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ECONOMIC POLICY UNCERTAINTY AND MACROECONOMY: A MULTI-COUNTRY FRAMEWORK

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Abstract

This study investigates the average macroeconomic effects of Economic Policy Uncertainty (EPU) across a group of OECD countries. Although EPU has been extensively studied in recent years, research focusing on its "average" impact at a multi-country level remains relatively scarce. To address this gap, I employ a Panel Vector Auto-Regressive (Panel-VAR) model using data from 14 OECD member nations, selected based on data availability. The findings indicate that a one standard deviation increase in the EPU index generally leads to declines in consumer and business confidence, along with slower economic growth. In contrast, inflation tends to rise following an EPU shock. Investment responses are more volatile, showing fluctuations around the mean for up to eight quarters. These results emphasize the considerable macroeconomic consequences of heightened policy uncertainty across advanced economies.

Keywords

Economic Policy Uncertainty, Panel VAR, Impulse Response, OECD Economies, Macroeconomic Indicators, Business Confidence, Consumer Confidence, Investment, Output Growth

Introduction

Following the global financial crisis of 2007–2009 and the subsequent turmoil in the Eurozone, concerns about Economic Policy Uncertainty (EPU) and its international ripple effects have become a growing focus among scholars, policymakers, and global institutions. These concerns were further heightened during the COVID-19 crisis (2019–2021), as lockdowns and rapid policy changes created an unusually volatile and uncertain global economic climate. Although academic interest in EPU has increased notably in recent years, much of the research tends to concentrate on individual countries, offering limited insights into the broader, cross-country implications of policy uncertainty. This paper aims to fill that gap by examining the average macroeconomic consequences of EPU on major indicators such as GDP, inflation, consumer and business confidence, and private investment across 14 OECD economies. Utilizing a multi-country panel dataset and estimating a Panel Vector Auto-Regressive (Panel VAR) model, the study finds that heightened policy uncertainty typically slows economic performance in these advanced nations.

Literature Review

Baker et al. (2016) emphasize that heightened concern over policy-related uncertainty has been largely fueled by a series of major global events, including the global financial crisis (2007 to 2009), the sovereign debt crisis in the Eurozone, and intensifying partisan conflict during United States presidential election cycles. To systematically capture the dynamics of such uncertainty, the authors developed the Economic Policy Uncertainty (EPU) index for the United States. This index is constructed by tracking the frequency

of newspaper articles containing terms related to the economy, uncertainty, and policy in ten major national newspapers. Despite potential ideological biases in individual publications, the authors demonstrate that such biases do not significantly affect the aggregated EPU index. Their work was subsequently extended to cover 27 additional countries and various subnational entities, including U.S. states. From a macroeconomic perspective, they report that elevated EPU levels are associated with declines in key indicators such as private investment, industrial output, and payroll employment. At the microeconomic level, their analysis indicates that firms tend to reduce investment, cut jobs, especially in policy-sensitive sectors, and experience higher stock market volatility during periods of rising policy uncertainty.

Building on this framework, Caggiano et al. (2020) examine how EPU shocks influence the Canadian labor market, differentiating between expansionary and contractionary phases of the business cycle. Their results show that the negative effects of EPU on unemployment are stronger during recessions, highlighting the significance of the macroeconomic environment. Using a small open economy model, they demonstrate how policy-related uncertainty in neighboring countries, like the United States, can spill over and intensify domestic economic fluctuations.

In a similar vein, Trung (2019) employs a panel vector autoregression (VAR) methodology to examine the cross-border impact of U.S. EPU shocks on emerging economies. This study shows that rising uncertainty in the United States dampens capital inflows, curtails consumption and investment, reduces international trade, and suppresses overall output in emerging markets. Furthermore, it finds that increased EPU leads to currency depreciation and a downward adjustment of short-term interest rates by monetary authorities in affected countries. Trung's work also offers a potential explanation for the sluggish global recovery following the 2008 and 2009 financial crisis.

Further exploring the channels through which EPU affects economic outcomes, Abid and Rault (2021) assess its impact on exchange rate volatility (ERV) in a sample of eight emerging market economies. Their panel VAR estimates suggest that both domestic and U.S.-originated EPU shocks contribute to higher ERV, which then transmits uncertainty to the broader economy by disrupting international trade and investment flows. In a related context, Balcilar et al. (2021) analyze the relationship between EPU and real housing market dynamics across multiple countries. Their results show a negative correlation, with increases in EPU linked to declines in real housing price returns.

Alam and Istiak (2020) focus specifically on the Mexican economy and assess its vulnerability to U.S.- based EPU shocks using both linear and nonlinear structural VAR (SVAR) models. Their empirical findings show that heightened EPU in the United States leads to a reduction in Mexican industrial production, lower inflationary pressures, and a decline in policy interest rates. Complementing these results, Bordo et al. (2016) provide evidence that policy uncertainty significantly impairs credit market functioning by reducing bank lending activity. They argue that this contraction in credit supply poses a serious constraint on economic recovery, especially in the aftermath of financial crises.

While the existing literature offers a broad understanding of the macroeconomic consequences of EPU within individual countries, cross-country evidence quantifying its "average effects" remains relatively scarce. To address this gap, the current study aims to estimate the average impact of EPU shocks on macroeconomic aggregates such as GDP growth, inflation, and investment, as well as sentiment indicators like consumer and business confidence, using a multi-country panel VAR approach.

Economic Policy Uncertainty

Baker et al. (2016) created the Economic Policy Uncertainty (EPU) index by measuring how often major newspapers report policy-related uncertainties, especially in fiscal, monetary, and legislative areas. Their initial focus was on the United States, tracking changes in policy uncertainty from 1985 onward. Later, they expanded their analysis to include EPU indices for 27 countries. The U.S. index is built through a systematic search of ten leading national newspapers for articles that contain the words "economic" or "economy," "uncertain" or "uncertainty," and at least one of the following: "congress," "legislation," "federal reserve," "regulation," "White House," or "deficit." As the authors mention, "The EPU index jumps up dramatically around presidential elections, the 9/11 attacks, the 2011 debt ceiling crisis, and other major disputes over fiscal policy."

The composite EPU index combines multiple aspects of uncertainty. It includes the overall news-based policy uncertainty index along with three other parts: the tax code expiration index, the dispersion in CPI forecasts, and the disagreement among projections of government purchases at the federal, state, and

local levels. Each part is standardized by its respective standard deviation to make them comparable. The final index is calculated by giving a weight of 0.5 to the news-based measure and weights of 0.167 (or one-sixth) to each of the other three components.

Data and Methodology

After exploring several data sources, I have selected 14 OECD countries where consistent EPU data were available over the study period. While this excludes some economies, it ensures the reliability of cross-country comparisons. The EPU indexes for these countries are displayed in the chart below. I also utilize OECD data on Output growth (i.e. the Growth in Real Gross Domestic Product), CPI inflation, investment, the consumer confidence index (CCI), and the business confidence index (BCI) for the period from 2000Q1 to 2020Q4 (Organisation for Economic Co-operation and Development, n.d.). A summary of the data description is shown in Appendix A.

The following chart illustrates the EPU indices for selected OECD countries. These countries are Australia (AUS), Brazil (BRA), Germany (DEU), Spain (ESP), France (FRA), the United Kingdom of Great Britain (GBR), Greece (GRC), Ireland (IRL), Italy (ITL), Japan (JPN), South Korea (KOR), the Netherlands (NDL), Sweden (SWE), and the United States of America (USA).

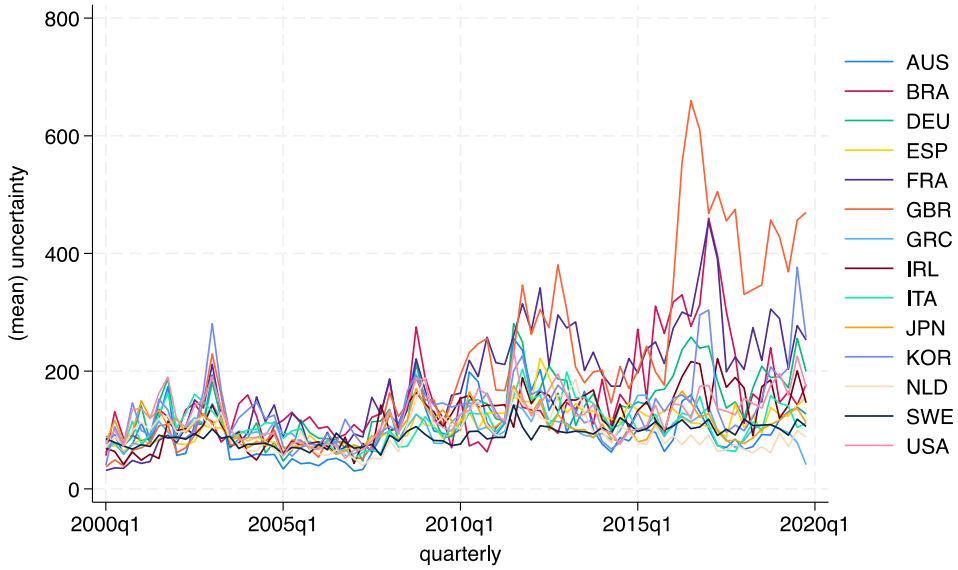

Figure 1: EPU Indexes in Selected OECD Countries

Source: Author's analysis based on OECD data

For the data analysis, first, I run a basic Ordinary Least Squares (OLS) regression to see whether the EPU uncertainty shock has an impact on output growth (i.e., quarterly GDP growth). I use four (4) control variables, namely CPI inflation, Consumer Confidence Index (CCI), Business Confidence Index (BCI), and private investment. Second, I use both fixed-effect and random-effect models. Afterward, I run the fixed effect model with year dummies. Finally, I use the panel-VAR estimation method to observe the responses of different variables to a 1 standard deviation shock to the EPU index, thereby referring to Economic Policy Uncertainty.

Panel VAR Estimation Methodology

Given the multi-country context and dynamic nature of the data, I have chosen a Panel VAR model, as it best captures both cross-country heterogeneity and temporal interactions. This approach allows for country-specific heterogeneity and exploits the panel structure of the data to improve estimation efficiency, following the methodology proposed by Love and Zicchino (2006).

In implementing the Panel VAR model, I use Cholesky decomposition to identify structural shocks from the covariance matrix of reduced-form residuals, placing the Economic Policy Uncertainty (EPU) index as the first variable in the ordering. This structure implies that any immediate correlation observed between the EPU index and macroeconomic variables is interpreted as the impact

of EPU on those variables, not vice versa.

For the panel VAR estimation, I consider the following estimation equation:

$$y_{i,t} = y_{i,t-1}A_1 + y_{i,t-2}A_2 + \ldots\ldots\ldots\ldots + y_{i,t-p}A_p + u_{i,t} + e_{i,t} \ldots\ldots\ldots\ldots (1)$$

Here, Y is the set of endogenous variables; $i \in (1, 2, \ldots.N)$ & $t \in (1, 2, \ldots\ldots T)$

I also use the following ordering for the Panel VAR estimation:

Economic Policy Uncertainty (EPU)
Consumer Confidence Index (CCI)
CPI Inflation
Business Confidence Index (BCI)
Investment
Output Growth

For the above estimation, I use quarterly data of Economic Policy Uncertainty (EPU), output growth (i.e., quarterly real GDP growth), CPI inflation, private investment, consumer confidence index, and business confidence index from the OECD data for the period from 2000Q1 to 2020Q4. The above-mentioned variables are used in a stationary form.

Empirical Analysis

To begin the analysis, I run a simple OLS regression to assess whether shocks in economic policy uncertainty (EPU) influence real GDP growth on a quarterly basis. The regression results indicate that a 1% rise in EPU corresponds to a 0.27% decline in output growth. In contrast, increases of 1% in the Consumer Confidence Index (CCI), Business Confidence Index (BCI), and private investment are associated with increases in output growth of 0.18%, 0.11%, and 0.2%, respectively. I then proceed to estimate both fixed-effects and random-effects models.

The fixed-effects estimates confirm a statistically significant negative relationship between EPU and output growth at the 1% significance level, where a 1% increase in EPU results in a 0.15% contraction in output growth. At the same time, CCI, BCI, and private investment are all positively and significantly related to output growth at the 1% level, whereas CPI inflation appears to exert no meaningful effect on output.

Within the fixed-effects framework, I explore the influence of time-varying regressors. To evaluate whether year-specific effects should be incorporated, I conduct the testparm i.year test. The F-statistic rejects the null hypothesis that all year coefficients are jointly equal to zero, indicating the need for including time fixed effects in the model.

Including year dummies, the results show that EPU still has a negative effect on output growth, although this relationship is no longer statistically significant. Meanwhile, consumer and business confidence remain positively and significantly associated with output growth. CPI inflation has a negative relationship with output growth, and this effect is statistically significant. Several year dummies, specifically 2008, 2009, 2011, 2012, and 2013, are significant and carry negative coefficients, which may explain why EPU's significance lessens as these time effects capture part of its influence. In contrast, the random-effects model indicates that a 1% increase in EPU reduces output growth by 0.31%. These results are summarized in the following table.

Table 1: Impact of Economic Policy Uncertainty (EPU) on Output Growth
Dependent Variable: Output Growth

Variables	Model (1) OLS	Model (2) Fixed Effect Model	Model (3) Fixed Effect Model with Year Dummies	Model (4) Random Effects Model
EPU	-0.0014 (0.0008)*	-0.002 (0.0009)**	-0.0006 (0.0011)	-0.0014 (0.008)**
Inflation	0.0443 (0.0298)	0.0247 (0.04)	-0.0337 (0.0482)	0.043 (0.030)*
Consumer Confidence	0.6605 (0.0757)***	0.6464 (0.0762)***	0.70 (0.08)***	0.659 (0.075)***
Business Confidence	0.14 (0.0317)***	0.1427 (0.0318)***	0.1388 (0.0323)***	0.1418 (0.031)***
Investment	0.0359 (0.0043)***	0.0339 (0.0043)***	0.032 (0.0043)***	0.035 (0.0043)***
Year dummies				
2001			0.4126 (0.3858)	
2002			0.3649 (0.3810)	
2003			0.3219 (0.3812)	
2004			0.1748 (0.3796)	
2005			0.4854 (0.3823)	
2006			0.3688 (0.3789)	
2007			0.4519 (0.3819)	
2008			-0.1404 (0.3999)	
2009			-1.0438 (0.3953)**	
2010			0.2706 (0.3898)	
2011			0.0709 (0.3953)	
2012			-0.3055 (0.3941)	
2013			-0.2019 (0.3905)	
2014			0.0306 (0.3899)	
2015			0.2757 (0.3993)	
2016			01614 (0.4138)	
2017			0.1243 (0.3983)	
2018			0.0897 (0.3941)	
2019			-0.0334 (0.4033)	
2020			-0.6803 (0.4091)*	

Statistical significance levels: * p < 0.05, ** p < 0.01, *** p < 0.001

Source: Author's calculation based on OECD data

Aggregate Economic Effects: Panel VAR Method

To investigate whether Economic Policy Uncertainty (EPU) exerts a significant influence on key macroeconomic outcomes, I apply a Panel Vector Auto-Regression (Panel VAR) framework across a group of advanced economies. This multi-country panel approach allows for a comprehensive examination of dynamic relationships among essential macroeconomic indicators, capturing both country-specific heterogeneity and cross-country interdependencies. The choice of a panel VAR model is particularly suitable for this study, as it facilitates the assessment of average effects across multiple economies while also improving statistical reliability through the use of both cross-sectional and temporal data dimensions (Love & Zicchino, 2006).

Unlike conventional time-series VAR models that are typically limited to analyzing macroeconomic fluctuations within a single national context, the Panel VAR structure enables a more generalized analysis of the average macroeconomic responses to policy uncertainty across countries. It is particularly valuable in the context of OECD economies, where structural similarities exist but varying exposure to external shocks and policy frameworks create diverse reaction patterns. By pooling data from multiple countries, the model increases efficiency and robustness, reducing the potential for biases that might arise in country-specific estimates.

The rationale for employing this methodology is grounded in the behavioral responses of economic agents, such as consumers, investors, firms, and policymakers, who tend to react to heightened uncertainty in a gradual and often delayed manner. These reactions unfold over time as new information becomes available and expectations adjust accordingly. Given this temporal nature of uncertainty transmission, the Panel VAR model is well-suited to trace such evolving dynamics and capture lagged effects of EPU shocks on economic activity.

Impulse response functions (IRFs) are derived from the Panel VAR estimates to map out the trajectory of key macroeconomic variables in response to shocks in policy uncertainty. These IRFs offer critical insights into how uncertainty affects macroeconomic stability over time, including information on the magnitude, direction, and persistence of such effects. Specifically, I explore how variations in EPU impact output growth, private sector investment, inflation, and sentiment indicators such as the Consumer Confidence Index (CCI) and Business Confidence Index (BCI). These variables are instrumental in understanding the broader economic repercussions of uncertainty, especially in a globally integrated environment.

The model specification is explicitly designed to evaluate the average macroeconomic response to a one standard deviation increase in EPU. The analysis is conducted using a balanced panel dataset drawn from 14 OECD member countries, covering a set of standardized and stationary macroeconomic indicators. These include the EPU index, the CCI and BCI, the Consumer Price Index (CPI) as a measure of inflation, real GDP growth on a quarterly basis, and private investment. Stationarity is ensured through appropriate transformations to avoid spurious regressions and to satisfy the assumptions required for VAR estimation.

To properly identify the structural innovations driving the system, I implement the Cholesky decomposition of the covariance matrix of the reduced-form residuals. In this identification strategy, the EPU index is ordered first in the vector of endogenous variables. This ordering implies that EPU shocks are contemporaneously exogenous and affect other variables immediately, while feedback from the macroeconomic variables to EPU is assumed to occur with a lag. This is a standard practice in the literature and reflects the premise that policy uncertainty tends to precede economic outcomes rather than respond to them instantaneously.

The impulse response analysis is carried out using a Monte Carlo simulation procedure, which generates Gaussian confidence bands at the 95 percent level. These bands provide a statistical measure of the reliability and precision of the estimated responses. The resulting Impulse Response Functions (IRFs), displayed in the subsequent figure, illustrate how selected macroeconomic variables dynamically adjust in the aftermath of an EPU shock. These responses serve as the empirical foundation for the paper's main findings and offer valuable policy-relevant insights into the propagation mechanisms of uncertainty across advanced economies.

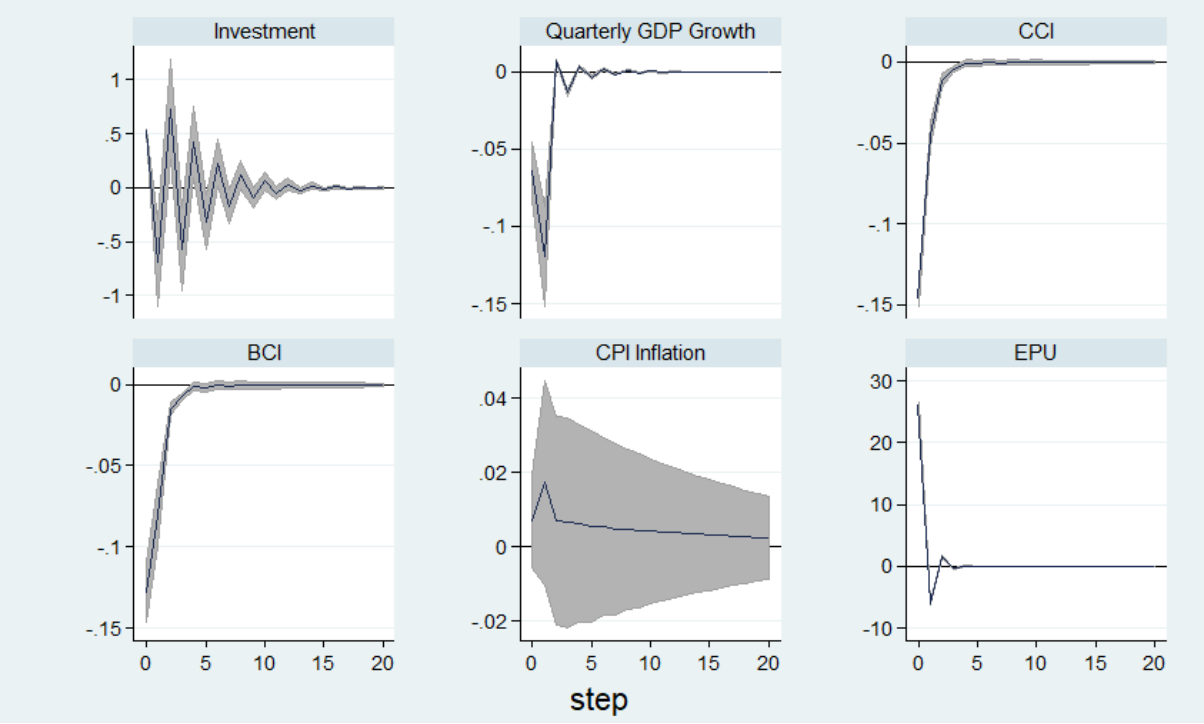

Figure 2: The Panel VAR Estimation Results: Average Impulse Responses of Macroeconomic Variables due to a 1 SD EPU Shock (95% Confidence Interval)

Source: Author's analysis based on Panel VAR impulse response technique

Results and Discussions

The impulse response analysis presented in Figure 2 illustrates the dynamic effects of economic policy uncertainty (EPU) shocks on key macroeconomic indicators across a panel of OECD countries. On average, a one standard deviation increase in the EPU index results in a 25 percent rise in policy uncertainty, which leads to a 15 percent decline in consumer and business confidence and a 5 percent decrease in GDP growth. These adverse effects persist for approximately two quarters before returning to baseline levels. The response of CPI inflation is positive but statistically insignificant, suggesting limited short-term price effects. In contrast, the response of private investment fluctuates significantly around its mean, indicating heightened sensitivity and volatility in reaction to uncertainty shocks. These responses reflect the average dynamic effect across countries, capturing both individual country-level EPU shocks and cross-country spillover effects, estimated within a multi-country panel framework.

These results are consistent with economic theory and prior empirical findings, which suggest that rising policy uncertainty causes economic agents to delay major decisions. Households tend to reduce spending in response to concerns about future income and employment, while firms postpone hiring and capital investment due to increased unpredictability in the policy environment (Baker et al, 2016). Interestingly, inflation does not respond significantly to EPU shocks. This may be due to short-term cost adjustments, such as shifts in import prices, rather than demand-side dynamics. This implies that prices may be relatively insulated from short-term uncertainty shocks in stable, inflation-focused economies.

The significant volatility observed in private investment underscores its particular vulnerability to policy uncertainty. Investment decisions are inherently long-term, involve substantial irreversible costs, and are highly sensitive to expectations about future economic and policy conditions. As a result, uncertainty can apply a strong deterrent effect on capital formation, making investment one of the most responsive components of the economy to policy shocks. This conclusion is supported by a growing body of empirical literature. For instance, Gulen and Ion (2016) find that firms reduce corporate investment during periods of heightened policy uncertainty, while Baker et al. (2016) report similar effects at the aggregate level. The results imply that under heightened uncertainty, firms adopt a cautious strategy by postponing investment until policy conditions become more predictable.

Importantly, the use of a multi-country panel framework in this paper allows this study to move beyond single-country analysis, providing a broader and more representative assessment of how EPU

affects macroeconomic dynamics across advanced economies. By estimating the average effect across multiple countries, this study captures not only domestic uncertainty responses but also international spillover effects that may arise from trade linkages, financial connections, and geopolitical dependencies. However, a detailed decomposition of spillover effects was not estimated due to time constraints.

I believe this article contributes to the literature by filling a critical gap in cross-country analysis of economic uncertainty. Most existing studies focus on country-specific dynamics, often centered on the United States. In contrast, this study offers new insights into how uncertainty shocks propagate across borders and influence macroeconomic conditions in interconnected economies. Future research could expand on these findings by distinguishing between domestic and external sources of uncertainty, which would help clarify the channels through which uncertainty is transmitted and how national economies respond differently based on their structural characteristics and external exposures.

Study Limitations

Several limitations should be acknowledged when interpreting the findings from this Panel VAR impulse response analysis. Each country used in this research may have been influenced not only by its own domestic EPU shock but also by cross-country spillover EPU shocks, which could be driven by trade linkages, diplomatic relationships, geopolitical tensions, and other external factors. Additionally, countries may have heterogeneous structural and institutional characteristics that may affect their responses to uncertainty shocks. While this study estimates the average effect of EPU shocks on macroeconomic indicators within a multi-country framework, it does not distinguish the specific contributions of domestic versus spillover effects. While I intended to explore these spillover effects further, limited time and computational resources made a full decomposition infeasible for this version. I plan to investigate this in future research.

Conclusion

Baker, Bloom, and Davis (2016) developed the U.S. Economic Policy Uncertainty (EPU) index in 2016 and later expanded it to 27 other countries. They argue that the EPU index spikes around presidential elections, major geopolitical events such as Gulf Wars I and II, the 9/11 attacks, major company failures like Lehman Brothers, and the 2011 debt disputes. Their findings indicate that the EPU predicts declines in investment, output, and employment in the U.S. However, my panel VAR analysis, which includes 14 selected OECD countries, shows that, on average, EPU shocks significantly and negatively impact consumer confidence, business confidence, and output growth. The impulse response of inflation is positive. Nonetheless, I observe an inconclusive response of investment to EPU shocks, which exhibit volatile movements around the mean. In fact, investment appears more volatile than anticipated. Future research could build on this by separating domestic and cross-country components of uncertainty shocks to gain a more detailed understanding of how economic policy uncertainty spreads within and across national economies.

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Appendix A: Brief Description of Data/Variables

Business Confidence Index (BCI):
The Business Confidence Index (BCI) provides insights into how manufacturers view upcoming economic conditions, based on surveys about trends in production, new orders, and inventories. It is especially helpful for predicting changes in economic activity. A value above 100 usually indicates a positive business outlook, while scores below 100 suggest a more pessimistic view. This index uses an adjusted scale where 100 represents the long-term average, and it primarily reflects data from the manufacturing sector due to limited information from construction, retail, and service industries, particularly in non-EU and non-OECD countries (OECD, n.d.).

Consumer Confidence Index (CCI):
The Consumer Confidence Index (CCI) measures how households feel about their personal finances, the economy, employment, and future savings. It is commonly used to predict consumer spending and saving habits. A reading above 100 indicates increasing confidence and a probable rise in consumption, while a score below 100 suggests caution among consumers. Similar to the BCI, this index is adjusted around a long-term average of 100. The data for this index in this study were collected from the OECD database (OECD, n.d.).

CPI Inflation:
Consumer Price Index (CPI) inflation shows the annual percentage change in the price level of a typical basket of goods and services consumed by households. The CPI monitors changes in various sectors, including food and energy, and also calculates a "core" inflation figure that excludes these categories. It is expressed as a year-over-year growth rate and serves as a key measure of living costs and the decline in purchasing power (OECD, n.d.).

Economic Policy Uncertainty (EPU):
The Economic Policy Uncertainty (EPU) index, developed by Baker et al. (2016), is designed to quantify uncertainty linked to economic policy decisions. The index is largely based on the frequency of relevant terms appearing in major newspapers such as The New York Times, Wall Street Journal, and Washington Post. These keyword searches help measure how often economic policy uncertainty is discussed in the media, forming the basis for standardized national and international EPU indices (Baker et al., 2016; Baker et al., n.d.).

Investment:
Investment, measured as Gross Fixed Capital Formation (GFCF), represents the net addition to fixed assets used in production for at least one year. This includes purchases of both new and used assets, including those produced for own use, minus disposals. Non-produced assets like land are excluded. The data is reported as the percentage change from the previous period and adheres to the 2008 System of National Accounts (SNA) framework used across OECD member countries (OECD, n.d.).

Real Output / Real Gross Domestic Product (GDP):
Real GDP measures the total output of goods and services produced within an economy, adjusted for inflation and seasonal effects. It serves as a comprehensive indicator of economic performance and national income. In this analysis, real GDP is expressed as a quarterly or yearly growth rate to reflect changes over time and ensure the data series remains stationary (OECD, n.d.).