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**Geopolitical risk and corporate investment behavior: Evidence
from the hospitality sector in India**

Debojyoti Das

Finance & Accounting

Indian Institute of Management Bangalore

debojyoti.das@iimb.ac.in

Pranav Dharmani

Marketing & Strategy

Indian Intsitute of Management Rohatak

pranav.dharmani@iimrohtak.ac.in

Anupam Dutta

School of Accounting and Finance,

University of Vaasa, Finland

adutta@uwasa.fi

Sankarshan Basu

Finance & Accounting

Indian Institute of Management Bangalore

sankarshan.basu@iimb.ac.in

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Debojyoti Das
Finance & Accounting Area, Indian Institute of Management Bangalore, Bengaluru, Karnataka, India

* Corresponding author
debojyoti.das@iimb.ac.in

Pranav Dharmani
Marketing & Strategy Area, Indian Institute of Management Rohtak, Rohtak, Haryana, India

pranav.dharmani@iimrohtak.ac.in

Anupam Dutta*
School of Accounting and Finance, University of Vaasa, Vaasa, Finland

adutta@uwasa.fi

Sankarshan Basu
Finance & Accounting Area, Indian Institute of Management Bangalore, Bengaluru, Karnataka, India

sankarshan.basu@iimb.ac.in

Abstract

We examine the relationship between geopolitical risk (GPR) and corporate investments considering 395 Indian hospitality sector firms from 2003 to 2020. We find a statistically significant negative association among the variables of interest. We also observe that even the less financially constrained firms cannot mitigate the adverse effects of GPR entirely. We further report that firms in this industry reduce investments more when the GPR rises compared to an increase in investments when the GPR falls by an equal proportion. Nonetheless, the optimum deployment of security forces can alleviate the adversities of GPR to a considerable extent. Our findings add further insights to the existing knowledge, which may be helpful for regulators and business leaders in other emerging markets.

JEL classification: G11; G30; G32; G38; E22

Keywords: Geopolitical risk; Corporate investments; Terrorist attacks; Hospitality sector; India

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Abstract

We examine the relationship between geopolitical risk (GPR) and corporate investments considering 395 Indian hospitality sector firms from 2003 to 2020. We find a statistically significant negative association among the variables of interest. We also observe that even the less financially constrained firms cannot mitigate the adverse effects of GPR entirely. We further report that firms in this industry reduce investments more when the GPR rises compared to an increase in investments when the GPR falls by an equal proportion. Nonetheless, the optimum deployment of security forces can alleviate the adversities of GPR to a considerable extent. Our findings add further insights to the existing knowledge, which may be helpful for regulators and business leaders in other emerging markets.

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*"MUMBAI: The **terror attacks** that rocked India's financial capital may depress stocks, **dampen tourism and slow new investment**, ... "This is a challenge for the government to **maintain law and order** in the country," said Takahira Ogawa, director of sovereign ratings at Standard & Poor's in Singapore.... The attacks, which began Wednesday night when gunmen **invaded two posh hotels, a restaurant** and several other sites in downtown Mumbai, came as India was struggling to contain fallout from the global financial crisis."*

-Excerpt from "Mumbai attacks seen denting business confidence" The Economic Times, November 28, 2008

1. Introduction

The uncertainties induced by geopolitical risks¹ (GPR) are often a matter of grave concern to governments, businesses, and individuals to undertake or continue investments (Caldara and Iacoviello, 2022; Wang et al., 2019). Keynes (1937) implies that investment decisions are founded on the managerial judgement of future expectations regarding profitability and the stability of the business environment. An uncertain business condition prompted by GPR may confound managers to form a reasonable view of the future business outlook. For instance, a recent policy report by the Government of India (GoI) expresses severe apprehensions considering the Russia-Ukraine conflict and its likely impact on the Indian economy.² According to the report, the current geopolitical instability predisposes the economy to higher inflation and subdued corporate investments, besides other detrimental implications. Similarly, the latest financial stability report furnished by International Monetary Fund (IMF) also

¹ Geopolitical risks may be defined as the adversities arising from threat, escalation, or realization of undesirable events such as terrorist or military attacks, wars, or diplomatic or partisan conflicts. These events disrupt the peaceful course of domestic or international relations (Caldara and Iacoviello, 2022).

² Parliament Library, "Background note on Impact of Russia-Ukraine War on Indian Economy", July 2022, Research and Information Division, Parliament Library and Reference, Research, Documentation and Information Service, New Delhi, India.

The document is available at: <https://parliamentlibraryindia.nic.in/lcwing/Impact%20of%20Russia-Ukraine%20war%20on%20Indian%20Economy.pdf> accessed March 09, 2023, 12:56 Hours, Indian Standard Time (IST).

43 highlights the adverse influence of GPR in hindering global growth and investment potential.³
44 Further, at the investor's level, a recent survey by Wells Fargo/Gallup in 2017 finds that almost
45 75% (total 1000 respondents (approx.)) of US investors in the sample are apprehensive about
46 GPR waning a conducive investment environment.⁴ Given the prominence of GPR in
47 determining corporate investments, a nascent body of literature focuses on this relationship
48 (See Kim and Mun, 2022; Rumokoy et al., 2023; Wang et al., 2019). This article contributes
49 to the ongoing debate by adding a new dimension to the literature. We focus on and empirically
50 examine how GPR influences corporate investments in the hospitality industry in India.

51
52 The focus of our research is timely and relevant on at least three credible grounds. First,
53 India is a prominent representative of the emerging market universe. As of 2022, India's
54 nominal Gross Domestic Product (GDP) accounts for 3.5% of the global share. Moreover, the
55 Indian GDP is likely to progress by 2029, taking the country to the spot of the world's top three
56 GDP contributors.⁵ Nonetheless, the contributions to national GDP channelizing from the
57 hospitality sector are expected to accentuate India's growth story. According to the estimates
58 of KPMG, the Indian hospitality sector is likely to flourish at a compounded annual growth
59 rate (CAGR) of 16.10%, yielding US\$ 342 billion (approx.) by 2022.⁶ Such growth of the
60 hospitality sector seems reasonable given the GDP projections. On the one hand, following
61 domestic economic progress, discretionary public spending on quality hospitality experiences
62 may increase, corresponding to incremental disposable income.⁷ On the other hand, with the
63 advent of new trade opportunities in a growing economy, both inbound and outbound business
64 travel is another potential source of revenue for the hospitality sector in India. Indian business
65 travel market already attained a size of US\$ 35.60 billion in 2022, which is tending to soar up
66 to US\$ 59.50 billion by 2028. The predicted CAGR of 8.71% during 2023-2028 in the business
67 travel and accommodation segment could transpire as a catalyst for the growth of the Indian
68 hospitality sector.⁸

69
70 It is noteworthy that hospitality is one of the sectors where high taxes are levied in
71 India⁹, which can eventually become a significant source of fiscal revenues. Given the current

³ International Monetary Fund, "IMF/Global Financial Stability Report October 2022 Update", October 2022, IMF Media Center, United States.

The full report is available at: <https://mediacenter.imf.org/news/imf--global-financial-stability-report-october-2022-update/s/1730edc6-2e1e-4ede-89d0-d0453b77029f>, accessed March 09, 2023, 14:01 Hours, IST.

⁴ Wells Fargo, "Wells Fargo/Gallup Survey: Geopolitical Risks Greater Threat to Investments Than the Economy, Investors Say", July 2017, Wells Fargo & Company, San Francisco, United States. The webpage is available at: <https://newsroom.wf.com/English/news-releases/news-release-details/2017/Wells-FargoGallup-Survey-Geopolitical-Risks-Greater-Threat-to-Investments-Than-the-Economy-Investors-Say/default.aspx>, accessed March 09, 2023, 14:39 Hours, IST.

⁵ The Times of India, "India to become 3rd largest economy by 2029: SBI report", September 2022. The full report is available at: <https://timesofindia.indiatimes.com/business/india-business/india-to-become-3rd-largest-economy-by-2029-sbi-report/articleshow/93971469.cms>, accessed March 11, 2023, 20:43 Hours, IST.

⁶ Business World, "Hospitality Industry in India: A Big Contributor to Economy's Growth", May 2017. The full report is available at: <https://www.businessworld.in/article/Hospitality-Industry-In-India-A-Big-Contributor-To-Economy-s-Growth/16-05-2017-118291/>, accessed March 11, 2023, 21:44 Hours, IST.

⁷ *Ibid.*,

⁸ Imarc Insightful Insights, "India Business Travel Market: Industry Trends, Share, Size, Growth, Opportunity and Forecast 2023-2028", 2022, The full report is available at: <https://www.imarcgroup.com/india-business-travel-market/toc>, accessed March 12, 2023, 12:22 Hours, IST.

⁹ Meghna Maiti, "Your Foreign Holiday Trips Will Get Costlier From July. Know The Details", Outlook, February 2023. The full report is available at: <https://www.outlookindia.com/business/your-foreign-holiday-trips-will-get-costlier-from-july-know-the-details-news-261538>, accessed March 13, 2023, 13:42 Hours, IST.

72 fiscal consolidation target of government¹⁰, such revenues could be crucial in closing the fiscal
73 deficit and fostering economic growth. Besides, a well-instituted hospitality environment may
74 promote outbound tourism, attracting more Foreign Direct Investment (FDI) and foreign
75 exchange earnings, which is vital for any emerging economy (Alam and Paramati, 2016;
76 Drakos and Kutun, 2003). Nevertheless, GPR can emerge as a severe impediment to the Indian
77 growth story by constraining the evolution of the hospitality sector. The domestic inflation in
78 India is amplified by the ongoing Russia-Ukraine crisis on the count of supply chain
79 constraints. As a measure to quell inflation, the central bank (Reserve Bank of India) has
80 increased the benchmark lending rates.¹¹ While this is a commonly adopted remedial measure
81 by central banks to counter inflation, the downside is that such a measure discourages new
82 capital investments. Akron et al., (2020) state that firms in the hospitality sector require
83 recurrent investments in fixed assets. Since the business process of the hospitality firms is
84 heavily reliant on land, building, equipment and other tangible furnishings, this sector is largely
85 capital-intensive (Jiang and Dalbor, 2017; Sharma and Upneja, 2005). Therefore, the higher
86 cost of availing capital, leading to constrained investment, is a bottleneck for the hospitality
87 sector to operate optimally. Further, it is well-known that emerging markets are often plagued
88 by institutional voids, such as weaker law and order enforcement mechanisms and prompt
89 conflict resolution procedures (Gray, 1997; Khanna and Palepu, 2010). Moreover, emerging
90 markets are generally more susceptible to macroeconomic risks than their developed
91 counterparts, which affects tourist inflows (Tiwari et al., 2019). Thus, the hindrances the
92 regulators face in controlling the uncertainty swiftly pose severe concerns to the hospitality
93 sector. Notably, previous studies examining the influential role of uncertainties in shaping
94 corporate decisions in the hospitality sector are mainly confined to developed markets (Akron
95 et al., 2020; Das et al., 2020; Desautels and Christensen, 1990; Li and Singal, 2019). Given the
96 criticality of these relationships, unravelling the association between uncertainties and
97 corporate investments in the hospitality sector in an emerging market appears indispensable.

98
99 The second reason pertains to historical traces and imminent adversities of geopolitical
100 instability in India. Historically, India has been subjected to frequent invasions and mass
101 destruction of cultural heritage, besides ethnic conflicts claiming human lives (Collier, 2016;
102 Silverman and Ruggles, 2007). Sporadic geopolitical conflicts have been quite evident
103 following the historical trail in recent decades. For instance, the Indo-Pakistan armed conflicts
104 in 1948, 1965, 1971 and 1999 are prominent undesirable events succeeding long-standing
105 discords. Multiple incidents of bomb blasts in several parts of the country, such as in Mumbai,
106 Delhi, Assam, Jaipur, Gujarat, and Hyderabad, shook the course of societal serenity. Moreover,
107 India has also been a victim of dreadful terrorist attacks, such as the parliament attack in Delhi
108 2001, threatening the lives of political leaders and national sovereignty. Subsequently, another
109 horrendous terrorist attack was witnessed in the Taj Mahal Palace and Oberoi Trident hotels in
110 Mumbai in 2008.¹² Such attacks have flustered the nation's psyche by exposing India's
111 susceptibilities to terrorism and fault lines in the security protocol (Deshpandé and Raina,
112 2011). The victims of terrorist acts in the past may suffer post-traumatic stress disorder (PTSD)

¹⁰ The Economic Times, "India 'fairly' confident of cutting fiscal deficit to 4.5% of GDP in 3 years, says official", February 2023,

The full report is available at: <https://economictimes.indiatimes.com/news/economy/indicators/india-fairly-confident-of-cutting-fiscal-deficit-to-4-5-of-gdp-in-3-years-official/articleshow/97559805.cms?from=mdr>, accessed March 13, 2023, 13:56 Hours, IST.

¹¹ Press Trust of India, "Geopolitical tensions biggest risk to India's growth outlook: Jayanth Varma", Business Standard, August 2022, New Delhi. The full report is available at: https://www.business-standard.com/article/economy-policy/geopolitical-tensions-biggest-risk-to-india-s-growth-outlook-jayanth-varma-122082400321_1.html, accessed March 14, 2023, 14:37 Hours, IST.

¹² A more detailed list of the mentioned geopolitical events in India is available in appendix Table A2.

113 for several subsequent months (American Psychiatric Association and Association, 2013). In
114 addition, these geopolitical events may worsen the degree of perceived safety by international
115 and domestic travellers (Tiwari et al., 2019). A combination of these factors may affect tourist
116 movements leading to the constricted flow of revenues to the hospitality sector. In this context,
117 Tiwari et al., (2019) argue that GPR is of greater concern to tourism in India as the impacts are
118 chronic and have long-run implications. Given such systemic vulnerabilities in the country due
119 to GPR, whether it constrains the capacity development of the hotel and restaurant industry in
120 India is a crucial question.

121
122 The third reason stems from the fact that while economic and political uncertainties
123 (EPU) affect all sectors somewhat uniformly, the impact of GPR can vary across sectors (Cam,
124 2008; Kannadhasan and Das, 2020; Ramiah et al., 2010). Thus, a sector or industry-specific
125 focus becomes a pertinent choice to diagnose its vulnerability to GPR (Rumokoy et al., 2023).
126 This study explicitly focuses on the hotel and restaurant industry in the Indian hospitality
127 sector¹³. As stated before, the hotel and restaurant industry is capital investment intensive
128 (Akron et al., 2020). Regular investments in capacity development and renovation are
129 unavoidable in this industry to enhance the quality of experience for the patrons. The
130 investment hindrances sparked by GPR are thus expected to potentially constrain strategic
131 expansion or service improvisation goals of firms in the industry (Jallat and Shultz, 2011).
132 Consequently, failing to provide state-of-the-art facilities and services by hotels and restaurants
133 may discourage travellers from picking the host country as a desirable destination. Hence, the
134 other allied industries in the hospitality sector may also face severe repercussions, as quality
135 food and accommodation experience are of utmost preference to any traveller (Narayan et al.,
136 2009; Weiermair and Fuchs, 1999). Thus, the eminence of the hospitality sector and its
137 potential vulnerability to GPR in undertaking new investments provides a ground to explore
138 and validate this relationship empirically.

139
140 We find a negative relationship between GPR and corporate investments in the hotel
141 and restaurant industry in India. These results are robust to alternative measurements of
142 dependent and independent variables of interest. We also find that even the lesser financially
143 constrained firms cannot mitigate the negative effects of GPR completely. Further, we report
144 that firms in this industry cut back more investments when GPR rises as compared to when it
145 falls by an equal proportion. However, the optimum deployment of security forces can alleviate
146 the adversities of GPR to a considerable extent.

147
148 The rest of the paper is structured as follows. Section 2 presents the literature and
149 hypothesis development. Section 3 describes the data and research design. Section 4 discusses
150 the empirical results, and robustness test results are reported in Section 5. The policy
151 implications and synoptic prescriptions are presented in Section 6. Finally, Section 7 concludes.

152 153 154 **2. Literature and hypothesis development**

155
156 While adequate literature documents the association between EPU and corporate investments
157 (Gulen and Ion, 2016; Kang et al., 2014; Wang et al., 2014), the role of GPR in this context is
158 not well understood. As Caldara & Iacoviello (2022) posit, firm-level investments may be

¹³ While a *sector* denotes a large segment of the economy, an *industry* describes a group of similar types of companies. For instance, the hospitality sector may broadly encapsulate services such as (a) accommodation, (b) food and drink, and (c) tourism and travel. In this study, we mainly focus on the hotel and restaurant industry in India, which falls under the bracket of the hospitality sector.

159 constrained by uncertainties triggered by events of geopolitical nature. There could be at least
160 two possible underlying mechanisms that explain this association. First, the *'real options*
161 *channel'* proposes that firms may view their investment choices as a series of real options.
162 When the degree of uncertainty is high, the option value of investment delay is high, too, given
163 the adjustment costs (Wang et al., 2019). Put differently, unless the firms are certain about the
164 returns originating from new investments, they may keep the project on hold, thus, depressing
165 investments. This channel has been empirically validated by several studies in the past (Guiso
166 and Parigi, 1999; Kang et al., 2014; Leahy and Whited, 1995). Second, the *'cost of external*
167 *financing channel'* propounds that lending institutions often impose higher risk premiums to
168 compensate for increased default risk under uncertainty (Bernanke, 1983; Gilchrist et al., 2014;
169 Pástor and Veronesi, 2013; Rodrik, 1991). The lenders usually feel discouraged from extending
170 funds under uncertainty as a translucent view of the future economic outlook prevents them
171 from ascertaining the proposed project's future cash flows.

172
173 Following this theoretical prediction, X. Wang et al., (2019) examine the relationship
174 between GPR and corporate investments using a sample of US firms across different industries.
175 After controlling for firm-level characteristics, their results reveal a strong negative association
176 between them. Similar results are recently reported by Rumokoy et al., (2023) using a firm-
177 level sample of the metal and mining industry in Australia. The findings of this study support
178 the real options channel and hence a negative relationship. In a related context, Kim & Mun
179 (2022) investigate the impact of terrorist attacks on corporate investments using the US firm-
180 level data within all industries except the financial and utility industry. Their results suggest
181 that the relationship is mostly negative except for the firms with overconfident Chief Executive
182 Officers (CEOs). While studies are broadly conducted in the context of the developed world,
183 the focus on emerging markets has been limited. Adding to the gravity of the issue, the hotel
184 and restaurant industry is largely capital-intensive. Further, it is evident from previous studies
185 that tourist arrivals are vulnerable to a state of uncertainty (Demir and Gözgör, 2018; Singh et
186 al., 2019; Tiwari et al., 2019). Consequently, the performance of the firms in the hotel and
187 restaurant industry may suffer largely in the phases of high uncertainty (Lee and How, 2022;
188 Madanoglu and Ozdemir, 2018; Ozdemir et al., 2023). Thus, rising uncertainties coupled with
189 limited tourist arrivals may discourage firms in this industry from undertaking investments
190 (Akron et al., 2020).

191
192 It is worth mentioning that most of these studies related to the firms in the hotel and
193 restaurant industry consider EPU as a proxy of uncertainty. While we concur that EPU is a
194 good measure of uncertainty, we also argue that the firms in this industry may stand more
195 vulnerable to GPR as compared to EPU. This argument seems logical as EPU mainly consider
196 uncertainties related to economic or political nature where risks of losing lives or a severe
197 physical injury are relatively minuscule. Whereas in the case of GPR, the exposure to probable
198 war casualties and adverse economic consequences is relatively extreme.¹⁴ Further, the impacts
199 of GPR in this industry can aggravate in the case of emerging markets with higher institutional
200 voids. Therefore, we examine the impacts of GPR on the hotel and restaurant industry firms in
201 an emerging market i.e., India. In light of the above discussion, we form our first hypothesis:

202
203 ***H1. GPR negatively affects the corporate investments of firms in the hotel and restaurant***
204 ***industry.***
205

¹⁴ Tiwari et al., (2019) compare the impacts of EPU and GPR on tourist arrivals in India. Their results show that the impacts of GPR are more chronic and long-lasting than EPU. Such a result reaffirms our argument.

206 The second channel (i.e., ‘*cost of external financing channel*’) argues that under the state of
207 uncertainty, the default risk is high, and so is the risk premium on borrowings by the firm
208 (Pástor and Veronesi, 2013). While it is fairly straightforward to conceive that a higher cost of
209 credit under uncertainty (Kaviani et al., 2020) would affect corporate investments (Gilchrist et
210 al., 2014), it is interesting to understand how firms with relatively lower financing constraints
211 behave under such conditions. Firms can fund their planned investments either from internally
212 generated capital or from raising external financing. Simply put, a firm can be regarded as less
213 constrained if it has sufficient resources to fund its investment plans (Kaplan and Zingales,
214 1997).

215
216 As mentioned earlier, in the hotel and restaurant industry, customers primarily derive
217 value from the quality of their living and dining experiences (Weiermair and Fuchs, 1999). To
218 augment service quality, these firms must invest recurrently (Akron et al., 2020). A
219 discontinuity to upgrade or renovate existing facilities may affect customer satisfaction. Under
220 the state of uncertainty, firms may have limited access to external funding due to higher risk
221 premiums. Thus, it is instinctive that firms with constrained internal capital will refrain from
222 investing. But how the firms with sufficient internal capital (less constrained) respond in such
223 a situation? Would these firms use internal capital to mitigate the investment cut in response to
224 GPR? We believe this question is worth examining. Intuitively, one may argue in favour of
225 utilizing internal capital when under uncertainty so that the experience of customers is not
226 impaired. However, theoretically, as uncertainties amplify, the option value to wait for precise
227 information increases (Dixit et al., 1994). Thus, managers are better off adopting a “*wait and*
228 *watch*” approach, especially when these investments are irreversible (Bernanke, 1983). Since
229 the firms in this industry typically invest in irreversible projects (Akron et al., 2020), the
230 managers, even in the lesser constrained firms, may refrain from investing under uncertainties
231 prompted by GPR. Nevertheless, it is also reasonable to argue that the lesser constrained firms
232 may be marginally less impacted (in terms of undertaking new investments) than more
233 constrained firms. This leads to our second hypothesis:

234
235 **H2.** *GPR negatively affects the corporate investments of firms in the hotel and restaurant*
236 *industry; even when they are less constrained, the impact is not completely mitigated.*

237 238 **3. Data and research design**

239 240 *3.1. Sample selection*

241
242 In this article, we assess the impact of GPR on corporate investments, using a sample of Indian
243 firms in the hotel and restaurant industry spanning over the year 2003 to 2020. Our sample
244 period starts in 2003 as the data for one of the important control variables (Economic Policy
245 Uncertainty (EPU) for India) is available onset 2003. The accounting data is extracted from the
246 Centre for Monitoring Indian Economy’s (CMIE) *Prowess* database. Several notable studies
247 predominantly use the *Prowess* database to study the research questions of Indian origin (for
248 instance, Bertrand et al., 2004; Manchiraju & Rajgopal, 2017; Vig, 2013). To finalize our
249 sample, we drop firm-year observations with missing values. In addition, the variables are
250 winsorized at 1% and 99% of the distribution to eliminate the influence of outliers. Finally, our
251 sample for analysis is condensed to 3,943 firm-year observations for 395 firms in the hotel and

252 restaurant industry¹⁵. The key independent variable GPR is represented by the GPR index
253 created by Caldara & Iacoviello (2022).¹⁶

254

255 3.2. Measurement of variables

256

257 3.2.1. Measuring corporate investments

258

259 The dependent variable, corporate investment, is defined as the annual capital expenditure
260 scaled by lagged total assets (CAPEX/TA) following the previous literature (Akron et al., 2020;
261 Bates et al., 2009; Gulen and Ion, 2016; Wang et al., 2019). Also, following Akron et al.,
262 (2020), an alternative measurement of corporate investment is modelled for testing the
263 robustness of our baseline results. In this case, the annual capital expenditure scaled by lagged
264 total revenues (CAPEX/TR).

265

266 3.2.2. Measuring GPR and other macro uncertainties

267

268 The variable of interest in our study is GPR, which is proxied by the GPR index constructed
269 by Caldara & Iacoviello (2022). Several studies in the recent past have used this index as a
270 measure of geopolitical uncertainty (Das et al., 2019b, 2019a; Demiralay and Kilincarslan,
271 2019; Tiwari et al., 2019; Wang et al., 2019). We use the Indian GPR index, which is
272 constructed based on the count of the number of articles appearing in leading national
273 newspapers discussing the events of geopolitical conflicts. The predefined set of keywords
274 used to construct the index include words such as: ‘war’, ‘insurrection’, ‘rebel’, ‘nuclear
275 missile’, ‘atomic war’, ‘bomb’, ‘hostage’, ‘terror attacks’, ‘insurgency’ and many others. The
276 Indian GPR index over the study period is exhibited in Figure 1, which also indicates some
277 critical geopolitical events described in Appendix A2.

278

279 Since the GPR index is available at a monthly frequency, following Akron et al., (2020),
280 we consider the annual average of the monthly natural logarithmic GPR value ($GPR_{L.Avg.}$) to
281 match the yearly frequency of the firm-level data. This measure is primarily used for our
282 baseline and subsequent regression model estimates. In addition, we also consider two
283 alternative specifications of the GPR index for testing the stability of our estimates. The first
284 is the highest value of the monthly natural logarithm of GPR ($GPR_{L.Max.}$) in a year. Further, the
285 first logged difference in annual GPR data ($\Delta \ln GPR$) is the second alternative specification.
286 Lastly, we also include the annual natural logarithmic average of international GPR
287 ($GPR_{L.International}$) and GPR threat ($GPR_{L.Threat}$) to perform robustness checks.

288

289 X. Wang et al., (2019) argue that it is critical to distinguish GPR's impact from other
290 macroeconomic uncertainties. This approach could be helpful in controlling confounding
291 effects. Thus, we control for two crucial sources of uncertainties, the Indian EPU (EPU) and
292 the Financial Stress Index (FSI), in our baseline estimates. The EPU index will control for
293 uncertainties arising from economic and political instabilities, such as expectations related to
294 changes in government, tax regime, monetary policy, and regulations, among others. We use
295 the Indian version of the EPU index provided by Baker et al., (2016).¹⁷ Similarly, to control
296 for stressed financial conditions in the economy, we consider the FSI of India. This is a
297 composite index suggested by Park & Mercado (2014) that captures the stress in four major

¹⁵ The *Prowess* identifier code for the hotel and restaurant industry is 101040101000000. Please note that the database has classified the hotel and restaurant industry as a single industrial segment.

¹⁶ The GPR data is freely downloadable at: <https://www.matteoiacoviello.com/gpr.htm>

¹⁷ The data is freely available here: https://www.policyuncertainty.com/india_monthly.html

298 financial markets: (a) the banking sector, (b) the equity market, (c) the debt market, and (d) the
299 foreign exchange market.¹⁸ Like GPR, we have also taken an annual natural logarithmic
300 average of EPU. In the case of FSI, we take only the annual average of FSI following previous
301 literature as it encompasses negative values during the phases of low-stress periods (Das et al.,
302 2022b, 2022a; Reboredo and Uddin, 2016).

303
304 **-INSERT FIGURE 1 HERE-**
305

306 3.2.3. *Measuring control variables*

307
308 We select and measure the firm-level controls in adherence with the extant literature.
309 Specifically, we control for all firm characteristics which are likely to determine corporate
310 investments. The control variables, such as Growth opportunities, Cash flows, Firm size,
311 Leverage and Profitability, are considered following Gulen & Ion (2016), X.Wang et al.,
312 (2019), and Akron et al., (2020). Further, Non-debt tax shields and Liquidity are controlled in
313 congruence with Edwards (1955) and Keating & Zimmerman (1999). The construction of the
314 control variables is elaborated in Appendix A1.

315 316 3.3. *Descriptive statistics*

317
318 The summary statistics of the variables used in our study are listed in Table 1. In the sample,
319 firms on average, have an annual capital investment ratio of 0.019 when scaled on total assets
320 and a ratio of 1.12 when scaled upon total annual revenues. The natural logarithmic annual
321 average and monthly maximum figures depict the mean (standard deviation) values of -1.6893
322 (0.2363) and -1.1726 (0.3141), respectively. To control for variables of macroeconomic
323 uncertainty, the mean values (standard deviation) of FSI and EPU are 1.5947 (2.8865) and
324 4.4731 (0.3845), respectively. The year-on-year change in annual sales shows an average
325 growth rate of 1.24. The mean of operating cash flows scaled on lagged total assets depicts a
326 negative value of -0.2369, implying that more cash is used to run the business operations than
327 generated. Further, the negative mean value (-0.0584) of profitability suggests that the firms,
328 on average, failed to stand profitable. The ratio of depreciation scaled by lagged total assets,
329 which is represented as non-debt tax shields, is 0.0399. The mean debt-to-book value of the
330 asset ratio, termed leverage, is 0.6439. The value of firm size is measured as the natural
331 logarithm of total assets averages at 5.4575. Lastly, liquidity is measured as net working capital
332 scaled by lagged total assets, which indicates a mean of 0.0051. This implies on average, firms
333 have managed to hold more current assets to service current liabilities.

334
335 **-INSERT TABLE 1 HERE-**
336

337 3.4. *Model specifications*

338
339 We specify a similar baseline model following X. Wang et al., (2019) to explore the empirical
340 relationship between GPR and corporate investments. The regression specification for testing
341 the first hypothesis is expressed as follows:
342

$$343 \frac{CAPEX_{i,t+1}}{TA_{i,t}} = \alpha_i + \beta_1 GPR_t + \beta_2 FSI_t + \beta_3 EPU_t + \beta_{4-10} Firm\ controls_{i,t} + \eta_i + \kappa_t + \varepsilon_{i,t} \quad (1)$$

¹⁸ The data for Indian Financial Stress Index is freely downloadable from the website of Asian Development Bank, available here: <https://aric.adb.org/database/fsi>

344

345 where $\frac{CAPEX_{i,t+1}}{TA_{i,t}}$ represents the capital expenditures (corporate investments) incurred scaled
346 upon lagged total assets for firm i and in year $t + 1$. GPR_t is the geopolitical risk, which is
347 constructed as the natural logarithm of the average annual GPR. β_1 measures the degree to
348 which geopolitical risk affects corporate investments. As mentioned previously, we
349 hypothesize that $\beta_1 < 0$. β_2 and β_3 controls for other forms of macroeconomic uncertainties and
350 β_{4-10} controls for all firm-level variables, which are: (a) Growth opportunities, (b) Cash flows,
351 (c) Non-debt tax shields, (d) Firm size, (e) Leverage, (f) Liquidity, and (g) Profitability. Lastly,
352 we contain the year and firm-fixed effects to lessen the potential influences of unobserved
353 macroeconomic and firm-level factors.

354

355 We first select a measure of financing constraint to test how heterogeneity affects the
356 relationship between GPR and corporate investments. To that end, following the literature, we
357 consider average net worth to be an indicator of financing constraints (Bose et al., 2021; Kaplan
358 and Zingales, 1997).¹⁹ To devise our empirical strategy, we follow a similar regression
359 framework as of Fan et al., (2021). The model expressed in Eq. (1) is first re-estimated by way
360 of a sub-sample analysis (stated as Eq. (2)). The sub-sampling is done by bifurcating our sample
361 based on the median of average net worth. Firms with an average net worth above the median
362 are classified as ‘lesser constrained’ (sub-Eq. (2.i)), ‘constrained’ (sub-Eq. (2.ii)) otherwise²⁰.
363 Thus, the equation is to be re-estimated as:

364

$$365 \quad \frac{CAPEX_{i,t+1}}{TA_{i,t}} = \alpha_i + \beta_1 GPR_t + \beta_2 FSI_t + \beta_3 EPU_t + \beta_{4-10} Firm\ controls_{i,t} + \eta_i + \kappa_t + \varepsilon_{i,t} \quad (2)$$

$$366 \quad \text{Constrained if Avg. Net worth} \leq \text{median (Avg. Net worth)} \quad (2.i)$$

$$367 \quad \text{Lesser constrained if Avg. Net worth} > \text{median (Avg. Net worth)} \quad (2.ii)$$

368

369 In addition, we also use an interaction term between GPR and lesser constraints dummy (LESS)
370 to gauge the moderating effects of financing constraints. The variable of interest in our case is
371 $GPR*LESS$; it captures the impact of lesser financing constraints on the relationship between
372 GPR and corporate investments. If lesser financing constraints can mitigate the negative impact
373 of GPR on corporate investments, then the coefficient of the interaction term ($GPR*LESS$)
374 should be positive. Thus, the revised Eq. (1) is specified as follows:

375

$$376 \quad \frac{CAPEX_{i,t+1}}{TA_{i,t}} = \alpha_i + \beta_1 LESS_t + \beta_2 GPR * LESS_{i,t} + \beta_3 GPR_t + \beta_4 FSI_t + \beta_5 EPU_t \\ 377 \quad + \beta_{6-12} Firm\ controls_{i,t} + \eta_i + \kappa_t + \varepsilon_{i,t} \quad (3)$$

378

379 4. Empirical results and discussion

380

381 In this section, we present and briefly discuss the empirical results. Table 2 exhibits our
382 hypothesis 1 (H1) results, which connote a negative relationship between GPR and corporate

¹⁹ Though we are aware of other popular measures of financing constraints, such as the *Size-Age* (SA) index proposed by Hadlock & Pierce (2010), and the *Whited-Wu* (WW) index suggested by Whited & Wu (2006), we could not employ them in our case since the majority of our sample firms are unlisted. The computation of the SA index requires information on the listing year, whereas the WW index necessitates having information on dividend declarations. This information can't be fetched for unlisted firms; thus, we resort to a plausible solution by relying upon average net worth following previous literature.

²⁰ Ersahin (2020) also adopts a similar empirical approach to split firms into two heterogeneous groups based on financial constraints.

383 investments. As argued by X. Wang et al., (2019), it is critical to account for other
384 macroeconomic adversities to discern the influences of GPR from other forms of uncertainties.
385 Following the argument, we control EPU and FSI in the Indian context. The uncertainties
386 induced by economic, political, and financial events are broadly controlled. Column (1) of
387 Table 2 reports the baseline results. The results confirm a statistically significant negative
388 relationship between GPR and corporate investments. The result of the full model is exhibited
389 in Column (2), which shows even after controlling for firm characteristics, the baseline result
390 for our variable of interest still holds true.

391
392 In addition, we also test for two alternative measurements of GPR. In the baseline
393 regression, we measure GPR as the annual average of the monthly natural logarithmic GPR
394 value. In the first alternative measurement (Alt. GPR I), we consider GPR as the highest value
395 of the monthly natural logarithm of GPR in a year. The coefficient of GPR again appears
396 significantly negative in Column (3). The second alternative measure of GPR (Alt. GPR II) is
397 constructed as the first logged difference in annual GPR. The result for the regression model
398 with Alt. GPR II is reported in Column (4), which reiterates similar findings. Overall, the
399 significant and negative associations between GPR and corporate investments are robust across
400 the alternative GPR measurement specifications.

401
402 The results above support our first hypothesis, and the findings are consistent with the
403 past literature and the theoretical prediction of the '*real options channel*' (Akron et al., 2020;
404 Caldara and Iacoviello, 2022; Rumokoy et al., 2023; Wang et al., 2019). The GPR coefficients
405 of Alt. GPR I and Alt. GPR II are not only significantly negative but also marginally strong
406 compared to the GPR coefficient in the baseline model. Such a finding re-emphasizes the
407 severity of GPR in terms of business confidence and new investments. Further, another
408 interesting observation is that while the coefficients of GPR are consistently negative across
409 various specifications, the coefficients of EPU remain largely insignificant. This phenomenon
410 is somewhat in concomitance with the findings of Tiwari et al., (2019) as they argue that in
411 India, the negative impacts of GPR on tourism are direr than EPU. Lastly, the coefficients of
412 FSI are mostly negative and significant. This finding is consistent with the theoretical intuition
413 as financial stress will widen the credit market frictions and restrict new investments (Illing
414 and Liu, 2006; Ko, 2022).

415
416 **-INSERT TABLE 2 HERE-**
417

418 Next, we report the results of our hypothesis 2 (*H2*) in Table 3. Here, we intend to
419 examine whether less-constrained firms in this industry can mitigate the adverse impact of GPR
420 in respect of their corporate investments. Columns (1) and (2) of Table 3 exhibit the results of
421 the sub-sample analysis. Interestingly, we find that the coefficient of GPR for constrained firms
422 reported in Column (1) is negative and statistically significant at the 1% level. Whereas the
423 coefficient of interest for lesser constrained firms in Column (2) is still negative but not
424 significant statistically.

425
426 This result supports our hypothesis that the severity of GPR may only be reduced for
427 the lesser constrained firms; however, it cannot be eliminated completely. Such a result can
428 also be predicted theoretically using the '*cost of external financing channel*'. The firms which
429 are more dependent on external financing may have to cut down investment spending more
430 aggressively compared to their peers with fewer constraints. Another interesting observation is
431 that while the coefficient of FSI is significantly negative for constrained firms, as reported in
432 Column (1), it is insignificant for lesser constrained firms in Column (2). The FSI indicates

433 stressed conditions in the debt and banking sector. In a way, it re-emphasizes the higher
 434 vulnerability of constrained firms to credit market frictions.

435

436 Finally, we consider the full model reported in Column (3). In this result, our coefficient
 437 of interest in the interaction term between GPR and lesser constraints dummy (LESS) to
 438 reaffirm the moderating effects of financing constraints. The interaction term coefficient
 439 ($GPR*LESS$) should be positive if the lesser financing constraints eradicate the adverse
 440 influence of GPR. We observe a consistent result as reported in the sub-sample analysis. The
 441 interaction term coefficient ($GPR*LESS$) stands negative, however insignificant. Thus, the
 442 results confirm that even firms with relatively lower reliance on external financing may fail to
 443 neutralize the severity of GPR upon investments.²¹

444

-INSERT TABLE 3 HERE-

445

446

447 5. Further analysis

448

449 This section furthers our understanding by exploring two additional dimensions of the
 450 relationship between GPR and corporate investment. First, we examine whether there exists an
 451 asymmetric impact of GPR on corporate investment. Second, we also evaluate whether the
 452 deficit in the deployment of security forces can exacerbate the negative impact of GPR caused
 453 by perceived weaker enforcement of law and order. In addition to the basic results, we believe
 454 these findings can be useful from the perspective of policy formulation in practice. We initially
 455 assess the asymmetric corporate investment adjustments by firms. To achieve this objective,
 456 we modify the regression model specified in Eq. (1) by following the asymmetric adjustment
 457 models suggested by Anderson et al., (2003), Banker et al., (2013), and Jin & Wu (2021). The
 458 revised regression model is specified below:

459

$$460 \frac{CAPEX_{i,t+1}}{TA_{i,t}} = \alpha_i + (\beta_1 + \beta_2 FSI_t + \beta_3 EPU_t + \beta_{4-10} Firm\ controls_{i,t}) \Delta \ln GPR_t$$

$$461 + (\delta_1 + \delta_2 FSI_t + \delta_3 EPU_t + \delta_{4-10} Firm\ controls_{i,t}) Inc * \ln \Delta GPR_t + \eta_i + \kappa_t + \varepsilon_{i,t} \quad (4)$$

462

463 where $\Delta \ln GPR_t$ is the first logged difference in annual GPR data. The interaction variable, Inc ,
 464 takes the value of 1 when GPR increases between periods $t - 1$ and t , 0 otherwise. The sum of
 465 the coefficients $\gamma = (\beta_1 + \delta_1)$, then $(\gamma/100)$ (since it is level-log regression specification),
 466 measures the net decrease in corporate investments in INR Millions with a 1% increase in GPR.
 467 Thus, if the corporate investments behave asymmetrically to GPR (i.e., more investment cut
 468 with the rise in GPR as compared to an increase in investment spending when GPR falls by the
 469 same proportion), the empirical hypothesis conditional on $\beta_1 > 0$ is $\delta_1 < 0$.

470

471 The results for the model specified in Eq. (4) are exhibited in Table 4. In the results,
 472 our coefficients of interest are $\Delta \ln GPR$ and $Inc * \Delta \ln GPR$. We observe that while a 1% decrease
 473 in GPR increases the investments by INR million 0.0490, it falls more by INR million 0.5352
 474 (-0.5842+0.0490) in response to a 1% increase in GPR. The results satisfy the conditions of
 475 asymmetric behaviour of investments in response to GPR, i.e., $\beta_1 > 0$ is $\delta_1 < 0$. Thus, we find that
 476 more investment is curtailed with the increase in GPR as compared to an enhancement in

²¹ As a quasi-measure for the robustness test, we proxy the financing constraints using the SA index of Hadlock & Pierce (2010). SA index requires to proxy for age by using the date the firm went public. As we stated before, the majority of our sample firms are unlisted. Thus, we use the date of incorporation as a measure of age. We perform a similar sub-sample and interaction regression model and find somewhat qualitatively identical results.

477 investment spending with a fall in GPR by an equal proportion. Such a result can be justified
478 by using the managerial risk-aversion theories, which state that, in general, managers (or
479 investors) are more sensitive to expected losses than otherwise (Kahneman and Tversky, 1979;
480 Li et al., 2021; Panousi and Papanikolaou, 2012; Sauner-Leroy, 2004). Furthermore, a corollary
481 argument for the steep disproportionate investment cut could be the prudent adoption of an
482 Asset-Light Fee Oriented (ALFO) strategy under uncertainty. According to this strategy, hotel
483 and restaurant industry firms can franchise and manage existing properties rather than owning
484 them (Li and Singal, 2019). Adoption of the ALFO strategy is useful for firms in this industry
485 to improve scalability and hedging earnings volatility. Hence, the firms can downsize their
486 investments in fixed assets (Akron et al., 2020). Several hotels and restaurants in India have
487 fast-adopted ALFO strategy over the past years to stand tall against the macroeconomic
488 headwinds.^{22,23}

489
490 **-INSERT TABLE 4 HERE-**
491

492 We further explore whether the deficit in the deployment of security forces can
493 accentuate the influence of GPR on corporate investments. In India, police forces are delegated
494 the responsibility of enforcing civil law and order. They are also the most perceptible
495 representative of the government in the hour of crisis.²⁴ Nevertheless, it is somewhat
496 paradoxical to note that India's police force is also one of the weakest in the world in terms of
497 the public-to-police ratio. The United Nations (UN) has recommended an optimal ratio of 222
498 police personnel per 1,00,000 population. However, there are only 144 police personnel per
499 1,00,000 population in India.²⁵ Consequentially, under-deployment of police personnel leads
500 to a higher workload, and poor work-life balance. For instance, a recent survey by the Centre
501 for the Study of Developing Societies (CSDS) reveals that average police personnel work for
502 14-16 hours a day.²⁶ These factors could be attributed as the antecedents for inefficient police
503 action and security lapses eroding public confidence in them.

504
505 Given the contextual background, it appears interesting to examine whether such a
506 deficit in police deployment intensifies the adverse GPR-corporate investment relationship. To
507 fulfil our purpose, we first create a state/union territory (UT)-wise index of security deployment
508 deficit by taking a difference between the number of police personnel posts sanctioned by the
509 government and the actual positions filled per lakh population.²⁷ Then, we map the index value
510 with the respective state of the firms using the *PROWESS* state/UT code. Next, following Fan

²² Kamat, V., "Shift to an asset-light model is boosting profit margins at Indian Hotels", Mint, February 26, 2020. The full report is available at: <https://www.livemint.com/market/mark-to-market/shift-to-an-asset-light-model-is-boosting-profit-margins-at-indian-hotels-11582655919719.html>, accessed April 24, 2023, 18:04 Hours, IST.

²³ Jethmalani, H., "IHCL's asset-light strategy has made investors forget covid woes", Mint, July 11, 2021. The full report is available at: <https://www.livemint.com/market/mark-to-market/ihcls-asset-light-strategy-has-made-investors-forget-covid-woes-11626019145289.html>, accessed April 24, 2023, 18:12 Hours, IST.

²⁴ Bureau of Police Research and Development. The full document is available at: <https://bprd.nic.in/WriteReadData/userfiles/file/6798203243-Volume%202.pdf>, accessed April 25, 2023, 18:29 Hours, IST.

²⁵ Devulapalli, S., & Padmanabhan V., "India's police force among the world's weakest", Mint, June 19, 2019. The full report is available at: <https://www.livemint.com/news/india/india-s-police-force-among-the-world-s-weakest-1560925355383.html>, accessed April 25, 2023, 20:43 Hours, IST.

²⁶ Kawoosa, V. M., "Stress, apathetic attitude taking toll on policing: study", Hindustan Times, June 22, 2020. The full report is available at: <https://www.hindustantimes.com/india-news/stress-apathectic-attitude-taking-toll-on-policing-study/story-YxU95pBYRBuopCdR8Ck1VJ.html>, accessed April 25, 2023, 21:09 Hours, IST.

²⁷ We source the data from the Ministry of Home Affairs, Government of India and Bureau of Police Research and Development. The data provides state/UT-wise historical cumulative public-police ratio (i.e., number of police per lakh population) as on 2020.

et al., (2021), we perform a sub-sample analysis. We re-estimate the baseline regression model as indicated in Eq. (5) by splitting them into sub-samples of low and high-security deployment deficit. If the firms fall below the median security deployment deficit index, they are classified as low-deficit firms (sub-Eq. (5.i)) or else high-deficit firms (sub-Eq. (5.ii)). The results of the sub-sample analysis are reported in Columns (1) and (2) of Table 5. We observe that while the firms in the low-deficit states exhibit a negative, however weak, and insignificant coefficient (see Column (1), Table 5), the coefficient for the firms in states with a higher deficit is significantly negative and relatively stronger (see Column (2), Table 5). In a way, the results suggest that the optimum deployment of security forces can mitigate the adverse impact of GPR.

$$\frac{CAPEX_{i,t+1}}{TA_{i,t}} = \alpha_i + \beta_1 GPR_t + \beta_2 FSI_t + \beta_3 EPU_t + \beta_{4-10} Firm\ controls_{i,t} + \eta_i + \kappa_t + \varepsilon_{i,t} \quad (5)$$

Low Deficit if Security deployment deficit \leq median (Security deployment deficit) (5.i)
High Deficit if Security deployment deficit $>$ median (Security deployment deficit) (5.ii)

Next, we also use an interaction term between GPR and high-security deployment deficit dummy (HIGH) to captivate the moderating effects of security deployment. The variable of interest in our case is $GPR*HIGH$; it describes the impact of a high-security deficit on the relationship between GPR and corporate investments. If a high-security deficit exacerbates the negative impact of GPR on corporate investments, then the coefficient of the interaction term ($GPR*HIGH$) should be negative and significant. Thus, the revised Eq. (1) specification is as follows:

$$\frac{CAPEX_{i,t+1}}{TA_{i,t}} = \alpha_i + \beta_1 HIGH_t + \beta_2 GPR * HIGH_{i,t} + \beta_3 GPR_t + \beta_4 FSI_t + \beta_5 EPU_t + \beta_{6-12} Firm\ controls_{i,t} + \eta_i + \kappa_t + \varepsilon_{i,t} \quad (6)$$

The empirical results derived from Eq. (6) are reported in Column (3), Table 5. The results restate our findings of the sub-sample analysis. Our coefficient of interest $GPR*HIGH$ remains negative and statistically significant. Thus, the empirical evidence suggests that the degree of security implementation can mitigate the impediments of GPR on corporate investments.

-INSERT TABLE 5 HERE-

6. Robustness test results

In this section, we briefly report and discuss the robustness of our principal findings. First, following Akron et al., (2020), we consider another measure of corporate investments. We create another measure of corporate investments by considering annual capital expenditure scaling upon lagged total revenues (CAPEX/TR). Further, we run the regression model specified in Eq. (1) with the stated alternate measure of corporate investments. The empirical results are reported in Table 6; Column (1) exhibits the results for the full model, whereas Columns (2) and (3) report the results with the alternative measures of GPR i.e., Alt. GPR I and Alt. GPR II, respectively. We observe that these results comply with our baseline results, both in terms of the direction and statistical significance of the relationship. Thus, our results

556 are robust to alternative measurements of corporate investments and GPR. Next, we control for
557 international GPR indicators i.e., international GPR²⁸ ($GPR_{L.International}$) and GPR threat
558 ($GPR_{L.Threat}$), to perform robustness checks. While international GPR captures global
559 geopolitical uncertainties, the GPR threat proxies for global war-like situations. As reported in
560 Table 7, the nature of the domestic GPR coefficients remains consistent after controlling for
561 the international GPR proxies. Hence, we find that our results are robust in either case.

562
563 **-INSERT TABLE 6 HERE-**

564
565 **-INSERT TABLE 7 HERE-**

566 567 **7. Discussion and policy implications**

568
569 In recent decades, conflicts of geopolitical nature have been a crucial source of business risk.
570 According to a recent report by McKinsey & Company²⁹, GPR is a top priority concern in
571 CEO's agenda. Thus, several recent studies explore various channels through which GPR
572 influences business, such as financing choices (Khoo, 2021; Lee et al., 2021), bank credit
573 (Demir and Danisman, 2021), cash-holding (Demir et al., 2019; Lee and Wang, 2021; Wang
574 et al., 2021), payout policy (Adra et al., 2023), and many others. We contribute to the ongoing
575 debate by investigating the impact of GPR on the corporate investments of firms in the hotel
576 and restaurant industry in India. Based on the empirical evidence, we tend to illustrate certain
577 policy implications which could be a quintessential outline for administrators and business
578 leaders.

579
580 As indicated by Appendix Table A2, in India, terrorists have recurrently executed
581 planned attacks and bombings to unsettle harmony and a peaceful course of daily life. While
582 the government has taken considerable measures to combat terrorism through diplomatic
583 resolutions and counterstrikes, there could be certain other measures to control these events.
584 For instance, our results show that access to finances cannot mitigate the adverse impacts of
585 GPR; however, the deployment of security can³⁰. Thus, the government should take necessary
586 actions to recruit police personnel and close the current deployment deficit. Thus, a perception
587 of safety that might prevail will boost the confidence of managers and travellers. Given the
588 prominence of the Indian hospitality sector, as stated before, such actions may reap multiplier
589 benefits to the economy. Otherwise, restraining investments in this industry could impair the
590 experience of the patrons, which in turn may adversely affect tourism development in a nation.

591
592 From the business perspective, while ALFO strategies may seem to be an attractive way
593 out, it has its own setbacks. Lesser standardization of processes and conflict of interest between
594 franchiser and franchisee on service philosophy can dilute the brand reputation (Michael, 2000;
595 Spinelli and Birley, 1996). Thus, ALFO may not be a viable solution for a service-based

²⁸ We proxy for international GPR and GPR threat by using the GPR indexes of the US. The US GPR index is constructed by considering 10 leading newspapers, which has a global coverage. They are: Chicago Tribune, the Daily Telegraph, Financial Times, The Globe and Mail, The Guardian, the Los Angeles Times, The New York Times, USA Today, The Wall Street Journal, and The Washington Post. In the context of EPU, previous studies have proxied US EPU to benchmark international EPU, see Das & Kumar (2018), and J. Ko & Lee (2015).

²⁹ Grant, A., Haider, Z., & Mieszala, J. C., "How to build geopolitical resilience amid a fragmenting global order", McKinsey & Company, September 2022.

The full report is available at: <https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/how-to-build-geopolitical-resilience-amid-a-fragmenting-global-order>, accessed April 27, 2023, 08:42 Hours, IST.

³⁰ While we find this evidence in the case of the hotel and restaurant industry, the same may hold true in the case of firms in the other industries. This could be a subject of future investigation.

596 industry, especially under uncertainty where the franchisers may be impulsive to adopt ALFO
597 strategies, conferring franchisees more power to bargain. Besides, risks such as leakage of trade
598 secrets (such as secret ingredients and proportion measures in the case of speciality preparation
599 in hotels and restaurants) are inherent in this model. Rather, given the fact that GPR is a
600 systemic issue, the industry may move towards more resilient business models proactively, as
601 asserted by several management consulting groups.³¹ Further, authorities must also devise
602 standard operating procedures to ensure safety protocols at all hotels and restaurants to prevent
603 undesirable mishaps such as attacks and bombings.

604

605 **8. Conclusions**

606

607 We explore the relationship between GPR and corporate investments, considering India's hotel
608 and restaurant industry. Our results show a negative relationship between GPR and corporate
609 investments in this industry, consistent with some previous studies (Rumokoy et al., 2023;
610 Wang et al., 2019). We further show that firms cut more investments when GPR rises as
611 compared to when it falls by an equal proportion. Moreover, access to internal financing does
612 not mitigate this problem. Nevertheless, the optimum deployment of security forces can control
613 the adversities of GPR to a considerable extent. We believe our findings add more insights to
614 the existing knowledge of the GPR-corporate investment relationship. Furthermore, as India is
615 a prominent emerging market, these findings could be useful to other emerging and frontier
616 markets. The extant literature mainly focuses on the relationship between GPR and capital
617 expenditures. As a future course of the research, scholars may focus on exploring the
618 relationship between GPR and several revenue expenditures, such as advertising, marketing,
619 and insurance expenses. Such a study will unravel whether the firms in this industry channel
620 their funds from capital to revenue expenditures under uncertainty.

621

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623

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(b) PwC, “*Resilience reloaded: how to prepare for geopolitical disruption*”, March 2023, The full report is available at: <https://www.strategyand.pwc.com/de/en/functions/operations/resilience-reloaded.html>, accessed April 27, 2023, 15:04 Hours, IST.

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821 **Table 1. Summary statistics**

822 This table illustrates the descriptive statistics of the key variables used for analysis and final results. The sample
 823 dataset comprises 3,943 firm-year observations for a set of 395 firms spanning over the years 2003 to 2020
 824 (unbalanced panel). All variables used for analysis are winsorized at the 1% and 99% levels. The construction of
 825 the variables is described in Appendix Table A1.

Variable	Mean	Std. Deviation	Median
CAPEX/TA	0.0186	3.4625	0.0381
CAPEX/TR	1.1181	40.8413	0.1178
GPR _{L.Avg.}	-1.6893	0.2363	-1.7578
GPR _{L.Max.}	-1.1726	0.3141	-1.2527
$\Delta \ln$ GPR	-0.0176	0.1841	0.0110
GPR _{L.International}	4.5519	0.1572	4.5405
GPR _{L.Threat}	4.5694	0.1759	4.5795
FSI	1.5947	2.8865	0.4366
EPU	4.4731	0.3845	4.3037
Growth opportunities	1.2410	18.7059	0.0857
Cash flows	-0.2369	70.7502	0.0446
Non-debt tax shields	0.0399	0.0416	0.0320
Firm size	5.4575	2.4212	5.6535
Leverage	0.6439	1.7180	0.4374
Liquidity	0.0051	2.6876	-0.0014
Profitability	-0.0584	3.6901	0.0243

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852 **Table 2.** Impact of GPR on corporate investments: baseline estimates

853 This table illustrates the impacts of geopolitical risk proxied by *GPR* on corporate investments. The specification
 854 of the regression model is expressed in Eq. (1). We regress the baseline model from the year 2003 to 2020. The
 855 explanatory variables are defined in Appendix Table A1. The figures in the brackets represent *t*-statistics based
 856 on standard errors clustered at the firm level. The null hypothesis is that the estimated coefficients are equal to
 857 zero. The asterisks ***, **, and * denote the level of statistical significance at 1%, 5% and 10% levels,
 858 respectively.

Variables	(1)	(2)	(3)	(4)
	Baseline model	Full model	Alt. GPR I	Alt. GPR II
GPR	-0.0979** (-2.036)	-0.0895*** (-2.633)	-0.1159*** (-2.633)	-0.0936*** (-2.633)
FSI	-0.0036 (-1.170)	-0.0079*** (-3.528)	-0.0070*** (-3.498)	-0.0127*** (-3.353)
EPU	-0.0051 (-0.221)	0.0257 (1.019)	0.0322 (1.220)	0.0194 (0.800)
Growth opportunities		-0.0004*** (-3.332)	-0.0004*** (-3.332)	-0.0004*** (-3.332)
Cash flows		-0.0198 (-0.944)	-0.0198 (-0.944)	-0.0198 (-0.944)
Non-debt tax shields		0.5904*** (2.769)	0.5904*** (2.769)	0.5904*** (2.769)
Firm size		0.0757*** (5.315)	0.0757*** (5.315)	0.0757*** (5.315)
Leverage		0.0008 (0.044)	0.0008 (0.044)	0.0008 (0.044)
Liquidity		0.0042 (0.525)	0.0042 (0.525)	0.0042 (0.525)
Profitability		-0.0622** (-2.540)	-0.0622** (-2.540)	-0.0622** (-2.540)
Constant	-0.1515 (-1.026)	-0.7940*** (-4.262)	-0.8022*** (-4.259)	-0.6021*** (-4.023)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
R-squared	0.007	0.112	0.112	0.112

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Table 3. Impact of GPR on corporate investments: financing constraints

This table illustrates the impacts of geopolitical risk proxied by *GPR* on corporate investments for constrained and lesser-constrained firms. The specification of the regression model is expressed in Eqs. (2) and (3). We regress the baseline model from the year 2003 to 2020. The explanatory variables are defined in Appendix Table A1. The figures in the brackets represent *t*-statistics based on standard errors clustered at the firm level. The null hypothesis is that the estimated coefficients are equal to zero. The asterisks ***, **, and * denote the level of statistical significance at 1%, 5% and 10% levels, respectively.

Variables	(1) Constrained	(2) Less constrained	(3) Full model
LESS			-0.0073 (-0.105)
GPR*LESS			-0.0024 (-0.062)
GPR	-0.1640** (-2.541)	-0.0454 (-1.173)	-0.0877** (-2.038)
FSI	-0.0148*** (-3.540)	-0.0034 (-1.339)	-0.0078*** (-3.529)
EPU	0.0693 (1.522)	-0.0064 (-0.188)	0.0255 (1.013)
Growth opportunities	-0.0006*** (-3.499)	0.0030*** (3.796)	-0.0004*** (-3.324)
Cash flows	0.0127 (0.255)	-0.0243 (-0.977)	-0.0196 (-0.939)
Non-debt tax shields	1.1903*** (2.853)	0.5177** (2.019)	0.5925*** (2.777)
Firm size	0.0854*** (3.535)	0.0835*** (4.577)	0.0753*** (5.256)
Leverage	0.0845 (1.631)	-0.0130 (-0.615)	0.0011 (0.061)
Liquidity	0.0486 (1.535)	0.0036 (0.436)	0.0041 (0.521)
Profitability	-0.1664** (-2.355)	-0.0385 (-1.326)	-0.0619** (-2.546)
Constant	-1.2536*** (-3.567)	-0.6202*** (-2.691)	-0.7857*** (-4.141)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
R-squared	0.205	0.111	0.112

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Table 4. Impact of GPR on corporate investments: asymmetric adjustments

This table illustrates the asymmetric impacts of geopolitical risk proxied by *GPR* on corporate investments. The specification of the regression model is expressed in Eq. (4). We regress the baseline model from the year 2003 to 2020. The explanatory variables are defined in Appendix Table A1. The figures in the brackets represent *t*-statistics based on standard errors clustered at the firm level. The null hypothesis is that the estimated coefficients are equal to zero. The asterisks ***, **, and * denote the level of statistical significance at 1%, 5% and 10% levels, respectively.

Variables	(1) Investments
$\Delta \ln GPR$	4.4890** (2.141)
Inc*$\Delta \ln GPR$	-58.4247*** (-3.301)
$\Delta \ln GPR * FSI$	0.0144 (0.532)
$\Delta \ln GPR * EPU$	-0.9277** (-2.159)
$\Delta \ln GPR * \text{Growth opportunities}$	0.0046 (1.479)
$\Delta \ln GPR * \text{Cash flows}$	0.1913 (0.883)
$\Delta \ln GPR * \text{Non-debt tax shields}$	-0.7050 (-0.715)
$\Delta \ln GPR * \text{Firm size}$	-0.0043 (-0.252)
$\Delta \ln GPR * \text{Leverage}$	0.0455 (0.575)
$\Delta \ln GPR * \text{Liquidity}$	-0.0269 (-0.340)
$\Delta \ln GPR * \text{Profitability}$	0.1868 (0.510)
Inc* $\Delta \ln GPR * FSI$	0.2214 (1.261)
Inc* $\Delta \ln GPR * EPU$	13.4690*** (3.256)
Inc* $\Delta \ln GPR * \text{Growth opportunities}$	-0.0087** (-2.290)
Inc* $\Delta \ln GPR * \text{Cash flows}$	-0.2364 (-0.888)
Inc* $\Delta \ln GPR * \text{Non-debt tax shields}$	0.4907 (0.292)
Inc* $\Delta \ln GPR * \text{Firm size}$	0.0035 (0.124)
Inc* $\Delta \ln GPR * \text{Leverage}$	-0.1397 (-1.070)
Inc* $\Delta \ln GPR * \text{Liquidity}$	0.0567 (0.332)
Inc* $\Delta \ln GPR * \text{Profitability}$	-0.4141

	(-1.062)
Constant	0.0581***
	(7.202)
Firm fixed effects	Yes
Year fixed effects	Yes
R-squared	0.068

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Table 5. Impact of GPR on corporate investments: security deployment deficit

This table illustrates the impacts of geopolitical risk proxied by *GPR* on corporate investments for firm years in the low and high-security deployment deficit states. The specification of the regression model is expressed in Eqs. (5) and (6). We regress the baseline model from the year 2003 to 2020. The explanatory variables are defined in Appendix Table A1. The figures in the brackets represent *t*-statistics based on standard errors clustered at the firm level. The null hypothesis is that the estimated coefficients are equal to zero. The asterisks ***, **, and * denote the level of statistical significance at 1%, 5% and 10% levels, respectively.

Variables	(1)	(2)	(3)
	Low Deficit	High Deficit	Full model
HIGH			-0.1307** (-2.108)
GPR*HIGH			-0.0624* (-1.890)
GPR	-0.0125 (-0.308)	-0.1737*** (-3.174)	-0.0597* (-1.656)
FSI	-0.0066** (-2.198)	-0.0092*** (-2.769)	-0.0078*** (-3.521)
EPU	0.0247 (0.697)	0.0199 (0.545)	0.0258 (1.022)
Growth opportunities	-0.0003*** (-3.190)	-0.0006* (-1.807)	-0.0004*** (-3.310)
Cash flows	-0.0169 (-0.713)	-0.0218 (-0.580)	-0.0186 (-0.896)
Non-debt tax shields	0.3946 (1.607)	0.7048** (2.186)	0.5872*** (2.740)
Firm size	0.0837*** (4.888)	0.0696*** (2.984)	0.0765*** (5.402)
Leverage	-0.0155 (-0.683)	0.0202 (0.868)	0.0012 (0.069)
Liquidity	0.0011 (0.124)	0.0357* (1.759)	0.0046 (0.578)
Profitability	-0.0605** (-2.156)	-0.0462 (-0.946)	-0.0633** (-2.563)
Constant	-0.6931*** (-2.805)	-0.8910*** (-3.175)	-0.7386*** (-3.936)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
R-squared	0.123	0.133	0.115

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Table 6. Impact of GPR on corporate investments: an alternative measure of investments
This table illustrates the impacts of geopolitical risk proxied by *GPR* on corporate investments while controlling for international GPRs. We regress the baseline model from the year 2003 to 2020. The explanatory variables are defined in Appendix Table A1. The list of control variables is the same as in the previous specifications and is not shown here for brevity. The figures in the brackets represent *t*-statistics based on standard errors clustered at the firm level. The null hypothesis is that the estimated coefficients are equal to zero. The asterisks ***, **, and * denote the level of statistical significance at 1%, 5% and 10% levels, respectively.

Variables	(1)	(2)	(3)
	Full model	Alt. GPR I	Alt. GPR II
GPR	-0.6287** (-2.546)	-0.8142** (-2.546)	-0.6571** (-2.546)
Controls	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
R-squared	0.042	0.042	0.042

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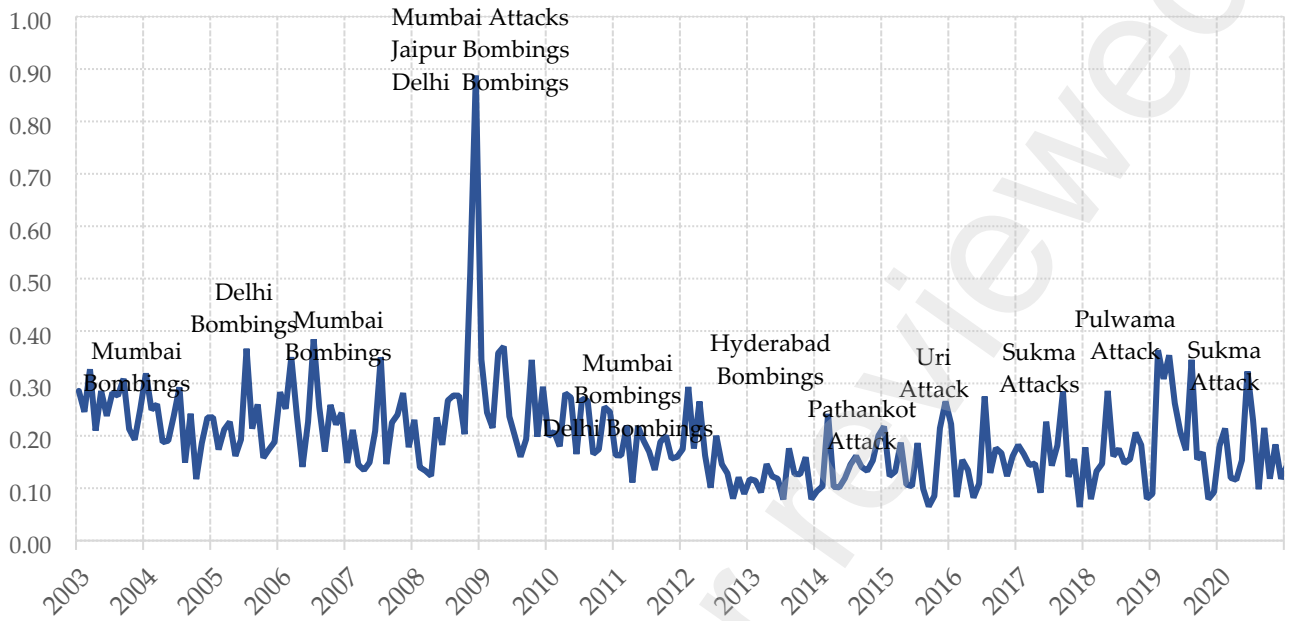
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Table 7. Impact of GPR on corporate investments: controlling for international GPRs
 This table illustrates the impacts of geopolitical risk proxied by *GPR* on corporate investments while controlling for international GPRs. We regress the baseline model from the year 2003 to 2020. The explanatory variables are defined in Appendix Table A1. The list of control variables is the same as in the previous specifications and is not shown here for brevity. The figures in the brackets represent *t*-statistics based on standard errors clustered at the firm level. The null hypothesis is that the estimated coefficients are equal to zero. The asterisks ***, **, and * denote the level of statistical significance at 1%, 5% and 10% levels, respectively.

Variables	(1)	(2)
	Global GPR	Global GPR Threat
GPR_{India}	-3.3691*** (-3.134)	-0.1031*** (-3.136)
GPR_{International}	-8.3094*** (-3.022)	-0.1610*** (-3.022)
Controls	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
R-squared	0.112	0.112

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