time-series and estimates the common variation in uncertainty across all the time-series.

For a clear visual inspection, we plot the GPR index and the VXO index in Figure 3. In general, GPR index has a low correlation with the VXO index and the two time-series have mostly independent variation. However, the GPR index and the VXO index have common spikes in 1991, at the time of the Gulf War, and in 2001, after the 9/11 terrorist attacks. It is likely that investors react to exogenous shocks to geopolitical uncertainty increasing the volatility index.[11] Importantly, we find that the GPR index lacks spikes during periods of economic and financial distress such as at the onset of the dot-com bubble and the period of the Global Financial Crisis.

Specification (II), Table 7, reports the results from the augmented baseline regressions controlling for general macroeconomic uncertainty. When the GPR index increases by 100 percent, firms on average reduces investment by 0.035 standard deviations controlling for macroeconomic uncertainty. The results are equivalent to 5.3 percent of the average investment level drop seen in the baseline regression.[12] We also find that an increase in the Jurado *et al.* (2015) MEU index reduces capital investment by 3.6 percent over the following quarter. An increase in the VXO index, on the other hand, has a trivial effect on the average firm investment.

[11] Indeed, there is evidence that investors react to news about geopolitical threats and acts, which in turn effect equity markets. Literature has used this link to identify potential changes to government spending (Fisher and Peters (2010); Dissanayake (2017)).

[12] Similar to the baseline findings, we find that firms reduce investment, on average, for the subsequent 4 quarters, controlling for EPU and MEU. Results are available upon request.

The overall results indicate that the implications of GPR are independent to that of the effects of economic policy uncertainty and general macroeconomic uncertainty. Importantly, we find that the effects of GPR on a firm's investment decisions are much larger than the effects of EPU and MEU, lending strong support for *hypothesis 6.*

7.3. Robustness: Industry-Level Analysis

For additional robustness, we examine the average effect of GPR on investment for each of the 12 industries based on the Fama-French industry classification. We estimate the baseline regression (1) for each of the industries.

Table 9 shows the industry level results. Excluding utilities, we find that a positive shock to GPR reduces firm investment in all industries. As expected, the largest effect is on the energy industry, which includes oil and gas firms. Multinational firms cut back on their investments in global oil markets in response to heightened geopolitical risks. We find a strong negative association for large capital-intensive industries such as telecommunication (telephone and television transmission), business equipment (computers, software, and electronic equipment), manufacturing (machinery, trucks, planes, office furniture, paper, printing).

8. Conclusion

We find that geopolitical risk is an important determinant of firm-level capital investment decisions. Increases in GPR tend to suppress capital investment, and this effect is stronger for more irreversible investments, as in Williamson (1984). When we decompose

GPR into actual acts and threats, we find that the latter has a larger influence on curtailing capital investments, perhaps because of a resolution of uncertainty. However, dividends, another use of cash by firms, are not adversely affected by changes in GPR. Overall our results indicate that GPR influence wanes when investments are more reversible, and waxes when they are less so.

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Figure 1
Geopolitical Risk Index

This figure plots the Caldara and Iacoviello (2018) geopolitical risk index. The index is constructed by counting the number of occurrences in leading English-language newspapers of articles discussing geopolitical events and risks. The final index is ratio of the total number of articles discussing geopolitical risks divided by the total number of published articles. The index ranges from 1985 to 2017.

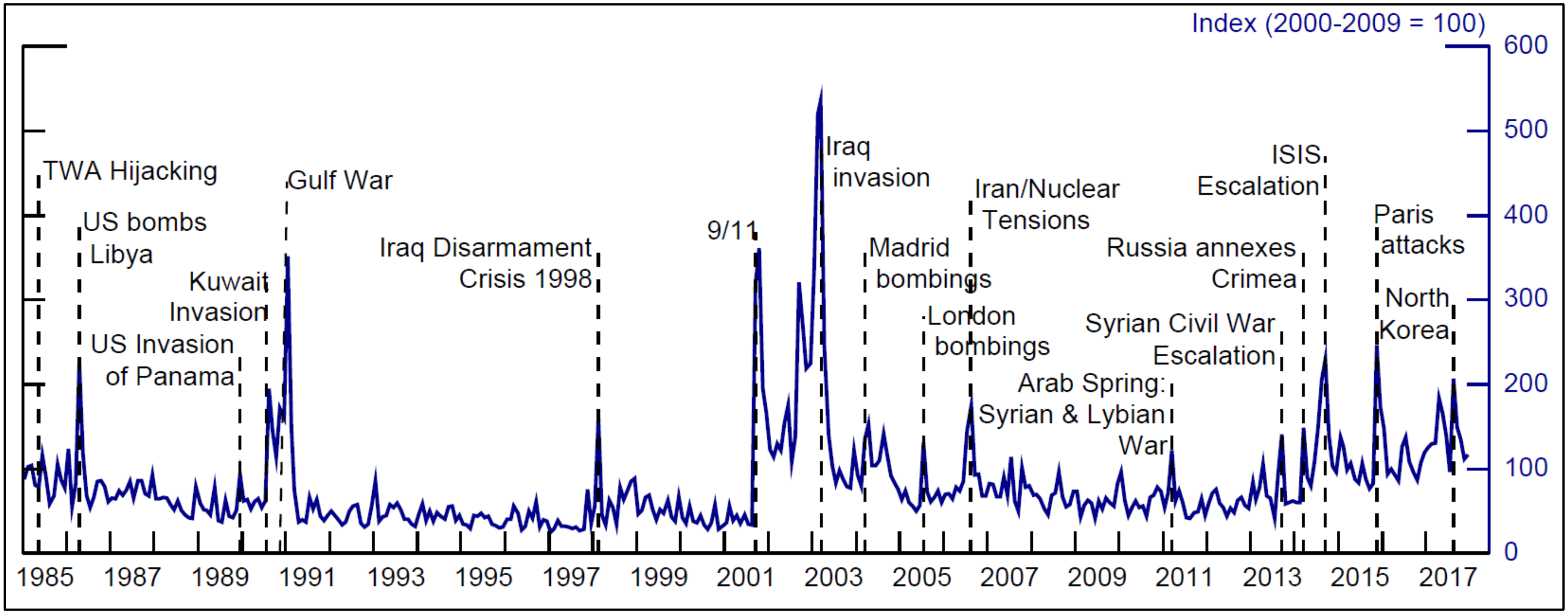


Figure 2
Geopolitical Uncertainty versus Economic Policy Uncertainty

This figure plots the Caldara and Iacoviello (2018) geopolitical risk index against the Baker *et al.* (2016) news-based index of economic policy uncertainty.

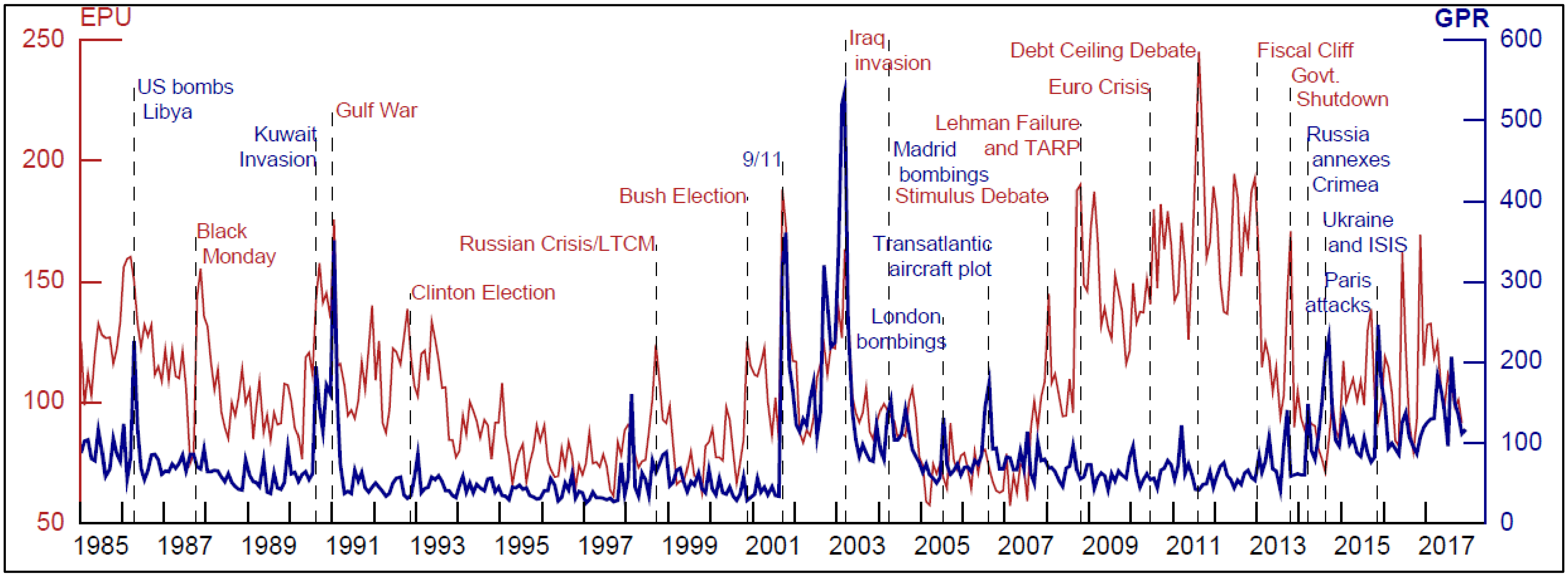


Figure 3
Geopolitical Risk versus VIX Index

This figure plots the Caldara and Iacoviello (2018) geopolitical risk index against the financial volatility as measured by the VIX.

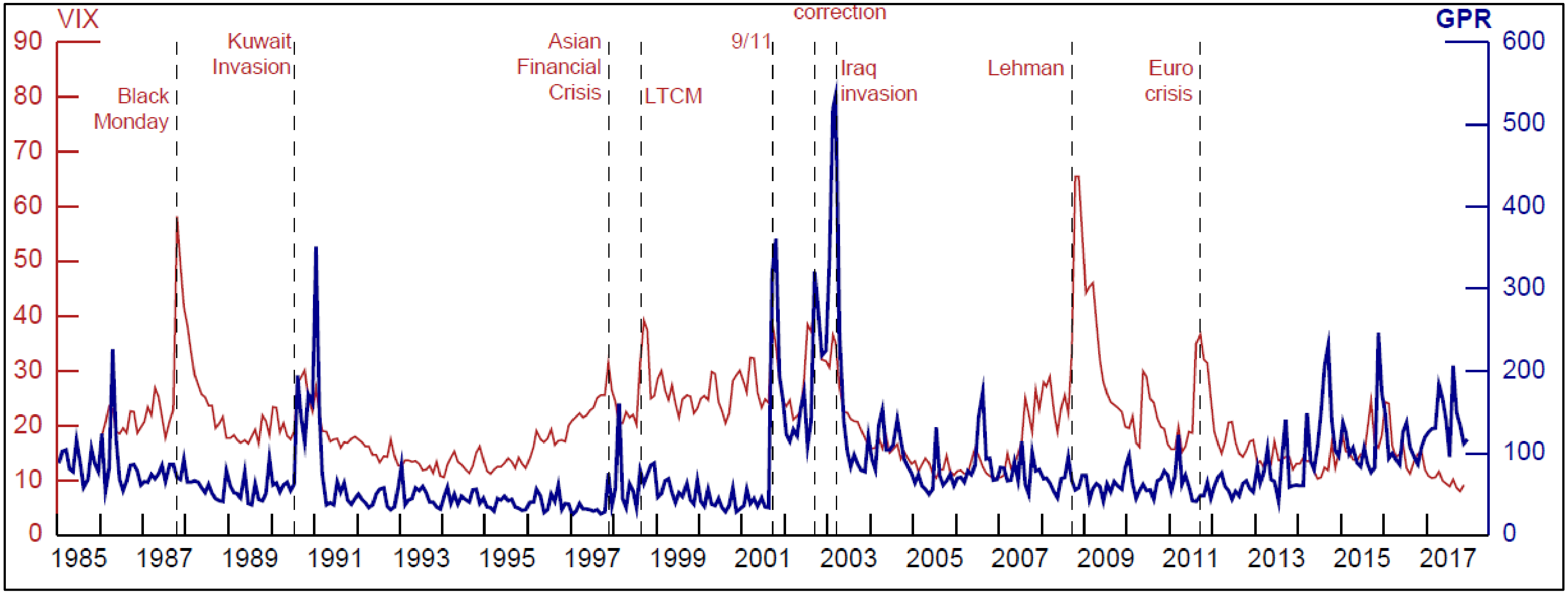
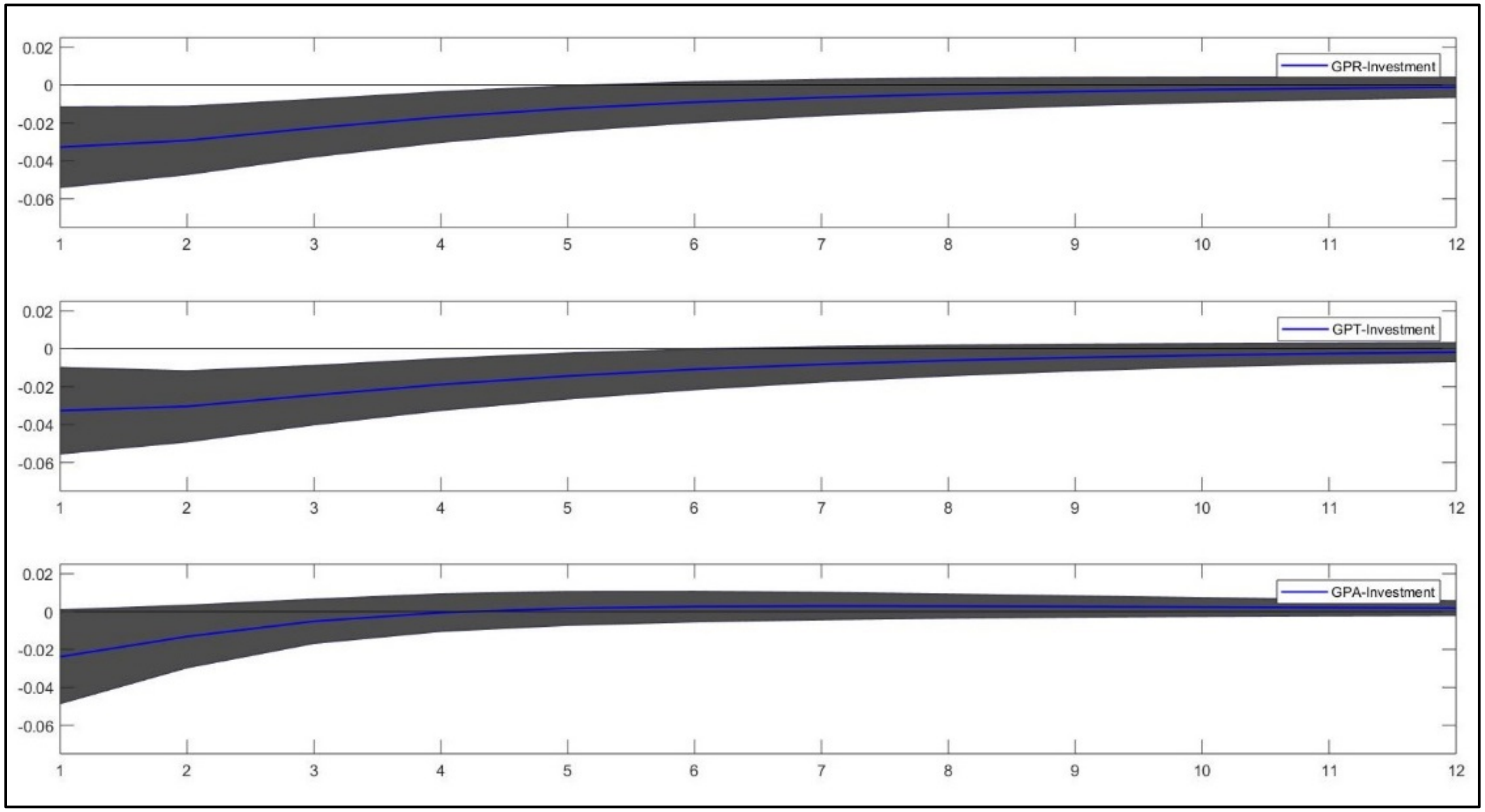


Figure 4
The Effects of the geopolitical risk over time

This figure depicts the effect of geopolitical risk on future levels of corporate investments. In the top panel, we show the effect of a shock to the overall geopolitical risk (GPR) index. The middle and the bottom panel show the effect of a shock to the geopolitical threats (GPT) index and the geopolitical acts (GPA) index. We impose the following ordering on the impulse response function (IRF): geopolitical risk index, the VXO implied volatility index, Robert Shiller's CAPE ratio, the value-weighted excess returns on the market portfolio, the spread on the Baa rate and the risk-free rate, and the average corporate investment. The shaded area represents the 95 percent bootstrapped standard error bands.



Appendix I
Variable Description

Variable	Construction	Source
CAPX t	Quarterly capital expenditure	COMPUSTAT
$\frac{CAPX\ t+k}{Assets\ t+k-1}$	Capital expenditure in quarter t+k scaled by total book assets in quarter t+k-1, where k=1,2,3, or 4	COMPUSTAT
GPR	Natural logarithm of geopolitical risk.	Caldara and Iacoviello (2018)
GPT	Natural logarithm of "Threat" geopolitical risk.	Caldara and Iacoviello (2018)
GPA	Natural logarithm of "ACT" geopolitical risk.	Caldara and Iacoviello (2018)
PU	Natural logarithm of overall policy-related economic uncertainty. We take average of monthly measure every quarter.	http://www.policyuncertainty.com
MEU	Natural logarithm of 3 months ahead of Macro-Economic Uncertainty measure. The data is matched based on fiscal year end month.	https://www.sydneyludvigson.com/data-and-appendixes
Realgdp_growth	The real GDP growth rate	US BEA
Pres_election	An indicator variable of 1 if the year is presidential election year, and zero otherwise	
Exp_rgdpgrowth12m	12-month ahead real GDP growth forecast from Philadelphia Federal Reserve's biannual Livingstone survey.	Philadelphia Federal Reserve
CLI	Composite Leading Indicator for OECD to provide early signals of turning points in business cycles showing fluctuation of the economic activity around its long term potential level.	oecd.org
CAPE	Shiller's PE ratio	http://www.multpl.com/shiller-pe/
VXOCLS	VXO (implied volatility) index	Chicago Board Options Exchange
Cash flow/Assets	The ratio of cash flow (Net income + depreciation) of quarter-beginning book value of total assets (ATQ).	COMPUSTAT
Tangible	The ratio of tangible assets (PPENT) of quarter-beginning book value of total assets (ATQ).	COMPUSTAT
Salegrowth	Quarterly sale growth rate.	COMPUSTAT
lnMktcap	Natural logarithm of firm market capitalization at fiscal quarter end	COMPUSTAT
Tobinq	Firm's quarterly *Tobin'Q* as measured as (ATQ-CEQQ-TXTQ+CSHOQ*PRCCQ)/ATQ)	COMPUSTAT
Leverage	Book value of debt (DLTTQ+DLCQ) divided by quarter-beginning book value of total assets (ATQ).	COMPUSTAT
Div Yield t+k	Dividend yield in quarter t+k, as calculated as dividend per share to fiscal quarter end share price.	COMPUSTAT
E/P t+1	Quarterly earnings per share to price ratio (EPS/Price). EPS is the diluted EPS excluding extraordinary items and Price is the fiscal quarter end share price.	COMPUSTAT

Table 1
Summary Statistics

Note: This table presents the summary statistics. The sample includes all Compustat firm-quarter observations between 1985 and 2017 except firms not incorporated in the United States, and firm-quarter with non-positive values for book value of total assets or book value of common equity or without accounting information. We require each firm to have at least 12 quarters of valid observations to be included. All financial variables are winsorized at 1-99 pctl. All variables are defined in Appendix I.

Variable	N	Minimum	25th Pctl	Mean	Median	75th Pctl	Maximum	Std Dev
CAPX t ($million)	464905	0.000	0.141	26.641	1.328	9.309	668.000	90.739
CAPX t+1/Assets t	464905	0.000	0.002	0.014	0.008	0.018	0.123	0.021
GPR	464905	3.361	3.864	4.210	4.104	4.487	6.140	0.495
GPT	464905	3.257	3.805	4.198	4.132	4.485	6.248	0.521
GPA	464905	2.770	3.846	4.183	4.155	4.491	5.918	0.531
PU	464905	4.145	4.411	4.620	4.586	4.803	5.375	0.263
MEU	464905	-0.376	-0.324	-0.254	-0.261	-0.218	0.161	0.090
Realgdp_growth	464905	-0.011	0.004	0.007	0.007	0.010	0.017	0.006
Pres_election	464905	0.000	0.000	0.252	0.000	1.000	1.000	0.434
Exp_rgdpgrowth12m	464905	-0.004	0.022	0.026	0.027	0.030	0.044	0.007
CLI	464905	94.584	99.311	99.838	100.010	100.642	101.912	1.183
CAPE	464905	10.000	20.070	24.591	24.497	26.890	44.200	7.399
VXOCLS	456130	9.540	14.410	20.591	18.740	24.450	61.410	7.986
Cash flow/Assets	464905	-0.230	0.003	0.011	0.018	0.033	0.131	0.049
Tangible	464905	0.000	0.060	0.273	0.188	0.417	0.946	0.257
Salegrowth	464905	-0.740	-0.038	0.174	0.076	0.231	3.777	0.556
lnMktcap	464905	0.748	3.778	5.385	5.278	6.909	10.781	2.187
Tobinq	464905	0.588	1.041	1.862	1.325	2.020	10.280	1.532
Leverage	464905	0.000	0.035	0.215	0.179	0.342	0.820	0.197

Table 2
Geopolitical Risk and Firm Investment

Note: This table presents the results of estimating Eq. (1) on the sample of Compustat firms for the period 1985 – 2017. All regressions include firm and quarter fixed effects. All variables are defined in Section 2 and Appendix I. The *t*-statistics in parentheses are based on standard errors adjusted for firm and quarter clustering. Observations are the total number of firm-year observations. ***, **, *, indicates significance at the 1%, 5%, and 10% level, respectively.

Dependent Var=	I $\frac{CAPX_{t+1}}{Assets_t}$	II $\frac{CAPX_{t+2}}{Assets_{t+1}}$	III $\frac{CAPX_{t+3}}{Assets_{t+2}}$	IV $\frac{CAPX_{t+4}}{Assets_{t+3}}$
GPR	-0.032***	-0.029***	-0.029***	-0.028***
	(-18.041)	(-11.110)	(-12.642)	(-12.080)
Realgdp_growth	0.014**	0.020***	0.024***	0.027***
	(4.579)	(8.595)	(7.464)	(10.550)
Cash flow/Assets	0.044***	0.061***	0.066***	0.054***
	(10.619)	(13.262)	(11.291)	(9.819)
Tangible	0.328***	0.230***	0.168***	0.135***
	(19.848)	(15.850)	(13.214)	(11.643)
Salegrowth	0.035***	0.036***	0.034***	0.031***
	(12.520)	(13.868)	(12.129)	(13.706)
lnMktcap	-0.021	-0.057**	-0.094***	-0.125***
	(-1.803)	(-5.576)	(-9.062)	(-11.450)
Tobinq	0.181***	0.173***	0.164***	0.152***
	(21.150)	(21.538)	(21.016)	(24.212)
Leverage	-0.102***	-0.102***	-0.095***	-0.091***
	(-17.039)	(-16.040)	(-15.165)	(-14.208)
Firm FE & Qtr FE	Yes	Yes	Yes	Yes
Firm & Qtr Clustering	Yes	Yes	Yes	Yes
Observations	464,905	450,583	443,749	436,428
Adjusted R^2	0.456	0.459	0.457	0.457

Table 3
Propagation Mechanism: Foreign Operations Risk

Note: This table presents the results of estimating Eq. (1) on the sample of Compustat firms for the period 1985 – 2017. Specifically, we examine the interactive effect of geopolitical risk and firm exchange rate risk. We employ two proxies for firm exchange rate risk; *Multinational* equals 1 if firm has international operating segment and zero otherwise, *Foreign Income* equals 1 if firm has foreign pre-tax income (PIFO) in last three years and zero otherwise. All regressions include firm and quarter fixed effects. All variables are defined in section 2 and Appendix I. The *t*-statistics in parentheses are based on standard errors adjusted for firm and quarter clustering. Observations are the total number of firm-year observations. ***, **, *, indicates significance at the 1%, 5%, and 10% level, respectively.

Dependent Var=	I $\frac{CAPX_{t+1}}{Assets_t}$	II $\frac{CAPX_{t+1}}{Assets_t}$
GPR	-0.020***	-0.020***
	(-5.891)	(-8.493)
*GPR*Multinational*	-0.017**	
	(-3.503)	
Multinational	0.218**	
	(4.859)	
*GPR*Foreign Income*		-0.030***
		(-7.903)
Foreign Income		0.333***
		(9.357)
Realgdp_growth	0.012**	0.014**
	(4.595)	(4.718)
Cash flow/Assets	0.043***	0.044***
	(10.601)	(10.534)
Tangible	0.326***	0.330***
	(19.842)	(19.908)
Salegrowth	0.035***	0.035***
	(12.266)	(12.556)
lnMktcap	-0.014	-0.019
	(-1.205)	(-1.634)
Tobinq	0.180***	0.178***
	(21.102)	(21.316)
Leverage	-0.102***	-0.102***
	(-17.239)	(-16.703)
Firm FE & Qtr FE	Yes	Yes
Firm & Qtr Clustering	Yes	Yes
Observations	464,905	464,905
Adjusted R^2	0.456	0.457

Table 4
Propagation Mechanism: Investment Irreversibility

Note: This table presents the results of estimating Eq. (1) on the sample of Compustat firms for the period 1985 – 2017. Specifically, we examine the interactive effect of geopolitical risk and investment irreversibility as proxied by firm's tangible assets scaled by total assets. All regressions include firm and quarter fixed effects. All variables are defined in Section 2 and Appendix I. The *t*-statistics in parentheses are based on standard errors adjusted for firm and quarter clustering. Observations are the total number of firm-year observations. ***, **, *, indicates significance at the 1%, 5%, and 10% level, respectively.

	I	II
Dependent Var=	$\frac{CAPX_{t+1}}{Assets_t}$	$\frac{CAPX_{t+1}}{Assets_t}$
GPR	-0.012*	-0.015***
	(-2.729)	(-6.814)
*GPR*Tangible*	-0.020**	
	(-4.462)	
*GPR*Hi_Tangible*		-0.035***
		(-7.927)
Hi_Tangible		0.392***
		(9.968)
Realgdp_growth	0.013**	0.013**
	(4.298)	(4.246)
Cash flow/Assets	0.044***	0.044***
	(10.607)	(10.720)
Tangible	0.498***	0.296***
	(13.134)	(15.952)
Salegrowth	0.035***	0.035***
	(12.443)	(12.645)
lnMktcap	-0.022	-0.019
	(-1.939)	(-1.672)
Tobinq	0.182***	0.181***
	(21.487)	(21.271)
Leverage	-0.102***	-0.103***
	(-17.068)	(-17.011)
Firm FE & Qtr FE	Yes	Yes
Firm & Qtr Clustering	Yes	Yes
Observations	464,905	464,905
Adjusted R^2	0.456	0.456

Table 5
Geopolitical Threats versus Geopolitical Acts

Note: This table presents the results of estimating Eq. (2) for the period 1985 – 2017. Specifically, we regress GPR in quarter *t+1* on geographic threat index (GPT) and/or geographic act index for specifications (GPA) in quarter *t*. Observations are the total number of quarter observations. ***, **, *, indicates significance at the 1%, 5%, and 10% level, respectively.

	I	II	III
Dep Variable =	GPR_{t+1}	GPR_{t+1}	GPR_{t+1}
GPT	0.762***	0.715***	
	(10.10)	(13.69)	
GPA	-0.083		0.317***
	(-1.22)		(3.69)
Constant	25.375***	22.724***	56.586***
	(6.38)	(5.95)	(6.83)
Observations	131	131	131
Adjusted R^2	0.60	0.59	0.13

Table 6
Geopolitical Threats, Geopolitical Acts and Investment

Note: This table presents the results of estimating Eq. (1) on the sample of Compustat firms for the period 1985 – 2017. Specifically, we regress firm's subsequent quarterly capital expenditures scaled by lagged total assets on geographic threat index (GPT) and geographic act index for specifications (GPA). All regressions include firm and quarter fixed effects. All variables are defined in Section 2 and Appendix I. The *t*-statistics in parentheses are based on standard errors adjusted for firm and quarter clustering. Observations are the total number of firm-year observations. ***, **, *, indicates significance at the 1%, 5%, and 10% level, respectively.

Dependent Var=	I $\frac{CAPX_{t+1}}{Assets_t}$	II $\frac{CAPX_{t+1}}{Assets_t}$
GPT	-0.034***	
	(-14.288)	
GPA		-0.017**
		(-4.459)
Realgdp_growth	0.014**	0.017***
	(3.926)	(6.634)
Cash flow/Assets	0.044***	0.045***
	(10.618)	(10.363)
Tangible	0.328***	0.330***
	(19.940)	(19.680)
Salegrowth	0.035***	0.036***
	(12.681)	(12.452)
lnMktcap	-0.019	-0.027*
	(-1.653)	(-2.443)
Tobinq	0.181***	0.184***
	(21.258)	(20.457)
Leverage	-0.102***	-0.104***
	(-17.073)	(-17.409)
Firm FE & Qtr FE	Yes	Yes
Firm & Qtr Clustering	Yes	Yes
Observations	464,905	464,905
Adjusted R^2	0.456	0.455

Table 7
Geopolitical Risk and Dividend Yield

Note: This table presents the results of estimating Eq. (3) on the sample of Compustat firms for the period 1985 – 2017. Specifically, we regress firm's subsequent 4 quarterly dividend yield (EPS/Price) on geopolitical risk in model I to IV (V to VIII). All regressions include firm and quarter fixed effects. All variables are defined in Section 2 and Appendix I. The *t*-statistics in parentheses are based on standard errors adjusted for firm and quarter clustering. Observations are the total number of firm-year observations. ***, **, *, indicates significance at the 1%, 5%, and 10% level, respectively.

	I	II	III	IV
Dependent Var=	*Div Yield t+1*	*Div Yield t+2*	*Div Yield t+3*	*Div Yield t+4*
GPR	-0.002	0.003	0.006	0.010
	(-0.704)	(0.429)	(1.494)	(1.949)
Realgdp_growth	-0.043***	-0.028**	-0.022***	-0.014**
	(-6.502)	(-5.662)	(-13.469)	(-3.428)
Cash flow/Assets	0.005*	0.007*	0.006*	0.008*
	(2.492)	(2.789)	(2.438)	(2.459)
Tangible	-0.042**	-0.041*	-0.040*	-0.039*
	(-3.205)	(-2.882)	(-2.998)	(-2.935)
Salegrowth	-0.009***	-0.008**	-0.004	-0.004
	(-6.057)	(-4.712)	(-2.285)	(-1.931)
lnMktcap	0.072***	0.100***	0.118***	0.131***
	(7.128)	(9.849)	(10.807)	(11.823)
Tobinq	-0.057***	-0.058***	-0.056***	-0.055***
	(-16.451)	(-14.268)	(-13.994)	(-10.899)
Leverage	-0.003	-0.001	-0.003	-0.002
	(-0.565)	(-0.274)	(-0.600)	(-0.493)
Firm FE & Qtr FE	Yes	Yes	Yes	Yes
Firm & Qtr Clustering	Yes	Yes	Yes	Yes
Observations	463,819	456,512	449,139	441,474
Adjusted R^2	0.538	0.537	0.537	0.536

Table 8
Geopolitical Risk, Economic Policy Uncertainty, and Macro-Economic Uncertainty

Note: This table presents the results of estimating Eq. (1) controlling for policy uncertainty and general macro-economic uncertainty on the sample of Compustat firms for the period 1985 – 2017. All regressions include firm and quarter fixed effects. All variables are defined in Section 2 and Appendix I. The *t*-statistics in parentheses are based on standard errors adjusted for firm and quarter clustering. Observations are the total number of firm-year observations. ***, **, *, indicates significance at the 1%, 5%, and 10% level, respectively.

	I	II
Dependent Var=	$\frac{CAPX_{t+1}}{Assets_t}$	$\frac{CAPX_{t+1}}{Assets_t}$
GPR	-0.030***	-0.035***
	(-16.080)	(-14.692)
EPU	-0.014**	
	(-4.946)	
MEU		-0.024**
		(-5.194)
VXOCLS		0.021*
		(3.128)
Realgdp_growth	0.009*	0.005
	(2.847)	(1.548)
Cash flow/Assets	0.044***	0.042***
	(10.567)	(10.226)
Tangible	0.328***	0.319***
	(19.743)	(19.793)
Salegrowth	0.035***	0.033***
	(12.738)	(11.057)
lnMktcap	-0.023	-0.009
	(-2.039)	(-0.704)
Tobinq	0.180***	0.178***
	(21.547)	(20.175)
Leverage	-0.103***	-0.101***
	(-16.895)	(-17.777)
Firm FE & Qtr FE	Yes	Yes
Firm & Qtr Clustering	Yes	Yes
Observations	464,905	456,130
Adjusted R^2	0.456	0.461

Table 9
Geopolitical Risk and Investment: Industry Sub Sample

Note: This table presents the results of estimating Eq. (1) on the sample of Compustat firms for the period 1985 – 2017. Specially, we run the regression for each industry (Fama French 12 industry). All regressions include firm and quarter fixed effects. All variables are defined in Section 2 and Appendix I. The *t*-statistics in parentheses are based on standard errors adjusted for firm and quarter clustering. Observations are the total number of firm-year observations. ***, **, *, indicates significance at the 1%, 5%, and 10% level, respectively.

Dep Var= $\frac{CAPX_{t+1}}{Assets_t}$	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
FF12 Industry	*NoDur*	*Durbl*	*Manuf*	*Enrgy*	*Chems*	*BusEq*	*Telcm*	*Utils*	*Shops*	*Hlth*	*Money*	*Other*
GPR	-0.025**	-0.029*	-0.045***	-0.099**	-0.036**	-0.052***	-0.087**	0.080**	-0.025**	-0.014	-0.006*	-0.042***
	(-4.473)	(-2.470)	(-9.223)	(-4.152)	(-3.473)	(-12.678)	(-5.498)	(4.169)	(-3.981)	(-2.281)	(-2.763)	(-6.612)
Realgdp_growth	0.013*	0.032*	0.017	0.003	-0.002	0.017*	-0.003	-0.053**	0.022**	0.018**	0.003	0.044***
	(2.440)	(2.958)	(2.331)	(0.228)	(-0.172)	(2.864)	(-0.203)	(-4.577)	(5.657)	(3.461)	(1.765)	(8.207)
Cash flow/Assets	0.052**	0.059**	0.072**	0.105**	0.055**	0.032***	0.021	0.043	0.068***	0.022**	-0.004	0.060**
	(4.483)	(3.679)	(5.376)	(4.415)	(3.237)	(9.417)	(1.213)	(1.047)	(6.831)	(5.191)	(-0.377)	(5.680)
Tangible	0.375***	0.381***	0.320***	0.339***	0.249**	0.483***	0.333**	-0.036	0.302***	0.280***	0.288***	0.357***
	(10.829)	(7.002)	(14.069)	(8.563)	(4.289)	(16.226)	(5.552)	(-1.324)	(9.664)	(9.488)	(7.041)	(9.659)
Salegrowth	0.046**	0.003	0.036**	0.081**	-0.006	0.040***	0.041*	-0.003	0.061***	0.019***	0.009*	0.035**
	(5.448)	(0.402)	(3.706)	(4.753)	(-0.232)	(8.688)	(2.897)	(-0.238)	(6.677)	(6.171)	(2.741)	(5.400)
lnMktcap	-0.079*	-0.106	-0.074*	0.316**	-0.005	-0.119***	0.053	0.665***	-0.137**	-0.132***	-0.014	-0.111*
	(-2.371)	(-2.174)	(-2.772)	(5.422)	(-0.094)	(-9.154)	(1.039)	(9.756)	(-4.802)	(-7.315)	(-1.133)	(-2.662)
Tobinq	0.211***	0.221***	0.222***	0.455**	0.192**	0.155***	0.308***	0.287	0.425***	0.123***	0.096***	0.265***
	(6.164)	(6.626)	(9.743)	(5.093)	(4.173)	(21.269)	(6.541)	(1.106)	(15.007)	(15.692)	(5.947)	(11.676)
Leverage	-0.113***	-0.088**	-0.119***	-0.247***	-0.123**	-0.096***	-0.051	-0.068	-0.128***	-0.041**	-0.033*	-0.112***
	(-10.987)	(-4.407)	(-11.211)	(-9.072)	(-4.830)	(-9.190)	(-1.896)	(-2.320)	(-5.892)	(-5.090)	(-2.642)	(-8.611)
Firm FE & Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Qtr Clustering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,854	10,726	50,890	22,349	11,433	85,813	11,291	18,213	49,167	46,804	72,136	60,229
Adjusted R^2	0.303	0.332	0.292	0.404	0.272	0.365	0.479	0.526	0.450	0.264	0.440	0.379