GEOPOLITICAL SHOCKS, FINANCIAL MARKET, AND ECONOMIC DYNAMICS: INSIGHTS FROM THE UNITED KINGDOM

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Abstract

Geopolitical risk (GPR) has become an important factor influencing economic stability. This research scrutinizes the macroeconomic impact of GPR shocks on the United Kingdom (UK) by using a structural vector autoregression (SVAR) model with monthly data from 1992 to 2024. The macroeconomic variables are the Financial Times Stock Exchange (FTSE) 100 index, bank rate, consumer price index (CPI), industrial production, employment, and hours worked. The results show that GPR shocks influence the UK economy, leading to a decline in the FTSE 100, temporary inflationary pressure, and a minor effect on industrial production and employment, followed by an overshooting effect. While UK- and Russia-specific GPR indices exhibit similar patterns, their effects vary in intensity and persistence. Compared to other uncertainty measures, GPR's impact is relatively short-lived, with the economy demonstrating a quicker recovery. This research contributes to the literature by collecting monthly data to apply SVAR-based analysis and investigating how UK-specific and Russia-specific GPR shocks affect key UK macroeconomic indicators. The findings suggest that these shocks depress the stock market and raise inflation. However, their effects on industrial production and employment are mild and short-lived compared with other uncertainty measures.

Keywords: Geopolitical Risk, Economic Uncertainty, SVAR, Forecast Errors, Industrial Production

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1. INTRODUCTION

Uncertainty, particularly from geopolitical tensions, is a growing concern for policymakers and investors. Caldara and Iacoviello (2022) described geopolitical risk (GPR) as the potential for, occurrence of, or escalation of unfavourable events that strain international relations. These shocks can impact price levels, investment, and labour markets. This research probes the effects of GPR on the United Kingdom (UK) economy, focusing on employment, industrial production, and the Financial Times Stock Exchange (FTSE) 100. The literature explores the effects of uncertainty on the macroeconomy. However, most literature focuses on global or United States (U.S.) based uncertainty measures, which leaves an unexplored area of the country-specific effects of GPR on the UK economy. This study contributes to the understanding of the impact of GPR on the UK economy by employing a vector autoregression (VAR) approach using monthly data from 1992 to 2024. Moreover, it examines the distinct effects of the UK GPR and Russian GPR on UK macroeconomic variables. By comparing GPR with other uncertainty indices, it assesses its relative importance in driving UK economic fluctuations. These findings are valuable for policymakers and market participants navigating geopolitical uncertainty.

There is growing literature on GPR and macroeconomic dynamics. However, most existing studies have focused on global GPR shocks or U.S. policy uncertainties. Thus, the investigation of the GPR and macroeconomic uncertainty is overlooked in the case of the UK. The UK financial markets are internationally integrated, and domestic industries are highly exposed to global supply chains. Thus, any GPR tension can affect macroeconomic fluctuations in the UK economy. Moreover, the effect of any GPR is not uniform. For instance, Brexit-related tensions and Russia-Ukraine conflicts may influence UK markets differently and through different channels. Therefore, this research addresses this gap by analysing the UK-specific transmission of GPR shocks and also compares them with foreign shocks.

As per the literature gap, this research works on the following research questions:

RQ1: How do GPR shocks influence employment, industrial production, inflation, and stock market performance in the UK?

RQ2: Is the influence of UK-specific GPR shocks different compared to foreign shocks?

Based on these questions, the study utilizes long-horizon data for the UK from 1992 to 2024 and tests the sensitivity of the UK economy to the GPR shocks. Moreover, the analysis distinguishes between domestic and external GPR to analyse asymmetric transmission patterns to understand which shocks would have a greater influence on UK macroeconomic stability. In addition, the analysis will explore how GPR shocks have a stronger impact on financial markets, industrial production, and employment.

The findings reveal that GPR shocks lead to a decline in the FTSE 100, a temporary rise in the consumer price index (CPI), and minor short-term effects on industrial production and employment, though both exhibit overshooting effects. Country-specific GPR indices (UK and Russia) produce similar results. Compared to other uncertainty measures, GPR and trade policy uncertainty (TPU) have weaker and less persistent effects, with faster recovery. Robustness checks confirm that the ordering of the GPR index does not alter conclusions, and working with stationary variables better highlights initial declines and overshooting patterns in industrial production and employment.

2. LITERATURE REVIEW

2.1. Uncertainty impact on macroeconomic variables

There are different approaches to measuring uncertainty. It could be measured by stock market volatility (SMV), text-based analysis, forecast errors, and firm-level indicators, and each approach has its own aspects. SMV depends on financial market volatility when uncertainty comes from the fluctuations in asset prices. Bloom (2009) utilized SMV, measured by the VXO Index, to assess the macroeconomic effects of uncertainty shocks. VAR analysis on U.S. data (1962–2008) reveals that increasing uncertainty results in declines in output, employment, and investment. Firms pause investment and hiring, but the declines are short-lived, often followed by overshooting effects as firms recover postponed activity.

Another approach to measuring uncertainty is text-based analysis, which uses news articles to track policy-related uncertainty based on keyword frequency. Baker et al. (2016) used the economic policy uncertainty (EPU) index using newspaper-based text analysis from 1985 onward. Their VAR analysis finds that EPU shocks reduce output and investment across the U.S. and 12 major economies. Alexopoulos and Cohen (2015) used New York Times articles to develop text-based uncertainty in the U.S. from 1985 to 2007 and showed that uncertainty shocks reduce output, employment, and investment. Bouassida and Ghabri (2025) investigated 13 developed economies from April 2014 to March 2024 and found that financial and macroeconomic uncertainties reduced private equity returns. Moreover, GPR further intensified these effects. The improved gross domestic product (GDP) growth and industrial production raised returns. However, inflation and unemployment reduced returns. Le et al. (2025) investigated global energy prices from January 2001 to December 2024 and found that the moderate GPR and EPU reduced oil prices over longer periods. However, uncertainty indicators increased price volatility.

Another way to measure uncertainty is forecaster disagreement, capturing differences in expectations for key economic indicators. Bachmann et al. (2013) utilize survey-based uncertainty measures from the Leibniz Institute for Economic Research (IFO) Business Climate Survey and the Philadelphia Fed Business Outlook Survey to analyze the effect of uncertainty on economic performance. By using structural vector autoregression (SVAR) analysis on monthly data (1980–2010 for Germany, 1968–2011 for the U.S.), they find that a rise in uncertainty will reduce industrial production and employment, with temporary effects in Germany but more persistent downturns in the U.S. due to labour market differences. Sheen and Wang (2019) construct a macroeconomic disagreement index (MDI) using forecast dispersion from various surveys. Applying a mixed-frequency state-space model to U.S. data (1961–2016), they estimate one year ahead of expected economic conditions. They conclude that greater forecast disagreement results in reductions in employment and industrial production.

Forecast errors are used as an approach to measure uncertainty. It captures unpredictability in economic variables by comparing actual outcomes with prior forecasts. Jurado et al. (2015) construct a forecast-based macroeconomic uncertainty index (MUI) using forecast errors from 132 U.S. macroeconomic and financial indicators (1960–2011). They find that uncertainty shocks reduce output, employment, and consumption. Ma and Samaniego (2019) developed an uncertainty index using forecast errors to capture uncertainty, drawing data from a comprehensive firm-level dataset to assess both aggregate and sector-specific uncertainty. Using U.S. firm-level data (1981–2016) from the Institutional Brokers' Estimate System (I/B/E/S) and the Center for Research in Security Prices (CRSP), their VAR analysis reveals that uncertainty shocks reduce employment and stock markets. Furthermore, they determine that uncertainty in the financial sector exerts a stronger macroeconomic influence compared to other industries. Scotti (2016) constructs a real-activity uncertainty index using forecast errors from

Bloomberg consensus forecasts across the U.S., Eurozone, U.K., Canada, and Japan. Applying a dynamic factor model to daily data (2003–2016), the study finds that uncertainty spikes during recessions, harming industrial production and employment. Jo and Sekkel (2017) construct an MUI using forecast errors from the survey of professional forecasters and analyse its impact on the economy with quarterly data from 1968 Q4 to 2016 Q1. Applying a factor stochastic volatility (FSV) model and a VAR framework, they find that macroeconomic uncertainty spikes during recessions and has persistent negative effects on GDP and employment.

Bloom et al. (2018) constructed a microeconomic uncertainty index using plant-level total factor productivity (TFP) shock dispersion from U.S. census data (1972–2011) and found that microeconomic uncertainty surges in recessions, rising 76% during the Great Recession. Piffer and Podstawski (2018) construct a gold price-based uncertainty measure, using percentage variations in gold prices around unexpected uncertainty events. Using monthly data (1979–2015), they apply an SVAR model with external instrumental variables to separate between shocks driven by uncertainty and those driven by news. Their findings suggest that shocks driven by uncertainty reduce output, employment, and investment, prompting prolonged monetary expansion. Leduc and Liu (2016) construct a consumer-based uncertainty index using survey responses from the Michigan survey of consumers on uncertainty-driven reluctance to purchase durable goods. Using U.S. monthly data (1978–2013) and a Bayesian VAR model, they observe that shocks raise unemployment and lower inflation, functioning as negative aggregate demand shocks.

There are different types of uncertainty, and each index has different sources of economic risk and their impact on economic activity. For example, there are oil earnings uncertainty (OEU), TPU, macroeconomic uncertainty, and financial uncertainty (FU). Ma and Samaniego (2020) constructed an OEU index using earnings per share (EPS) forecast errors from analyst forecasts in the U.S. oil and gas sector. Their method is an SVAR model, and the data is monthly U.S. data (1982–2018). They find that higher OEU reduces U.S. output and CPI. Unlike aggregate uncertainty, OEU sometimes increases stock prices, likely due to falling oil prices benefiting energy-consuming sectors. Caldara et al. (2020) construct a TPU index using newspaper coverage, firms' earnings calls, and import tariff volatility to measure trade-related uncertainty. Using quarterly U.S. data (1960–2018) and a VAR model, they find that higher TPU reduces business investment, leading to a 1–2% decline in aggregate capital stock.

Ludvigson et al. (2015) utilize a FU index and a MUI. Using U.S. monthly data (1960–2015) and an SVAR model, the results demonstrate that FU shocks reduce employment and production. Their findings highlight that FU exerts a more pronounced negative impact on real economic activity than MUI. Mumtaz and Surico (2018) analyse the effects of policy uncertainty on macroeconomic oscillations using quarterly data from 1970 Q1 to 2015 Q4. Applying an SVAR model with stochastic volatility, the effects of uncertainty related to public debt, tax policy, government spending, and monetary policy on GDP, consumption, and investment are estimated. Their findings show that public debt uncertainty has the most persistent negative effect on GDP, reducing output by 0.5% after two years, while tax policy uncertainty significantly lowers investment and consumption. Haque and Magnusson (2021) probe the effects of uncertainty shocks on inflation in the U.S. from 1962 Q3 to 2019 Q4. They find that uncertainty shocks condense output growth without overshooting, and inflation responds negatively, behaving like an aggregate demand shock.

2.2. Geopolitical risk index

Many studies have utilized the GPR index of Dario Caldara and Matteo Iacoviello to analyze its impact on macroeconomic variables, financial markets, and global economic stability. Pinchetti (2025) uses the GPR index to distinguish between geopolitical energy shocks (related to oil markets) and geopolitical macro shocks (general economic contractions). Using monthly data (1985–2023) and an SVAR model with high-frequency sign restrictions, the study finds that geopolitical energy shocks are contractionary and inflationary, while geopolitical macro shocks are contractionary and deflationary. Sectoral analysis of 57 U.S. industries confirms that energy-intensive sectors experience larger output losses and price increases. The study highlights that failing to differentiate between energy and macro GPR shocks can lead to misleading policy conclusions regarding inflationary risks. Caldara et al. (2024) use the GPR index to examine its effects on inflation and economic activity across 44 economies (1900–2022). Using panel VAR and structural VAR models, they find that GPR shocks are inflationary, driven by commodity price increases, supply disruptions, and higher military spending. Gu et al. (2021) analyse the impact of GPR and EPU indexes on the global oil market from January 1985 to September 2020. Their findings show that GPR shocks have a weaker adverse effect on global oil production and prices compared to EPU shocks.

Alqahtani and Klein (2021) examine the effects of GPR and oil price uncertainty on stock markets in the Gulf Cooperation Council (GCC) region, using monthly data from 2007 to 2018. Applying an autoregressive distributed lag (ARDL) model and cointegration tests, they determine that GCC stock markets exhibit significant resilience to global GPR, except for Qatar, which shows a significant negative response. However, local GPR (Saudi Arabia-specific GPR) has a stronger adverse effect on Qatar, Bahrain, and the United Arab Emirates (UAE). Saudi Arabia exhibits no response to its own GPR. Cheng and Chiu (2018) examine the impact of global GPR shocks on 38 emerging and developing countries using yearly data from 1980 to 2011. Applying an SVAR model with Cholesky decomposition, they determine that higher GPR contributes to economic contractions, with consumption and investment declining by 1% and 2%, respectively. GPR shocks explain 13% to 22% of business cycle fluctuations. Smales (2021) used daily data from 1986 to 2018 to examine the effects of GPR on oil and SMV and found that higher GPR raises oil prices but lowers stock returns.

Aysan et al. (2019) scrutinize the impact of GPR on Bitcoin returns using daily data from 2010 to 2018 and find that higher GPR reduces Bitcoin returns but increases Bitcoin price volatility.

Additionally, Bitcoin might be considered as a hedge against GPR in times of heightened uncertainty. Lu et al. (2020) scrutinize the impact of GPR on financial development from 1985 to 2018 for 18 emerging market economies. They find that higher GPR declines in credit availability for the private sector, weakening financial development. Their results indicate that both per capita income and broad money have a positive influence on credit availability. Wang et al. (2019) analyse U.S. firm-level data from 1987 to 2016. Applying panel regressions while controlling for firm characteristics and macroeconomic uncertainty, they find that higher GPR reduces corporate investment, with geopolitical threats (GPT) having a stronger negative effect than geopolitical acts (GPA). The reduction in investment is more significant for firms engaged in irreversible investments and those with substantial market power.

Demiralay and Kilincarslan (2019) investigate the effects of GPR on travel and leisure (T&L) stock indices, utilizing monthly data spanning from 1992 to 2018 across global, Asia-Pacific, European, and North American markets. Applying ordinary least squares (OLS) and quantile regression models, they determine that GPR harms T&L stocks, especially in bear markets, with European and North American stocks being the most sensitive. Additionally, GPT impacts returns mainly during downturns, whereas GPA affects stock returns under all market conditions, highlighting the importance of geopolitical stability for the T&L sector. Baur and Smales (2020) analyse the hedging properties of precious metals against GPR using daily data from 1985 to 2018. Applying OLS regression and exponential autoregressive conditional heteroscedasticity (EGARCH) models, they examine how gold, silver, platinum, and palladium futures respond to GPT and GPA. Their findings show that gold and silver serve as strong hedges against GPR, particularly GPT, rather than realized events, while palladium and platinum exhibit weaker responses.

2.3. Country-specific studies

Several papers have studied the effects of uncertainty on GDP, inflation, financial markets, investment, and labour dynamics. Redl (2017) examines the UK economy's response to uncertainty shocks. Using quarterly data from 1991 to 2016. Applying an SVAR model with narrative sign restrictions, the study differentiates between macroeconomic, financial, and credit-related uncertainty shocks. The results indicate that financial and credit-related uncertainty have stronger negative effects on UK GDP than macroeconomic uncertainty alone, highlighting FU as the key driver of economic downturns. Denis and Kannan (2013) investigate how uncertainty shocks affect the UK economy, utilizing monthly data from 1984 to 2011. Applying the VAR model, they examine the impact of SMV (FTSE-100 implied volatility) and GDP forecast dispersion on industrial production, GDP, unemployment, and consumer confidence. Their findings show that uncertainty shocks significantly reduce UK GDP and industrial production, with peak effects 6–12 months after the shock.

Yousuf (2021) examines how EPU influences the UK stock market using monthly stock market data. Applying the VAR model, the study finds that EPU negatively affects UK stock market indicators, including exchange rates, CPI, and price indices. Chowla et al. (2014) analyse how global economic shocks affect the UK economy using quarterly data from 1987 to 2013. Applying a VAR model, they analyse how trade linkages, financial markets, and uncertainty spillovers affect UK GDP, inflation, and financial conditions. Their findings indicate that global shocks have been responsible for 2/3th of the UK's output decline since 2007.

Mumtaz (2016) probes the transmission of uncertainty in the UK utilizing data collected monthly from 1960 to 2015. The study analyses how macroeconomic and FU affect GDP, inflation, and interest rates. The findings indicate that the influence of uncertainty shocks on UK GDP and price levels has diminished over time, particularly after inflation targeting was introduced in 1992. Milas and Papapanagiotou (2024) studied the effects of GPR, EPU, and financial stress on the UK economy, utilizing quarterly data from 1978 Q1 to 2024 Q2. Applying hybrid time-varying parameter var (TVP-VAR) models with Bayesian shrinkage and threshold VAR models, they examine non-linear and regime-dependent effects of uncertainty on GDP and unemployment. Their findings show that GPR shocks increase financial stress and reduce GDP growth, with stronger effects during periods of crises such as Brexit and the Ukraine war. Theophilopoulou (2021) explores the effects of macroeconomic uncertainty on inequality in the UK using quarterly data from 1970 Q1 to 2018 Q1. Applying the SVAR model, the study analyses how income, wage, and consumption inequality respond to uncertainty shocks. The results indicate that shocks driven by uncertainty reduce income and consumption inequality, with middle- and high-income households experiencing greater negative effects. Cao and Vo (2025) investigated the Vietnam stock market and found that foreign EPU had a stronger impact on volatility than GPR. However, volatility spillovers remained short-term in nature. EPU remained dominated during COVID-19, and GPR's effects were intensified during the Russia-Ukraine conflict.

The reviewed literature demonstrates that uncertainty is measured through SMV, forecast errors, disagreement measures, and sector-specific indicators. These uncertainties are tested to check their effects on macroeconomic activity, financial markets, commodity prices, investment, and the labour market. GPR has been measured by using the Caldara-Iacoviello index in global, regional, and sectoral analyses. The results of the literature signify that GPR is responsible for contractions in output, investment, and employment, which corroborate the negative effect of GPR on financial and commodity markets. However, the effect of GPR is unexplored in the UK literature, and the present study is trying to fill this gap. To ensure a sound literature contribution, this research compares the role of domestic and foreign GPR shocks on macroeconomic instability. For this purpose, the following hypotheses are developed:

H1: GPR shocks negatively affect industrial production, employment, inflation, and stock market performance in the UK.

H2: UK-specific GPR shocks have stronger effects on the UK economy compared to foreign shocks.

3. RESEARCH METHODOLOGY

3.1. Data

This study employs a quantitative, comparative This research utilizes macroeconomic data monthly for the UK from March 1992 to September 2024. The dataset includes industrial production, CPI, employment, and average weekly hours, sourced from the Office for National Statistics (ONS, n.d.). The bank rate data is obtained from the Bank of England database (BoE, n.d.), and the FTSE 100 index data is obtained from Yahoo Finance. This analysis uses the GPR index, which is constructed by Caldara and Iacoviello (2022). The GPR index is constructed using textual analysis of news articles, identifying geopolitical tensions by tracking the occurrence of key terms associated with wars and acts of violence, and international conflicts in major newspapers from the U.S., the UK, and Canada. Additionally, Caldara and Iacoviello (2022) disaggregate them into several components to allow a more detailed examination of GPRs:

GPA: Measures actual geopolitical incidents such as armed conflicts and terrorist activities.

GPT: Captures signals of potential future GPRs, such as military buildups or diplomatic conflicts.

Country-specific GPR measures: These indexes track GPR from the perspective of specific countries, providing a more localized assessment of geopolitical uncertainty.

3.2. Macroeconomic impact of geopolitical risk

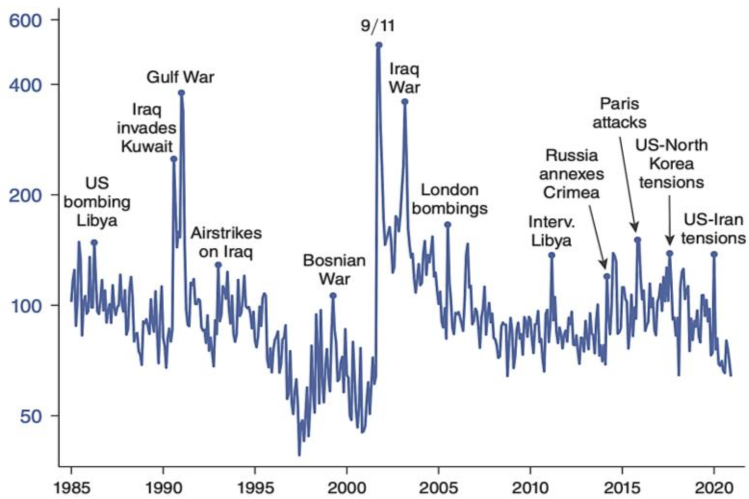
The relationship between macroeconomic variables and uncertainty indices has continued to be a key area of interest in economic research. This study employs a recursively identified VAR to analyse the connection between macroeconomic variables and the GPR index. A shock to the GPR index is considered an uncertainty shock, allowing for an assessment of its impact on macroeconomic dynamics. Following the approach of Bloom (2009), the VAR specification is determined, and the selection of variables is established. The estimation order includes the log FTSE 100 index, the log of the recent GPR index, the monthly average of the official bank rate, the log of the average weekly hours of work, the log of the CPI, the log of employment, and the log of industrial production. The data is at a monthly frequency, since daily GPR index data is noisier, as noted by Caldara et al. (2020). Since it is the monthly data, 12 lags are incorporated to ensure consistent estimates. The benchmark ordering of variables is structured accordingly:

- log (FTSE 100 index);
- log (Recent GPR index);
- Official bank rate;
- log (Hours);
- log (CPI);
- log (Employment);
- log (Industrial production);

The wage in the manufacturing sector was not included in the benchmark specification, consistent with Bloom (2009). Given that the average weekly hours of work are already incorporated, the wages were unnecessary. In contrast to Bloom (2009), this study follows Caldara et al. (2020) in applying a logarithmic transformation to the GPR index. While no fundamental justification necessitates this transformation, comparative testing of both specifications indicated that the logarithmic transformation enhanced model stability. Similar to Sims (1980), using non-stationary variables enables a better interpretation of the dynamic connection between macroeconomic variables and the GPR index. In the robustness analysis, the Hodrick-Prescott (HP) filter is applied to demonstrate that the main findings remain consistent. However, the HP filter is not applied to the official bank rate, as it is already stationary.

In addition to the benchmark model, an additional extension is introduced by incorporating country-specific measures of GPR. Specifically, the UK GPR index and Russian GPR index are used in place of the global recent GPR index employed in the benchmark analysis. This approach enables a deeper examination of how GPRs originating from specific countries influence macroeconomic conditions.

Figure 1. The recent geopolitical risk index from 1985



Source: Caldara and Iacoviello (2022).

4. RESEARCH RESULTS

4.1. Result of the benchmark

In the benchmark model, a VAR model is estimated using the recent GPR index for the period March 1992 to September 2024. This framework captures the dynamic connection between the recent GPR index and macroeconomic variables in the UK. Three significant spikes in the recent GPR index correspond to major geopolitical events in Figure 2.

Figure 2. The macroeconomic impact of the recent GRP on the UK economy

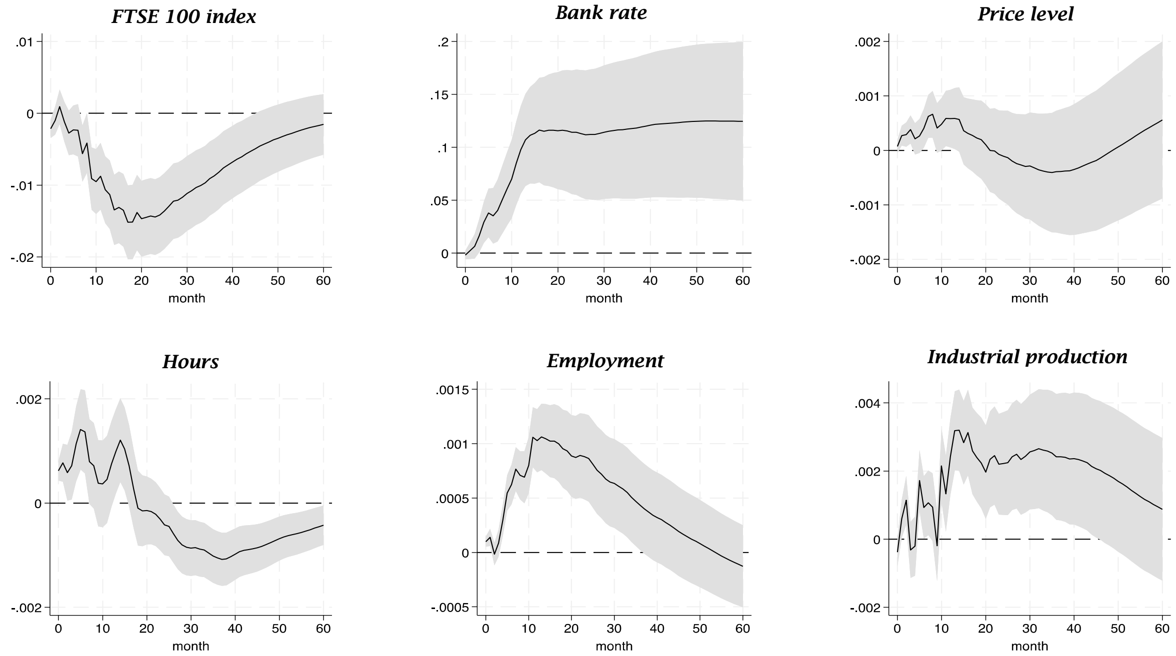


Figure 2 shows the impulse response function (IRF) of the bank rate, stock market index, industrial production, employment, hours, and price level to a one-standard-deviation positive shock to the recent GPR index, and the gray areas are +/- one standard error with 68% or 50% confidence bands.

The bank rate's immediate response to the GPR index is nearly zero, suggesting a 'wait-and-see' approach by the Bank of England. The subsequent gradual increase, peaking at 0.11 after 15 months, reflects the BoE's inflation-targeting framework, focused on maintaining a 2% inflation target (HM Treasury, 2023). In contrast, studies such as Ma and Samaniego (2019) show that U.S. monetary authorities lower the federal funds rate after uncertainty shocks due to deflationary pressures. This difference arises from the Federal Reserve's dual mandate, balancing inflation and employment goals (Federal Reserve Board, n.d.).

The initial response of the IRF of the FTSE 100 index to a shock in the GPR index shows a gradual decline to -0.015 by the 15th month. A decline in stock markets is expected, as Piffer and Podstawski (2018) highlight the impact of monetary policy in responding to geopolitical and economic shocks. The IRF of the CPI to a GPR shock shows a gradual increase, then recovers after 20 months. This pattern aligns with the findings of Caldara et al. (2024), who demonstrate that GPR tends to increase inflation in the short to medium term, primarily due to supply-side disruptions such as rising commodity prices, trade restrictions, and heightened military expenditures. These factors likely contribute to the gradual rise in CPI observed in the IRF.

The IRF results indicate that the impact of GPR shocks on industrial production is minimal, with fluctuations within a narrow range. After 10 months, results indicate an overshooting effect in production, which is in line with Bloom (2009). His findings suggest that uncertainty shocks initially suppress investment and hiring, but as uncertainty dissipates, firms tend to compensate by increasing production, temporarily exceeding their pre-shock levels before stabilizing. The average weekly hours of work will fluctuate in the first year after the shock, then gradually decline. The IRF results indicate that the impact of GPR shocks on employment is relatively minor in the short run. However, an overshooting effect is observed, with employment increasing to a maximum of 0.001 after 12 months. The outcome aligns with the findings of Bachmann et al. (2013), who show that a rise in uncertainty results in a minor reduction in employment. Their study finds that while the impact of uncertainty shocks on employment in Germany is temporary, the downturns in the U.S. are more persistent, primarily due to differences in labour market structures. Similarly, the UK employment might have labour market regulations and wage-setting mechanisms that mitigate the immediate impact of uncertainty on hiring and layoffs.

Table 1. The VAR forecast error variance decomposition (FEVD) of the log level FTSE 100 index, bank rate, hours, CPI, employment, and industrial production due to the GPR index

Horizon	*FTSE 100 index*	*Bank rate*	*Hours*	*CPI*	*Employment*	*Industrial production*
h = 3	0.15	0.048	0.6	0.45	0.37	0.48
h = 12	2.1	3.43	1.7	1.1	7.6	1.56
h = 36	15.8	9.65	3.6	0.51	14.3	5.9
h = 60	17.11	13.66	5.7	0.4	13.2	6.1

Note: Monthly data is estimated with 12 lags.

Following the IRF analysis, the quantitative significance of global GPR shocks is assessed. Table 1 presents the fraction of the VAR FEVD for the FTSE 100 index, bank rate, hours worked, CPI, employment, and industrial production. The values are reported as percentages, representing the proportion of the forecast error variance attributed to GPR shocks. The decomposition is conducted over forecast horizons of 3, 12, 36, and 60 months.

As indicated in Table 1, GPR shocks contribute to the variance of macroeconomic variables varies considerably due to GPR shocks. For instance, at a 36-month forecast horizon, GPR shocks account for 17.11% of the variation in the FTSE 100 index. Similarly, at the 60-month (five-year) horizon, these shocks explain approximately 6.1% of the variation in industrial production. Overall, the findings suggest that while GPR shocks influence macroeconomic variables, their contribution remains below 17% across all indicators, indicating a moderate but significant role in macroeconomic fluctuations.

4.2. Result of country-specific measures of geopolitical risk

Caldara et al. (2021) developed country-specific measures of GPR. In this analysis, the recent UK GPR index is employed instead of the general recent GPR index. The primary distinction between these indices is that the recent UK GPR index specifically captures GPRs from the perspective of the UK, particularly those in which the UK is directly involved. The fluctuations observed in the recent UK GPR index closely resemble those in the general recent GPR index; therefore, the findings are anticipated to closely align with the results obtained in the benchmark analysis. Moreover, this study analyses the impact of the recent Russia GPR index on the UK's macroeconomic indicators.

Figure 3. IRF of the bank rate, stock market index, industrial production, employment, hours, and price level to a one standard deviation positive shock to the recent UK GPR index

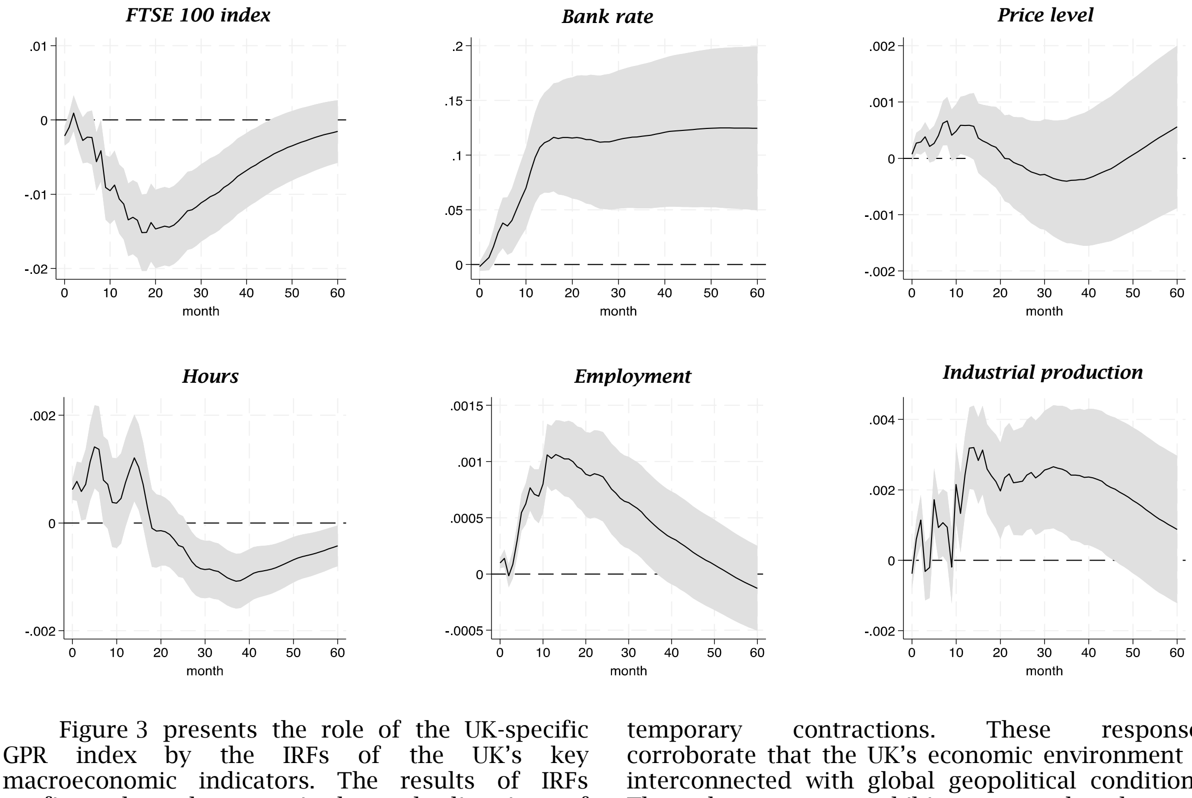
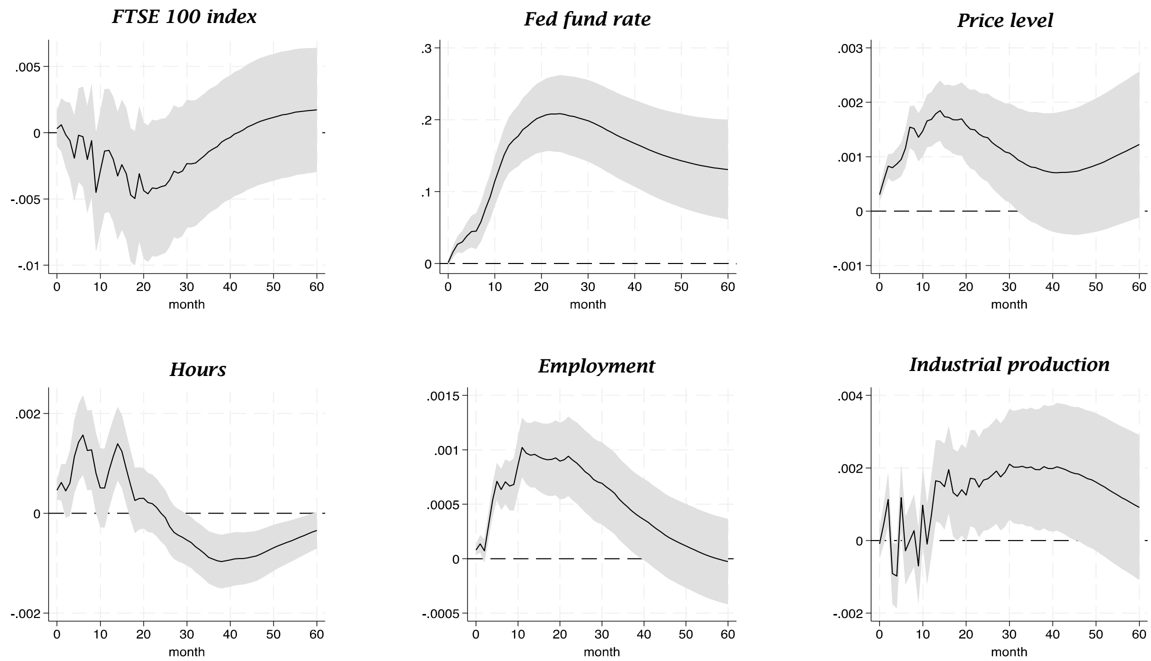


Figure 3 presents the role of the UK-specific GPR index by the IRFs of the UK's key macroeconomic indicators. The results of IRFs confirm that the magnitude and direction of responses of the FTSE 100, CPI, industrial production, and employment are consistent in response to domestic UK GPR and the global GPR. Thus, with domestic GPR shocks, financial markets immediately decline, price levels show short-lived increases, and real activity indicators have mild and temporary contractions. These responses corroborate that the UK's economic environment is interconnected with global geopolitical conditions. Thus, the responses exhibit patterns that domestic GPR has almost similar effects on key macroeconomic variables as global GPR. It is reflecting that domestic UK GPR is coinciding with global tensions like terrorist attacks, military escalations, and diplomatic crises, which are also affecting the UK markets in a similar way.

Figure 4. IRF of the bank rate, stock market index, industrial production, employment, hours, and price level to a one standard deviation positive shock to the recent Russia GPR index



The recent Russia GPR index exhibits two spikes: The Gulf War and the annexation of Crimea. The index does not capture the geopolitical events of the September 11 attacks or the 2003 Iraq War. Figure 4 illustrates the IRF of the UK's macroeconomic variables to a recent Russia GPR shock. The similarities between the responses are evident, with only minor differences in magnitude. Specifically, the CPI increases to 0.002 in response to the Russia GPR shock, whereas the IRF of the CPI to the general recent GPR index reaches a maximum increase of 0.0005. The IRF of the bank rate to the Russia GPR index is larger than that observed in the benchmark analysis.

Overall, the findings from both extensions align with the benchmark findings. The consistency of the UK GPR index with the benchmark is attributed to the fact that both indices exhibit similar spikes in GPR, reflecting major geopolitical events that had global economic implications. Since these events had direct consequences for the UK, particularly through financial markets, trade, and policy responses, the macroeconomic impact remains similar. Furthermore, the results derived from the Russian GPR index align with those of the benchmark analysis. This consistency can be attributed to the nature of GPR itself, which often induces economic uncertainty, disrupts investor confidence, and influences monetary policy reactions, regardless of the specific source of the shock.

4.3. Comparison with other uncertainty indices

The IRF analysis in Figure 5 compares the effects of GPR, FU, macro uncertainty, and TPU on UK industrial production. The TPU index used in this study was constructed by Caldara et al. (2020). The FU index and MUI used in this study were constructed by Ludvigson et al. (2015). Each uncertainty measure is separately incorporated into a VAR model, maintaining the same benchmark specification. Qualitatively, industrial production responds similarly across all four measures. However, the response to GPR and TPU is less significant and has faster recovery than other measures.

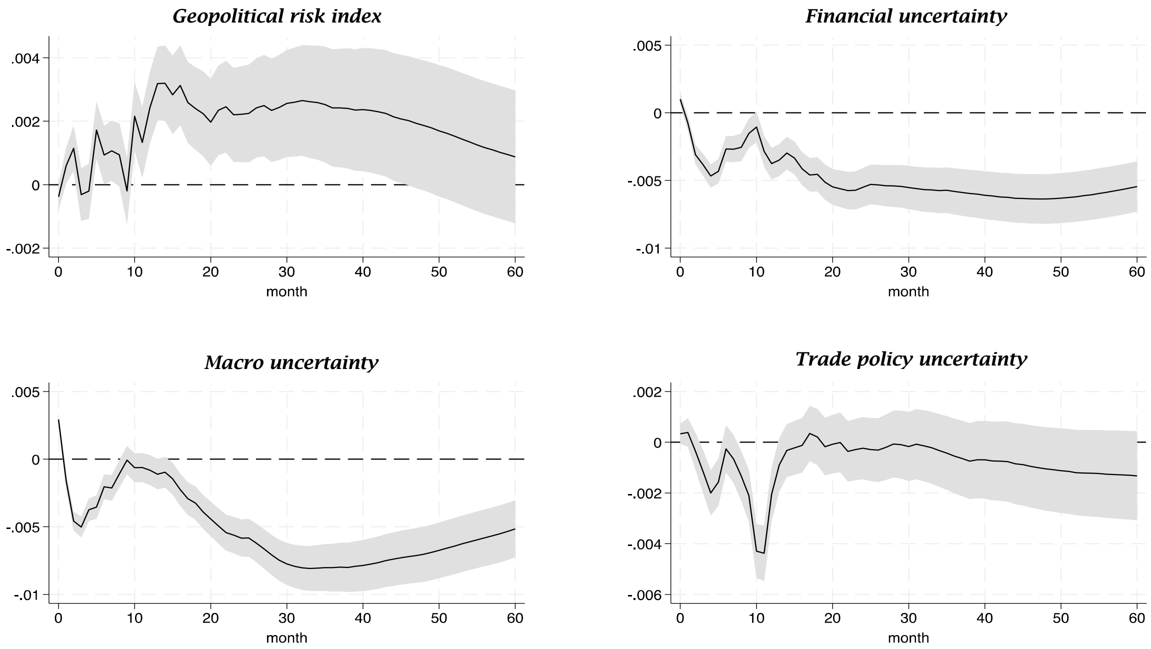
Table 2. Industrial production forecast variance due to uncertainty (in percent)

Horizon	*FU*	*Macroeconomic uncertainty*	*TPU*	*GPR*
h = 3	2.5	8	0.09	0.48
h = 12	10.2	10.2	5.3	1.56
h = 36	27	32	2	5.9
h = 60	40	47	2	6.1

To assess the quantitative significance of different uncertainty shocks in driving economic fluctuations, we compute the FEVD for industrial production using each uncertainty measure.

Table 2 reports the percentage contribution of FU, macroeconomic uncertainty, TPU, and GPR to the forecast error variance over 3, 12, 36, and 60 months. The results indicate that macroeconomic uncertainty explains the largest share of variance, contributing 47% at the 60-month horizon, followed closely by FU at 40%. TPU has a moderate impact in the short term (5.3% at h = 12) but fades to 2% beyond 36 months. In contrast, GPR accounts for a much smaller fraction of the variance, reaching only 6.1% at h = 60, indicating that GPR is lower compared to broader macroeconomic and FU.

Figure 5. IRF of industrial production with different uncertainty measures

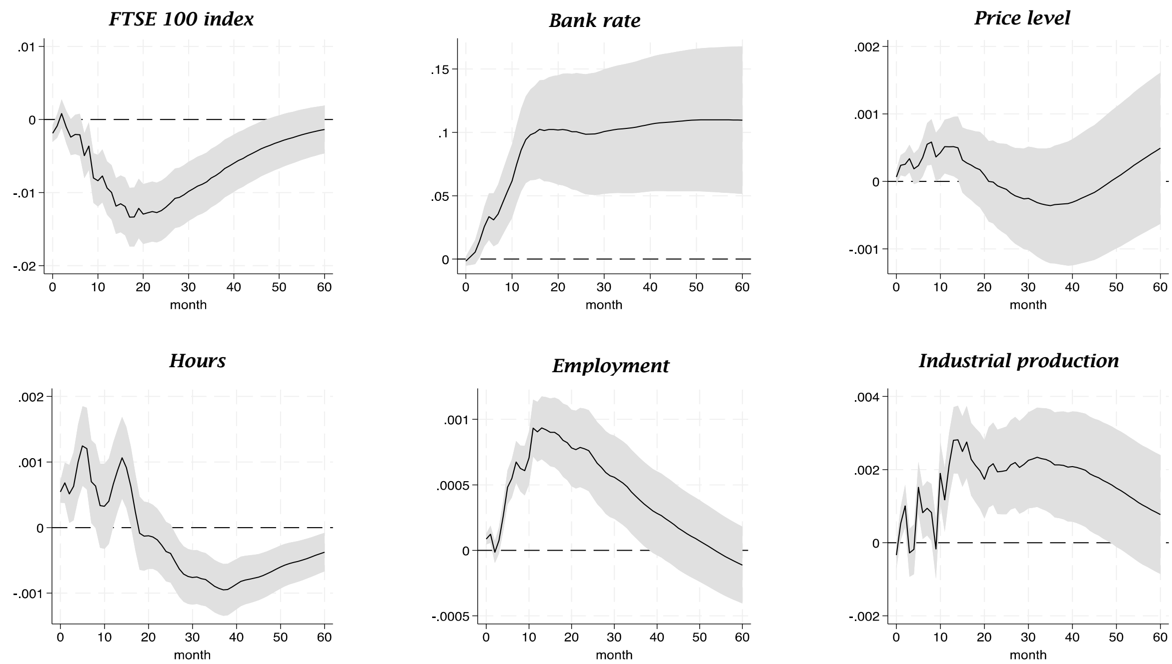


5. ROBUSTNESS AND DISCUSSION OF THE RESULTS

5.1. Reordering of the geopolitical risk index in the vector autoregression system

In the benchmark estimation, the recent GPR index is placed in the second position within the VAR model. As a robustness check, the estimation is re-run with the GPR index placed first to assess whether the IRF is sensitive to the ordering of variables in the system. Figure 6 presents the impulse responses obtained from the alternative ordering, where the GPR index is placed first. The results remain largely robust, with the responses of key macroeconomic indicators aligning with those in the benchmark model. This suggests that while the ordering of the GPR index in the VAR system introduces slight numerical variations, the overall conclusions about the effect of GPR on the UK economy remain unchanged.

Figure 6. IRF of the bank rate, stock market index, industrial production, employment, and price level from the estimation of VAR with GPR placed first



5.2. Robustness check using stationary variables

The non-stationary variables are transformed into stationary series using the HP filter. Unlike Bloom (2009), who applied the HP filter to all variables, the bank rate is excluded from this transformation, as it is already stationary. The smoothing parameter (λ) is set to 129,600, which aligns with standard practices in the literature when working with monthly data.

Figure 7. IRF of benchmark variables to the recent GPR index from the estimation of VAR with HP-filter variables

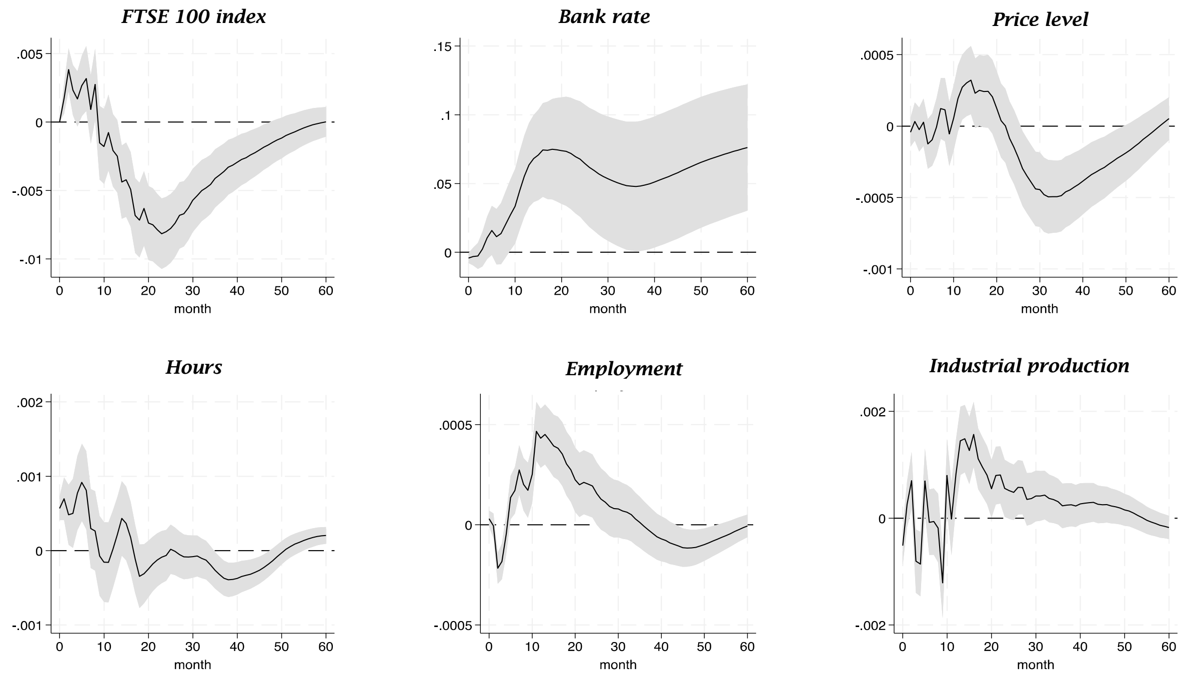


Figure 7 presents the IRFs derived from this specification. The IRFs reveal that the stock market initially rises during the first six months following a GPR shock but subsequently declines, reaching -0.008 after 20 months. The bank rate exhibits a gradual increase, although its magnitude remains lower than in the benchmark model. The responses of employment and industrial production are similar to the benchmark. Initial decline, followed by an overshooting effect, reflects firms' tendency to delay investment and hiring amid uncertainty. The subsequent recovery likely results from firms resuming investment as uncertainty fades or policy interventions take effect. Overall, the findings remain consistent with the benchmark model. Moreover, working with stationary variables in employment and industrial production more clearly reveals the initial decline and overshooting, reinforcing the 'wait-and-see' approach observed in prior studies.

5.3. Impact of geopolitical threats and acts on United Kingdom macroeconomic variables

Caldara et al. (2020) decompose the recent GPR index into two distinct components: the GPT index and the GPA index. The correlation between these two indices is 0.46 from 1985 onward and 0.59 over the entire sample period. To assess their individual effects, the recent GPR index is replaced separately with the GPT and GPA indices in the analysis. This approach allows for a better examination of whether perceived GPT or actual geopolitical events drive macroeconomic responses differently.

Figures 8 and 9 present the IRFs illustrating the effects of GPT and GPA on UK macroeconomic variables. The results indicate that the overall macroeconomic responses remain consistent with the benchmark model, irrespective of whether the GPR originates from anticipated threats or actual geopolitical events. These findings reinforce the robustness of the benchmark model and underscore the importance of both perceived risks and actual geopolitical events in shaping UK macroeconomic dynamics.

Figure 8. IRF of the bank rate, stock market index, industrial production, hours, and price level to a one standard deviation positive shock to the GPT

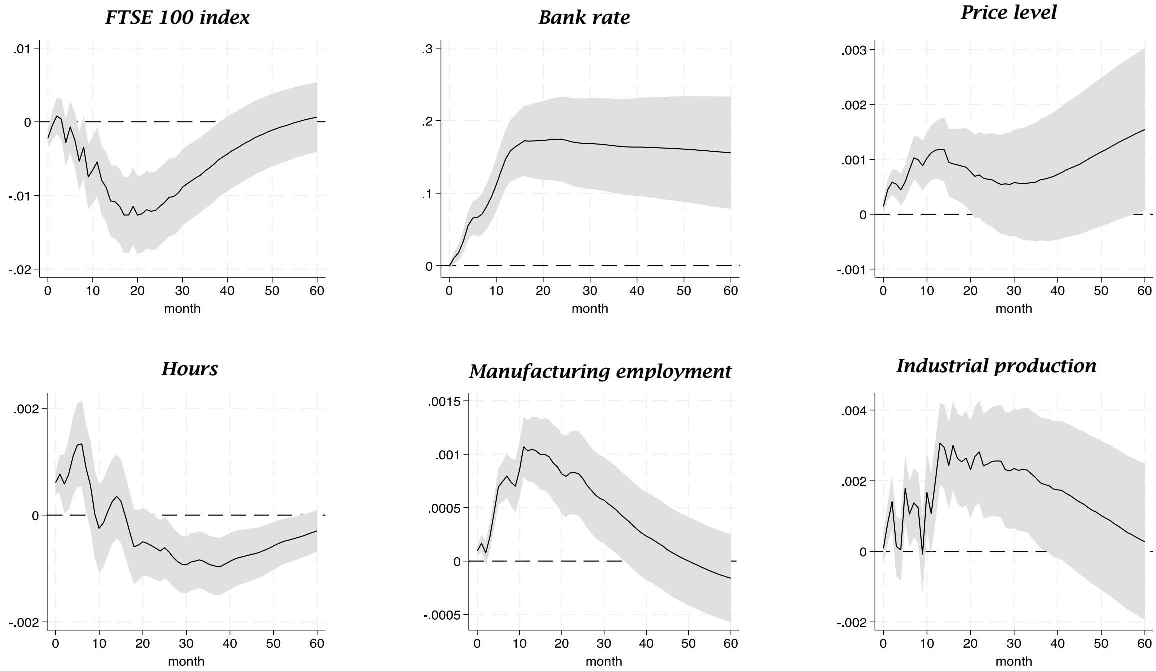
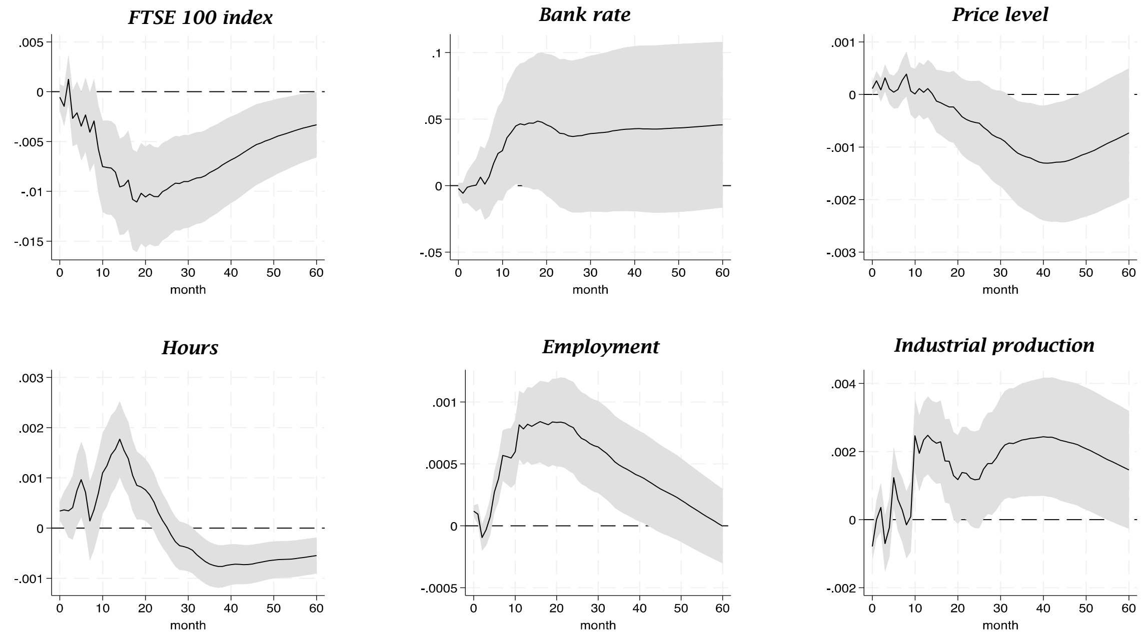


Figure 9. IRF of the bank rate, stock market index, industrial production, hours, and price level to a one standard deviation positive shock to the GPA



6. CONCLUSION

This study analyses the impact of GPR on the UK economy, distinguishing between global, UK-specific, and Russia-related GPR. It enhances understanding of how different sources of GPR affect UK macroeconomic variables and compares the GPR index with other uncertainty measures. The findings show that GPR shocks lead to a decline in the FTSE 100, a temporary rise in CPI, and minor short-term effects on industrial production and employment, both exhibiting overshooting effects. UK- and Russia-specific GPR indices have similar results. Compared to other uncertainty measures, GPR and TPU have weaker, less persistent effects with faster recovery. Robustness checks confirm that the ordering of the GPR index does not alter conclusions. Given the economic disruptions caused by GPRs, incorporating GPR into macroeconomic forecasting and monetary policy frameworks could enhance economic resilience. This study has some limitations. It focuses on aggregate macroeconomic effects, leaving room for future research to explore sector-specific responses to GPR shocks, such as their impact on UK sectoral employment.

This study analyses the effects of GPR by using the Caldara-Iacoviello GPR indices, which are constructed from news-based text frequency. However, this index does not capture the roles of informal political tensions and cybercrimes. Secondly, the study focuses on a limited set of macroeconomic indicators, which ignore the effect of GPR on sector-specific and regional outcomes in the UK economy. These limitations may be covered by future research by including sectoral analysis and investigating alternative uncertainty measures.

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