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Geopolitics and investment cycles in the United States

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Abstract

This study explores the relationship between geopolitical crises and investment cycles in the United States. Using a novel dataset on geopolitical crises over the period of 1960 to 2019, we find that the dimensionality of geopolitical crises (duration, intensity and scope) and the temporal nature of their impact (short-run versus long-run) need to be properly considered when studying the implications of these crises for investment. Our analysis also suggests that geopolitical crises can boost investment spending in the U.S. economy if the United States is not directly involved in them.

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1. Introduction

Geopolitical crises are often recognized as ubiquitous sources of uncertainty, with substantial implications for investment (Caldara and Iacoviello, 2022; Wang et al., 2023). Such crises trigger economic shocks like supply chain disruptions, financial market volatility, volatility in the prices and supply/demand of critical resources, and disruption in foreign investment flow (Caldara and Iacoviello, 2018; Guidolin and Ferrara, 2010; Alam et al., 2022; Gupta and Modise, 2013; Henriques and Sadorsky, 2008; Kesicki, 2010; Hui, 2022; Niederhoffer, 1971; Chen and Siems, 2004; Schneider and Troeger, 2006; Bradford and Robison, 1997; Kollias et al., 2011). Additionally, these crises heighten unpredictability regarding government trade, fiscal, and monetary policies (Baker et al., 2016). The resulting economic and policy uncertainties have a significant impact on investment patterns. However, the direction, magnitude, and conditional nature of this impact remain theoretically—and, to a lesser extent, empirically—ambiguous.

The link between uncertainty and investment is still up for debate. Studies identify two conflicting effects of any kind of uncertainty, including the type induced by geopolitical crises, on investment. Proponents of the real-option effect propose that greater uncertainty increases the real-option value of waiting to avoid investment commitments that prove costly to modify ex post, thereby dampening investment (Bernanke, 1983, Brennan and Schwartz, 1985, McDonald and Siegel, 1986; Rodrik, 1991; Dixit and Pindyck, 1994). In contrast, proponents of the Oi-Hartman-Abel effect (Oi, 1961; Hartman, 1972; Abel, 1983) suggest that in the face of increased uncertainty, economic actors could have an incentive to invest now because future liquidity required to exercise the real option may itself be subject to adverse shocks (Boyle and Guthrie, 2003). Therefore, in theory, the impact of geopolitical crises on investment can be either positive or negative, depending on which of these effects prevails.

Most empirical studies support the real-option effect. For example, in studying the link between geopolitical risk and firm-level investment in the United States, Wang et al. (2023) report a negative overall impact of geopolitical crises and conclude that the real-option effect is more dominant. Caldara and Iacoviello (2022) observe a similar pattern in their study of aggregate-level investment spending in the United States. Likewise, international evidence from different economies shows that geopolitical crises are associated with lower investment (Hu et al., 2023; Tan et al., 2022).

However, despite substantial evidence supporting the real-option effect, analysts also document the heterogeneity or asymmetry in the geopolitical impact across firms and countries, leading to some ambiguity in the overall empirical findings. Wang et al. (2023) identify a heterogeneity in firms' exposure to geopolitical risk, with a stronger negative effect for firms with more irreversible investment and higher market power and a less pronounced or even positive effect for firms with a higher labor-to-capital ratio. Kim and Kung (2017) explore how asset redoployability (the usability of assets within and across industries) mediated the extent to which the first Gulf War in 1990 and the 9/11 terrorist attacks in 2001 influenced firms' investment decisions. They show that firms with less redeployable capital reduce investment more. Similarly, Dissanayak et al. (2020) examine the modifying effect of financial slack and investment irreversibility. Their results show that firms with more tangible investments and lower asset redeployability decrease their capital investment in response to geopolitical risk shocks. Using evidence from Chinese firms from 2002 to 2017, Hu et al. (2023) document that the magnitude of a geopolitical impact depends on the physical proximity of firms to the immediate site of the geopolitical crisis (the North Korean nuclear test in their analysis). They find that the negative impact was strongest for firms physically closest to the site of the crisis and diminished as firms got farther away from the site. Other studies similarly report that factors like financial constraints (e.g., cash holding, dividend), size, and age create notable heterogeneity in firms' experience of geopolitical crises (Le and Tran, 2021; Kotcharin and Maneerop, 2020; Tan et al., 2022).

Studies note heterogeneity not only at the firm level but also at the country level. Le and Tran (2021), using a sample spanning 1995–2018, find that geopolitical risks in China and Russia had a greater impact on corporate investment compared to India and Turkey. Though their immediate focus is not investment per se, several studies report country-level heterogeneity in the economic impact of geopolitical crises. Blomberg et al. (2004) find that in OECD economies, the negative economic influence of terrorist incidents on growth is smaller than non-OECD economies. Tavares (2004) reports that terrorist attacks create lower economic costs on more democratic countries. In their investigation of the effect of terrorism on the financial markets, Arin et al. (2008) find that the negative effect of terrorism is more pronounced for emerging markets. In examining the impact of the 2022 Russian invasion of Ukraine on global stock market indices, Boubaker et al. (2022) find that more globally integrated economies are more vulnerable to international conflicts.

The theoretical and empirical ambiguity surrounding the link between geopolitical crises and investment calls for further research. In examining the aggregate investment cycles in the United States over time, our paper offers a further set of evidence to bear on this link. Our contributions to the existing body of research are four-fold.

First, instead of focusing on the mere presence/absence and frequency of crises like most studies on the subject do, we explore the different dimensions of geopolitical crises—such as duration, intensity, and scope—and ascertain whether the strength and direction of the relationship between geopolitical crises and investment vary based on the dimensionality of the geopolitical crises. Such a dimensional focus offers a more nuanced and insightful approach than merely examining their presence or frequency. Although the occurrence or number of crises provides a surface-level understanding, these metrics alone fail to capture the varied ways in which these events could influence investment dynamics. For instance, a prolonged but low-intensity crisis may have different economic implications compared to a brief yet highly intense conflict. Similarly, a crisis involving many nations introduces complexities that crises involving few countries do not. This dimensional focus enables a deeper understanding of the mechanisms through which geopolitical crises impact investment.

Second, our empirical strategy distinguishes between the short- and long-run effects of geopolitical crises. Such a differentiation represents a novelty for the literature, which has not paid enough attention to the temporal nature of the geopolitical impact. As noted, geopolitical crises often trigger immediate market reactions, such as increased volatility, risk aversion, and uncertainty. This can lead to temporary investment slowdowns as firms adopt a "wait-and-see" approach, consistent with the real-option effect. Over time, however, firms and markets may adjust to new geopolitical realities, leading to policy responses, structural shifts, or even investment opportunities in certain sectors (e.g., defense, energy). These adjustments may either mitigate or exacerbate the initial impact, leading to long-term shifts in investment patterns.

Third, our study differentiates crises by the extent of involvement in the crises. The common premise in the literature is that geopolitical crises create generalized shocks that are felt more or less evenly across the international system. We differentiate crises where a country is directly involved from those crises where the country is not directly involved and explore the difference between the two. Our reasoning is straightforward: the economic shocks and policy implications of a geopolitical crisis can be more pronounced when a country gets more directly involved in it. However, if a country is not directly involved in a geopolitical crisis, the investment pattern might be different in that country because it may be able to avoid the brunt of the geopolitical impact and even become a safe haven for investors, leading to a potentially positive impact on the investment level in that country.

Fourth, with few exceptions (Hu et al., 2023; Kim and Kung, 2017), analysts typically rely on a news-based index of geopolitical uncertainty to study the relationship between geopolitical crises and investment (Caldara and Iacoviello, 2022; Wang et al., 2023). In our research, we employ a new dataset to measure geopolitical crises: the International Crisis Behavior (ICB) project (Brecher and Wilkenfeld, 2000; Brecher et al., 2023). This dataset allows us to focus on the actual engagement of the United States in specific conflict situations over time. Such a focus offers at least two advantages over a news-based approach. First, it provides a more objective assessment of the topic because it is grounded in tangible actions such as military deployments rather than subjective media narratives. Second, it reduces the potential for bias or sensationalism often present in news reports, which can exaggerate or misrepresent the scale of a crisis.

2. Data and Variables

We analyze the impact of geopolitical crises on investment cycles in the United States by using annual time-series data from 1960 to 2019. Our sample period is based on the availability of data for the variables in our analysis. Especially noteworthy is the upper cap of our time frame, 2019, which is strictly based on the availability of data for geopolitical crises.

In identifying geopolitical crises, we employ a dataset commonly used in the field of international relations but novel for the literature on the geopolitics-investment nexus: the International Crisis Behavior (ICB) project (Brecher and Wilkenfeld, 2000; Brecher, et al., 2023). The project defines a geopolitical crisis as an adversarial situation where international actors (typically governments) face a threat to their core values and interests, time pressure for a response, and a heightened probability of involvement in military hostilities (Brecher et al., 2023). The latest version of the dataset produced in this project covers 496 geopolitical crises for the period 1918–2019. Because the dataset provides a vast amount of information about these crises and thus allows us to measure their dimensionality, it is appropriate for our purpose.

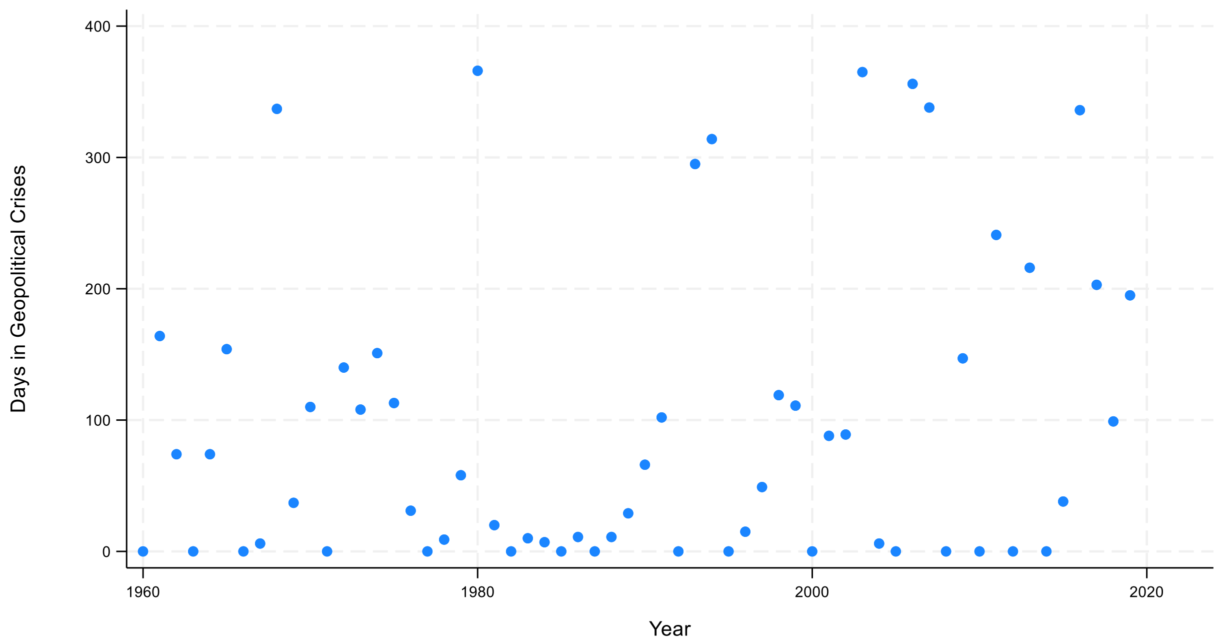
Initially, we divide the geopolitical crises covered in the dataset into two categories: the ones where the United States is coded as a crisis actor and the ones where the United States is not listed as a crisis actor. A crisis actor means an actor that is directly involved either as an initiator or target of an adversarial situation. Some recent examples of crises with the United States coded as a crisis actor include the 2002, 2009, 2013, and 2017 episodes of the North Korean nuclear crisis; the 2006 Iranian nuclear crisis; the 2011 Libyan civil war; and the 2015 Turkey–Russia jet incident.[1] Some examples of crises without the United States listed as a crisis actor include the 2014 Russian takeover of Crimea, the 2011 South Soudan crisis, the 2014 India–Pakistan border firing, and the 1998 and 2005 episodes of the Ethiopia–Eritrea conflict.

Based on the information from the crises where the United States is coded as a crisis actor, we create measures for three dimensions of geopolitical crises: duration, intensity, and scope. *Crisis Duration* is measured by the number of days in a year that the United States was

[1] In the 2015 Turkey–Russia jet incident, Turkey and the United States' joint membership in the North Atlantic Treaty Organization (NATO) automatically made the United States a crisis actor.

coded as a crisis actor. Using the start and end dates of the crises listed in the dataset, we can identify which and how many days the United States was in a geopolitical crisis in a year. We measure *Crisis Intensity* by using scores on the extent of violence in a crisis. For each crisis, the dataset offers an ordinal scale of the extent of violence in it ("1" denoting no violence, "2" minor clashes, "3" serious clashes, and "4" full-scale war).[2] Our assumption is that more violence suggests greater conflict intensity. Furthermore, the dataset gives the total number of crisis actors for each of the crises. Based on the premise that a greater number of crisis actors implies a larger scope, we employ this information to construct *Crisis Scope*, specifically the number of crisis actors in the crises in which the United States was involved in a year.[3] If there are multiple crises occurring in a year, we add the intensity and scope scores of those conflicts to generate a summative annual value for that year. Figures 1–3 present the data on *Crisis Duration*, *Crisis Intensity*, and *Crisis Scope*.

Figure 1. Crisis Duration (the Number of Days in a Year with the United States in a Geopolitical Crisis)

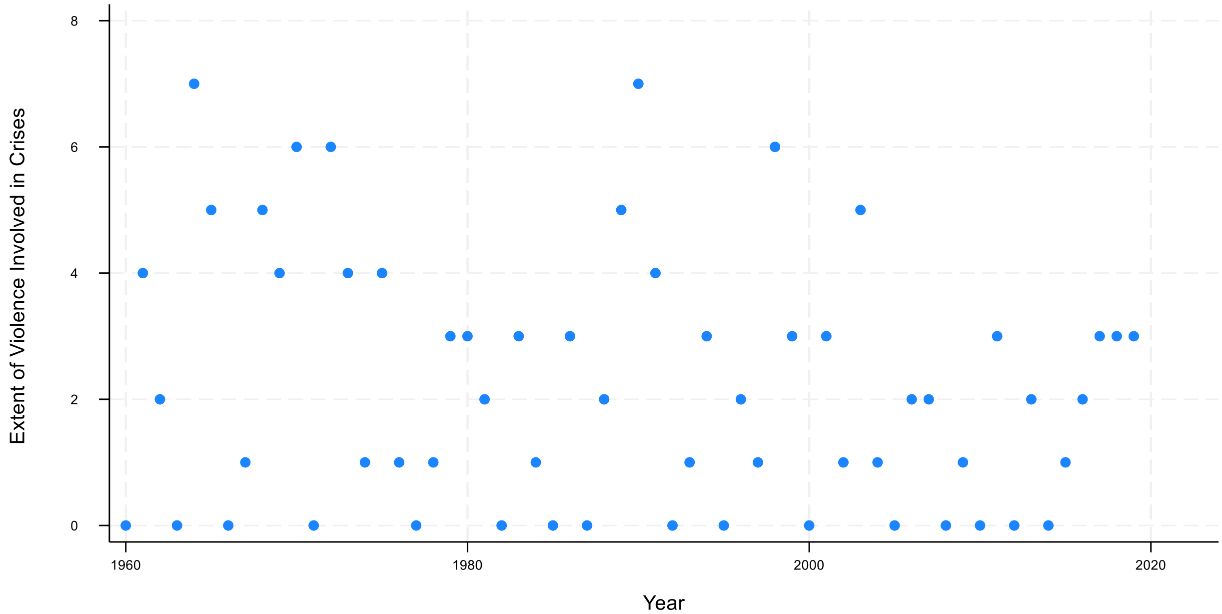


Notes: The data is the authors' own collection, based on the information taken from the International Crisis Behavior (ICB) project (Brecher and Wilkenfeld, 2000; Brecher, et al., 2023)). Using the end and beginning dates of crises, it is possible to identify which and how many days the U.S. was coded as a crisis actor in a given year

[2] For example, among the recent crises, the 2013 North Korean nuclear crisis has a violence score of 1, and the 2011 Libyan civil war has a score of 3.

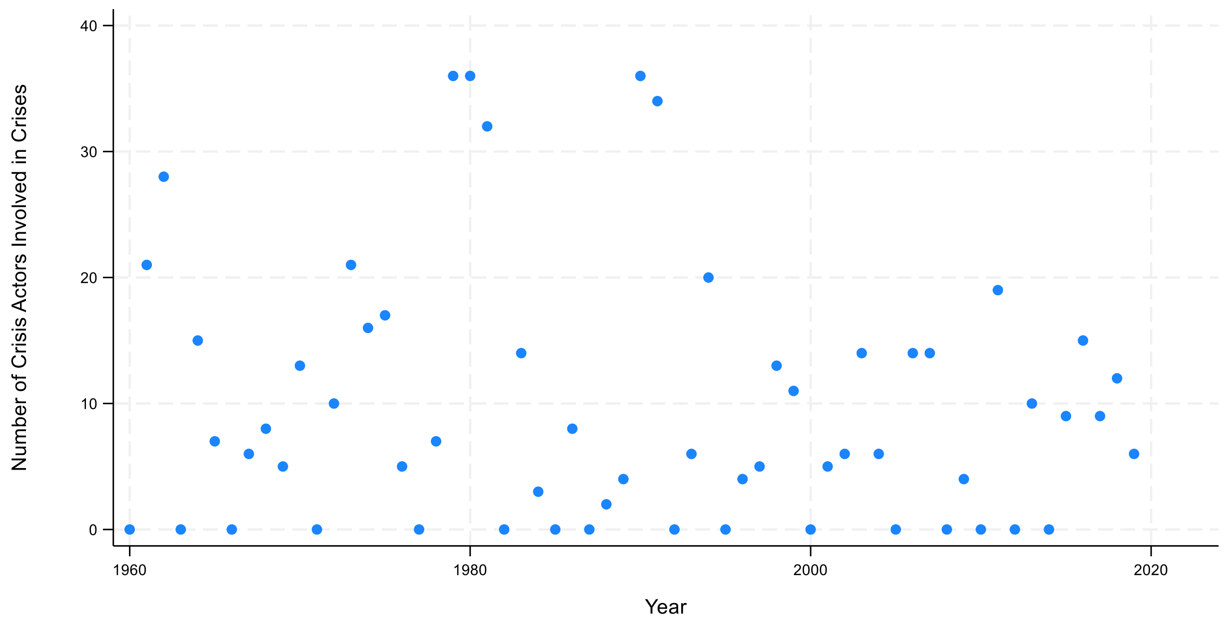
[3] For example, among the recent crises, while the 2011 Libyan civil conflict has 19 crisis actors listed, the 2017 episode of the North Korean nuclear crisis has six crisis actors.

Figure 2. Crisis Intensity (Extent of Violence in Geopolitical Crises with the U.S. as a Crisis Actor from 1960 to 2019)



Notes: The annual data is the authors' own collection, based on the information taken from the International Crisis Behavior (ICB) project (Brecher and Wilkenfeld, 2000; Brecher, et al., 2023)). Each crisis in the dataset is given a severity of violence score, ranging from 1 to 4 with higher scores indivating greater violence. If there are multiple crises with the U.S. as a crisis actor, we added the violence scores of these crises to create a summative annual value.

Figure 3. Crisis Scope (the Total Number of Crises Actors in Crises with the U.S. as a Crisis Actor from 1960 to 2019)

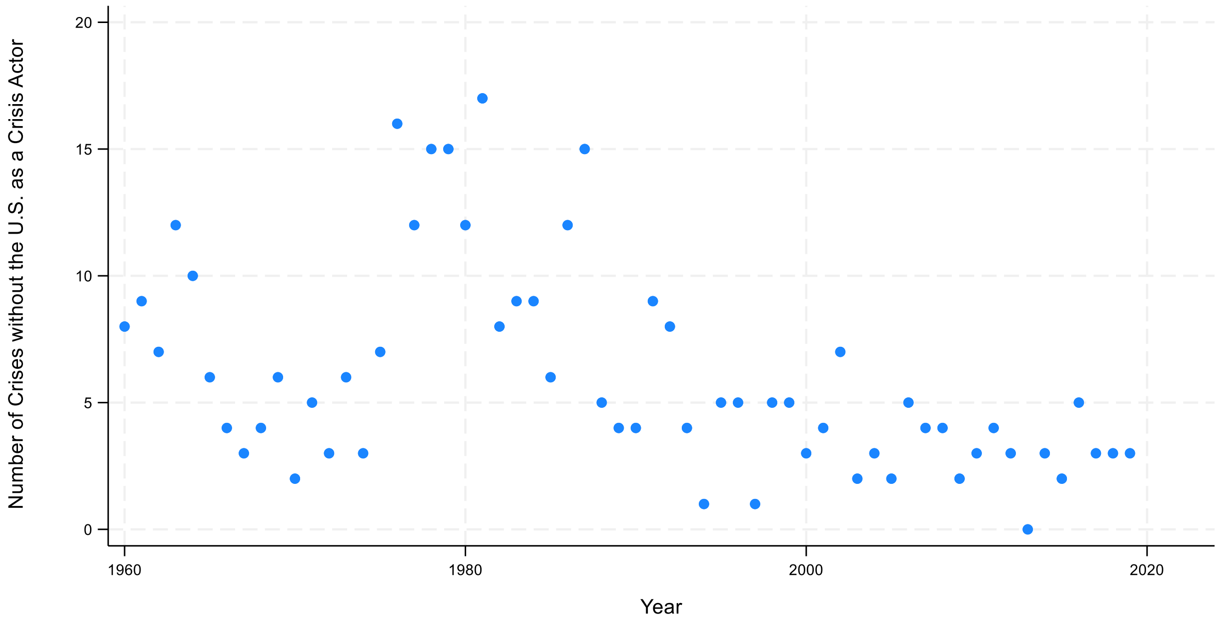


Notes: The annual data is the authors' own collection, based on the information taken from the International Crisis Behavior (ICB) project (Brecher and Wilkenfeld, 2000; Brecher, et al., 2023)). The dataset identifies the total number of crises actors in each crisis. If there are multiple crises in a given year, we added the total numbers of crises actors in those crises to create a summative annual value.

We also include a separate variable to capture those crises where the United States is not listed as a crisis actor: *World Crises*. It is a measure of the total number of such crises occurring in a year. This variable helps to disentangle the specific effects of crises with direct U.S. involvement from other crises without such involvement. The impact of these crises can be either negative or positive. It can be negative because geopolitical crises create negative spillover effects for all actors, regardless of whether they are active parts of those crises. Even when the

United States is not directly involved, major geopolitical crises can create ripple effects that influence U.S. investment cycles. The impact of those crises for investment levels in the United States can also be positive. During those crises, the United States can attract investors who might be looking for a safe haven. We present the annual data for *World Crises* in Figure 4.

Figure 4. World Crises (Crises without the U.S. as a Crisis Actor from 1960 to 2019)

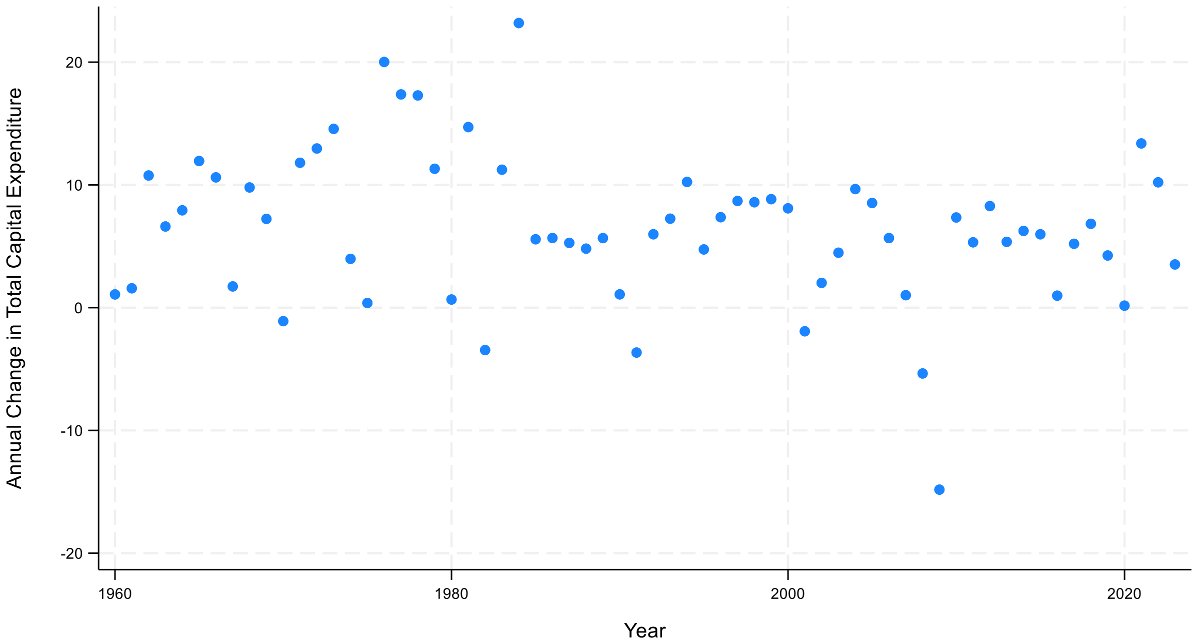


Notes: The annual data is the authors' own collection, based on the information taken from the International Crisis Behavior (ICB) project (Brecher and Wilkenfeld, 2000; Brecher, et al., 2023)).

Our dependent variable is investment cycles in the United States, which we measure as the annual percentage change in the total capital expenditure (*TotalCapExp*) each year. Capital expenditure refers to funds used in the economy to acquire, upgrade, or maintain physical assets such as property, industrial buildings, or equipment. The annual percentage change in total capital expenditure effectively captures shifts in investment behavior, making it a reasonable proxy for investment cycles. Figure 5 presents the data on our dependent variable.

Our analysis includes some control variables as well. We include *Election*: a dummy variable with a value of "1" for the general election years and "0" otherwise. Elections, especially presidential elections, introduce uncertainty about future policies, including taxation, regulation, trade, and government spending. This uncertainty can influence business confidence and investment decisions. Investors and businesses may adopt a "wait-and-see" approach during election years, affecting investment timing and volume. Research shows that stock markets and other financial indicators often exhibit heightened uncertainty around U.S. general elections, which can cascade into broader investment behavior (Baker et al., 2016; Julio and Yook, 2012). Including this variable allows the model to distinguish between the effects of geopolitical uncertainty and those driven by election-related uncertainty.

Figure 5. Annual Percentage Change in Total Capital Expenditure in the United States (All Sectors)



Notes: The data is taken from the Federal Reserve Bank of St. Louis (retrieved from https://www.stlouisfed.org/)

We control for the partisan orientation of the executive branch with *Democrat*: a dummy variable with a value of "1" if Democrats are controlling the White House and "0" if Republicans are in power. Different political parties and candidates often have distinct economic agendas with consequences for investment (Hibbs, 1977). The two parties also tend to adopt distinct foreign policy approaches to geopolitical crises (Dwived and Mishra, 2021). Whereas Republicans have historically focused on military strength and assertive foreign policy, potentially intensifying responses to geopolitical crises, Democrats have often emphasized diplomacy and multilateralism, which might moderate the economic impacts of crises.

We include some usual economic correlates of investment cycles. For example, *Consumer Sentiment* (the University of Michigan Consumer Sentiment Index or the Conference Board Consumer Confidence Index, which track the attitudes and expectations of consumers) tends to move in cycles. As such, it can provide insights into the general mood of and expectations in the U.S. economy. Investment is highly sensitive to *Federal Fund Rate* as well.

3. Method and Results

Our empirical strategy employs the bounds testing (or autoregressive distributed lag [ARDL]) cointegration procedure developed by Pesaran et al. (2001). Our model takes the following form:

$$\Delta TotalCapEx_t = \theta + \sum_{(i=1)}^{m} \alpha_{1,i}\, \Delta TotalCapEx_{t-1} + \sum_{(i=1)}^{m} \beta_{1,i}\Delta(Crisis\ Duration)_{t-1} + \sum_{(i=1)}^{m} \beta_{2,i}\Delta(Crisis\ Intensity)_{t-1} + \sum_{(i=1)}^{m} \beta_{3,i}\Delta(Crisis\ Scope)_{t-1} + \sum_{(i=1)}^{m} \beta_{4,i}\Delta(World\ Crises)_{t-1} + \sum_{(i=1)}^{m} \beta_{5,i}\Delta(Election)_{t-1} + \sum_{(i=1)}^{m} \beta_{6,i}\Delta(Democrat)_{t-1} + \sum_{(i=1)}^{m} \beta_{7,i}\Delta(Consumer\ Sentiment)_{t-1} + \sum_{(i=1)}^{m} \beta_{8,i}\Delta(Federal\ Fund\ Rate)_{t-1} + \Omega_1(Crisis\ Duration)_{t-1} + \Omega_2(Crisis\ Intensity)_{t-1} + \Omega_3(Crisis\ Scope)_{t-1} + \Omega_4(World\ Crises)_{t-1} + \Omega_5(Election)_{t-1} + \Omega_6(Democrat)_{t-1} + \Omega_7(Consumer\ Sentiment)_{t-1} + \Omega_8(Federal\ Fund\ Rate)_{t-1} + \mu_t \quad (1)$$

where β_0, β_1, β_2, β_3, β_4, β_5, β_6, β_7, and β_8 are parameters to be estimated; m is the maximum lag length; Ω_i represents the long-run multipliers; θ is the drift; μ represents the white noise errors; and t is the annual time period.[4]

The ARDL framework depends on the time series characteristics and nature of the datasets. So, we initially examine the order of integration. For this purpose, we use the Augmented Dick Fuller (ADF) and Phillips-Perron (PP) tests to determine the stationarity of the variables. The results, presented in Table 1, show that five of the nine series (*TotalCapEx*, *Crisis Duration*, *Crisis Intensity*, *Crisis Scope*, and *Election*) are stationary or integrated at levels or order zero I(0), while the other four (*World Crises*, *Consumer Sentiment*, *Federal Fund Rate*, and *Democrat*) become stationary after first differencing I(1).

Table 1. Unit Root Tests

	Augmented Dick Fuller (ADF) Test		*Philips-Perron (PP) Test*		*Conclusion*
Variables	*Level*	*First Difference*	*Level*	*First Difference*	
TotalCapEx	-6.243 (0.000)		-6.214 (0.000)		I(0)
Crisis Duration	-7.794 (0.000)		-7.826 (0.000)		I(0)
Crisis Intensity	-7.447 (0.000)		-7.446 (0.000)		I(0)
Crisis Scope	-6.119 (0.000)		-6.064 (0.000)		I(0)
World Crises	-3.463 (0.009)		-3.345 (0.013)	-11.594 (0.000)	I(I)
Consumer Sentiment	-2.616 (0.089)	-7.121 (0.000)	-2.850 (0.051)	-7.082 (0.000)	I(1)
Federal Fund Rate	-2.020 (0.277)	-5.737 (0.000)	-2.077 (0.253)	-5.480 (0.000)	I(1)
Election	-10.774 (0.000)		-36.772 (0.000)		I(0)
Democrat	-2.995 (0.035)	-8.010 (0.000)	-3.325 (0.014)	-8.013 (0.000)	I(1)

Notes: The entries in parentheses are p-values. The critical values for the ADF with the 1%, 5%, and 10% levels of significance are -3.430, -2.860, and -2.570. The critical values for the PP test with the 1%, 5%, and 10% levels of significance are -3.960, -3.410, and -3.120.

Next, we run the ADRL bounds cointegration test. This test helps to establish long-run cointegration relationships among the time series variables. After estimating our model by OLS, we conduct an F-test for the joint significance of the coefficients of the lagged levels of the variables. The approximate critical values for the F-statistics are obtained from Narayan (2005). These values are adjusted for small samples like ours. Table 2 presents the results of the bound F-tests for cointegration together with the asymptotic critical values. The computed F-statistic for our main model (13.46) is much higher than the upper critical bound at 1%, 5%, and 10% critical values. Therefore, we can confidently conclude there is a long-run cointegration relationship among the variables.

Table 2. Autoregressive Distributed Lag (ARDL) Bound Test

Test Statistic		Value
F-Statistic		13.46
Asymptotic Critical Value Bounds		
Significance	I(0) Bounds	I(1) Bounds
10%	2.70	3.90
5%	3.28	4.63
1%	4.59	6.37

Notes: Critical values are from Narayan (2005), which are adjusted for small samples like ours

[4] It is worth noting that we include all our variables in their levels, which is essential for the ARDL model to be valid.

With the establishment of a long-run relationship, we then estimate the short-run parameters from the following error correction model (ECM):

$$\Delta TotalCapEx_t = + \alpha_{1,i}\, \Delta TotalCapEx_{t-1} + \beta_{1,i}\Delta(Crisis\ Duration)_{t-1} + \beta_{2,i}\Delta(Crisis\ Intensity)_{t-1} + \beta_{3,i}\Delta(Crisis\ Scope)_{t-1} + \beta_{4,i}\Delta(World\ Crises)_{t-1} + \beta_{5,i}\Delta(Election)_{t-1} + \beta_{6,i}\Delta(Democrat)_{t-1} + \beta_{7,i}\Delta(Consumer\ Sentiment)_{t-1} + + \beta_{8,i}\Delta(Federal\ Fund\ Rate)_{t-1} + \vartheta\ TotalCapEx_{t-1} + \mu_t \ldots\ldots\ldots\ldots (2)$$

where ϑ is an expectedly negative coefficient indicating the speed of adjustment to equilibrium, $ECT_{(t-1)}$ is the coefficient for the error correction term obtained from the estimation of the long-run equation, and α and β are the short-run dynamic coefficient model's convergence to equilibrium.

Table 3 lays out the long- and short-run dynamic parameters for the variables. The ECM is negative and highly significant. This offers another piece of evidence for the cointegration relationship among the variables of our model. The ECM coefficient is equal to -0.88, indicating the rate at which the deviation from the long-term *TotalCapEx* is corrected in coming years. Overall, the results highlight the temporal variation in geopolitical crises' impact on investment cycles in the United States. That is, the full impact is not felt immediately but is realized over time.

The results for the geopolitical crisis variables display different patterns. *Crisis Duration* appears to have neither a short-run nor a long-run impact on investment. In other words, how long the United States has been involved in a crisis does not make a difference in the investment cycles in the country. *Crisis Intensity* has opposite short- and long-run effects. Although a growing intensity of geopolitical crises with the United States as a crisis actor leads to an initial decline in investment, this decline is too much and needs to be corrected with an increase in investment in coming years, as indicated by the long-run parameter for *Crisis Intensity. Crisis Scope* does not have any short-run impact. In other words, a growth in the number of crisis actors in crises in which the United States is involved does not have any notable short-run impact. However, the long-run parameter for this variable suggests that the impact turns negative and significant in the long run, dampening investment. *World Crises* has both short- and long-run positive significant impacts on investment. When the number of geopolitical crises without the United States as a crisis actor increases, this has an initial positive impact on investment in the United States. However, this positive change is not enough and is corrected in the following years with an even greater increase.

Table 3. The Autoregressive Distributed Lag (ARDL) Model of the Determinants of Investment Cycles in the United States from 1960 to 2019

		Coefficient		Std Error
Long-Run Effect				
	Crisis Duration$_{(t-1)}$	**0.002**		**0.006**
	Crisis Intensity$_{(t-1)}$	**2.001**	***	**0.655**
	Crisis Scope$_{(t-1)}$	**-0.364**	***	**0.120**
	World Crises$_{(t-1)}$	**0.686**	***	**0.183**
	Consumer Sentiment$_{(t-1)}$	-0.085		0.067
	Federal Fund Rate$_{(t-1)}$	0.025		0.215
	Election$_{(t-1)}$	-1.001		2.142
	Democrat$_{(t-1)}$	-0.853		1.342
Short-Run Effect				
	ΔCrisis Duration$_{(t)}$	**0.002**		**0.005**
	ΔCrisis Intensity$_{(t)}$	**-0.244**		**0.357**
	ΔCrisis Intensity$_{(t-1)}$	**-0.582**	**	**0.258**
	ΔCrisis Scope$_{(t)}$	**-0.022**		**0.077**
	ΔWorld Crises$_{(t)}$	**0.606**	***	**0.148**
	ΔConsumer Sentiment$_{(t)}$	0.350	***	0.067
	ΔConsumer Sentiment$_{(t-1)}$	0.317	***	0.072
	ΔFederal Fund Rate$_{(t)}$	1.248	***	0.342
	ΔElection$_{(t)}$	0.766		1.156
	ΔDemocrat$_{(t)}$	-3.048	*	1.589
	ΔDemocrat$_{(t-1)}$	2.639		1.387
Error Correction Term (ECM)				
	TotalCapExp$_{(t-1)}$	-0.883	***	0.000
Number of Observation		58		
R-Squared		0.88		

*Notes: This table presents the main results with the long-run and short-run dynamic parameters, estimated using the bounds testing or autoregressive distributed lag (ARDL]) cointegration procedure developed by Pesaran et al. (2001). The dependent variable is the annual percentage change in the total capital expenditure in the United States. 'Δ' and 't' refer to change and time (year), respectively. Standard errors are in paranthesis. *, ** and *** refer to 10%, 5% and 1% significant levels, respectively.*

We run our main regression with different model specifications to test the robustness of our results. We first employ different measures of investment cycles in the United States: an annual percentage change in private fixed investment and private investment as a percentage of GDP. While the former refers to a change in investment spending only by the private sector on long-term assets (including nonresidential structures, machinery, and intellectual property), the latter measures investment relative to the total output of the economy. As shown in Models 1 and 2 of Table 4, the results for our key variables are substantively the same.

For the sake of parsimony, our original model is selective in its control variables. This selectiveness is important, especially given the small size of our sample and hence the small degrees of freedom. We also test the stability of our results to the inclusion of more control variables. First, we add a variable for the Cold War period. The Cold War was the defining geopolitical conflict during a significant portion of the study period, shaping U.S. foreign policy, defense spending, and economic priorities. It represented a prolonged state of geopolitical tension rather than isolated crises, introducing a structural factor that influenced the U.S. economy across decades. *Cold War* is a dummy variable with a value of "1" for the Cold War years (before 1992) and "0" otherwise. Our results, presented in Model 3 of Table 4, confirm the robustness of our results to the consideration of the Cold War. Additionally, we run a further test by including more economic control variables in our model. Because investment cycles are known to be cyclical, we include additional control variables like capacity utilization and technological shocks to enhance the robustness of our model. We measure capacity utilization with a capacity utilization index constructed by the Federal Reserve Board and technological shocks with annual percentage change in total factor productivity (Feenstra et al., 2015). We draw the data for both variables from the Federal Reserve's economic data (Board of Governors of the Federal Reserve System, 2025). As Model 4 of Table shows, our main results remain generally stable.

Furthermore, in selecting optimal lags to be used to determine the order of the ARDL model, we use the Akaike information criterion (AIC). We conduct our analysis using alternative selection criteria like BIC, SIC, or HQ. Given the space constraints here, we report the results only with BIC in Model 5 of Table 4. Available upon request, the results show that employing the alternative selection criteria does not change our main findings.

4. Conclusion

Our results offer new insights into the relationship between geopolitical crises and investment. First, we show that the dimensionality of geopolitical crises is important to consider. While duration is not significant for investment patterns, intensity and scope matter in somewhat opposite ways. One way to explain the insignificant and inconsistent effects of direct U.S. involvement in geopolitical crises is to note that geopolitics-induced uncertainty sets off the contradictory forces of the real-option and Oi-Hartman-Abel effects, and neither of these effects is consistently dominant as far as such crises are concerned. Second, it is important to differentiate between short-run and long-run impacts. For example, crisis scope does not appear to make a difference in the short run; however, its full impact turns negative as it materializes over a longer period. Third, although the investment implications of geopolitical crises with the United States as a crisis actor are not clear cut, the implications of crises without direct U.S. involvement appear to be much clearer. The results suggest that geopolitical crises can in fact boost investment spending in the U.S. economy if the United States is not directly involved in them. Given the relative size and health of the U.S. economy, those crises without direct U.S. involvement appear to lead to a "flight to safety," where foreign investors seek refuge in U.S. assets (e.g., treasury bonds, equities, and real estate). This inflow of capital can stimulate investment by lowering borrowing costs and increasing liquidity in U.S. markets. What our findings collectively denote is that in understanding the relationship between geopolitical crises and investment, context matters.

Table 4. Robustness Checks

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 4*
Long-Run Effect					
Crisis Duration$_{(t-1)}$	-0.018	0.002	0.002	0.006	-0.001
	(0.017)	(0.008)	(0.006)	(0.006)	(-0.006)
Crisis Intensity$_{(t-1)}$	2.944 ***	2.860 ***	2.053 **	0.519	1.487 **
	(0.984)	(0.846)	(0.811)	(0.518)	(-0.590)
Crisis Scope$_{(t-1)}$	-0.352 **	-0.464 ***	-0.369 ***	-0.309 **	-0.240 **
	(0.169)	(0.154)	(0.132)	-0.125	(0.102)
World Crises$_{(t-1)}$	0.790 ***	0.856 ***	0.699 ***	0.400	0.635 ***
	(0.286)	(0.243)	(0.218)	-0.184	(0.172)
Cold War$_{(t-1)}$	-	-	-0.207	-	-
			(1.811)		
Short-Run Effect					
ΔCrisis Duration$_{(t)}$	-0.004	0.001	0.002	0.005	-0.001
	(0.006)	(0.007)	(0.005)	(0.004)	(0.005)
ΔCrisis Duration$_{(t-1)}$	0.012 **	-	-	-	-
	(0.005)				
ΔCrisis Intensity$_{(t)}$	0.395	-0.303	-0.224	-0.539 *	-0.327
	(0.372)	(0.489)	(0.402)	(0.310)	(0.364)
ΔCrisis Intensity$_{(t-1)}$	-0.823 ***	-	-0.588 **	-	-0.507 *
	(0.292)		(0.265)		(0.267)
ΔCrisis Scope$_{(t)}$	-0.063	-0.031	-0.024	-0.003	0.037
	(0.081)	(0.104)	(0.080)	(0.065)	(0.078)
ΔWorld Crises$_{(t)}$	0.501 ***	0.796 ***	0.615 ***	0.282 **	0.607 ***
	(0.168)	(0.204)	(0.168)	(0.124)	(0.154)
ΔCold War$_{(t)}$	-	-	-0.182	-	-
			(1.586)		
Error Correction Term (ECM)					
TotalCapEx$_{(t-1)}$	-	-	-0.880 ***	-0.704 ***	-0.955 ***
			(0.111)	(0.095)	(0.106)
Private Fixed Investment$_{(t-1)}$	-0.634 ***	-	-	-	-
	(0.099)				
Private Investment- GDP Percent$_{(t-1)}$	-	-0.931 ***	-	-	-
		(0.101)			
Number of Observation	58	58	58	58	58
Adjusted R-Squared	0.725	0.847	0.878	0.884	0.855

*Notes: This table presents the results of some additional rebustness tests with the long-run and short-run dynamic parameters, estimated using the bounds testing or autoregressive distributed lag (ARDL]) cointegration procedure developed by Pesaran et al. (2001). For the sake of simplicity, we presents only the results for the geopolitical crisis variables.The dependent variables are the annual percentage change in private fixed investment in Model 1, private investment as a percentage of GDP in Model 2 and, the annual percentage change in the total capital expenditure in Models 3, 4 and 5. Cold War in Model 3 is a dummy variable that has the value of "1" for year before 1992 and "0" otherwise. 'Δ' and 't' refer to change and time (year), respectively. Standard errors are in paranthesis. *, ** and *** refer to 10%, 5% and 1% significant levels, respectively.*

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