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Uncertainty and the Great Slump

By Jason Lennard*

This paper investigates the impact of economic policy uncertainty on the British interwar economy. A new index constructed from contemporary newspapers indicates that this was a period of great uncertainty. Time series and narrative evidence suggests that this uncertainty reduced output, raised unemployment and contributed to macroeconomic volatility.

‘Business can flourish with tariffs. Business can flourish without tariffs. Business cannot flourish where there is uncertainty.’

Stanley Baldwin, Leader of the Opposition (1930)¹

The interwar period holds a number of unwanted records in British economic history. Unemployment in the 1930s was higher than at any point since reliable records began in 1855.² The volatility of output growth was greater than under any macroeconomic regime of the past three centuries.³ No recession since the beginning of the 1700s has been as deep as that of the early 1920s.⁴ What caused this instability?

Textbook answers to this question identify four main factors. The first factor is the reduction in hours worked after the First World War, which led to an increase in the natural rate of unemployment.⁵ The second is the behaviour of the nominal and real exchange rate, which had both short- and long-run effects.⁶ The third is the decline of the old staple industries.⁷

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¹ Hansard (Commons), 5th ser., CCXXXVI, 13 Mar. 1930, cols. 1535-654. Baldwin attributes this saying to Lord Melchett.

² Figures in this paragraph are calculated from data in Thomas and Dimsdale, ‘A millennium of macroeconomic data for the UK’.

³ Volatility measured using the sample standard deviation. Chronology of regimes based on Benati, ‘UK monetary regimes and macroeconomic stylised facts’.

⁴ Based on the annual percentage change in output.

⁵ Broadberry, *The British economy between the wars*.

⁶ Solomou, *Themes in macroeconomic history*.

Textiles, iron and steel, and shipbuilding, which Britain had invested heavily in, suffered from weak demand and oversupply.⁸ The final factor is the constraint on stabilization policy. Monetary policy was curbed by the commitment to the interwar gold standard, while fiscal policy was limited by the balanced budget orthodoxy of the time.

Yet contemporaries were concerned with another issue. Businessmen, journalists and politicians frequently held uncertainty over economic policy accountable for the slump. In 1930, for example, the Labour government faced a vote of no confidence on this issue. Winston Churchill appealed to the House of Commons, ‘the charge that we make against the Chancellor of the Exchequer is that, without due cause, he has created uncertainty which has been harmful to trade and employment’.⁹ Ultimately, the noes had it by a majority of 73 and the Government avoided defeat. The role of uncertainty has since been relegated to a footnote in the economic history of interwar Britain.

A possible explanation for why the impact of uncertainty has not been investigated further in this context is measurement. As a nebulous concept, uncertainty is difficult to quantify. Alexopoulos and Cohen and Baker et al. address this challenge by constructing indices based on the frequency of articles in a sample of newspapers relating to economic policy uncertainty.¹⁰ Vector autoregressions (VARs) show that these measures have been associated with lower output and higher unemployment and volatility in the United States.

This paper revisits the old uncertainty hypothesis using a new index of economic policy uncertainty constructed from the archives of the *Daily Mail*, *Guardian* and *The Times*. The index confirms that the interwar period was indeed a time of heightened uncertainty. A VAR suggests that a major uncertainty shock, such as that associated with the break from the gold standard in 1931, reduced output by 1.4 per cent, raised unemployment by 1.1 percentage points and accounted for more than a fifth of macroeconomic volatility.

This article is structured as follows. Section I reviews the relevant theoretical and empirical literature. Section II deals with the measurement of economic policy uncertainty. Section III discusses the sources of fluctuations in uncertainty. Section IV analyses the impact of this

⁷ Richardson, ‘Over-commitment in Britain before 1930’.

⁸ Eichengreen, ‘The British economy between the wars’.

⁹ Hansard (Commons), 5th ser., CCXXXVI, 13 Mar. 1930, cols. 1535-654.

¹⁰ Alexopoulos and Cohen, ‘The power of print’; Baker et al., ‘Measuring economic policy uncertainty’.

uncertainty on the macroeconomy. Section V presents narrative evidence. Section VI assesses the sensitivity of the baseline results to a string of alternative specifications. Section VII concludes.

I. Previous literature

The theoretical literature is ambiguous about the sign of uncertainty's impact on the macroeconomy.¹¹ On one hand, uncertainty increases the option value of postponing decisions that are costly to reverse. As a result, firms delay investment and households hold back on durable consumption, which leads to lower output and employment.¹² On the other hand, uncertainty can generate growth. One channel is the 'growth options' effect. As uncertainty increases the spread of possible outcomes, bigger prizes for winners are potentially available, which can in turn stimulate investment in certain circumstances.¹³ The other channel is the Oi-Hartman-Abel effect, which suggests that uncertainty can be desirable in the absence of adjustment costs as firms are able to expand to exploit good outcomes but contract to insure against bad outcomes.¹⁴

The empirical literature is clearer on the macroeconomic effects of uncertainty. Alexopoulos and Cohen construct uncertainty indices based on the relative frequency of articles in the *New York Times* relating to general economic uncertainty and economic policy uncertainty.¹⁵ The impact of an uncertainty shock such as that of 9/11 caused a 2 per cent decline in output and a 1 per cent reduction in employment, according to a VAR model estimated for monthly US data between 1985 and 2007. Moreover, uncertainty shocks accounted for roughly one-fifth to one-half of macroeconomic volatility.

Baker et al. build on this measure in a number of ways.¹⁶ First, the sample of US newspapers is increased to 10. The resulting index is highly correlated ($r = 0.58$) with the VIX, which is an alternative measure of uncertainty based on the implied volatility of S&P500 index options. Based on a VAR model applied to monthly US data between 1985 and 2014, a shock

¹¹ Bloom, 'Fluctuations in uncertainty'.

¹² Bernanke, 'Irreversibility, uncertainty, and cyclical investment'; Bertola et al., 'Uncertainty and consumer durables'; Mathy and Ziebarth, 'How much does political uncertainty matter?'.

¹³ Bloom, 'Fluctuations in uncertainty'.

¹⁴ Oi, 'The desirability of price instability under perfect competition'; Hartman, 'The effects of price and cost uncertainty on investment'; Abel, 'Optimal investment under uncertainty'.

¹⁵ Alexopoulos and Cohen, 'The power of print'.

¹⁶ Baker et al., 'Measuring economic policy uncertainty'.

equal to the change in economic policy uncertainty during the recent financial crisis led to peak declines in industrial production and employment of 1.1 and 0.35 per cent respectively. Second, the sample is extended to 12 major economies. A panel VAR estimated over the same sample period indicates similar, although marginally smaller, peak effects.

The economic effects of policy uncertainty have also been investigated in historical contexts. Similar to Alexopoulos and Cohen, Mathy constructs a measure of uncertainty based on articles in the *New York Times* for the US during the Great Depression.¹⁷ A VAR model indicates that uncertainty accounted for a substantial share of the deep decline in industrial production. Mathy and Ziebarth study political uncertainty in Louisiana during the 1920s and 1930s using newspapers and stock return volatility, finding no impact of uncertainty on employment.¹⁸ Using the variability of stock markets and qualitative evidence, Romer argues that the hangover of uncertainty from the Great Crash was a key factor in the propagation of the Great Depression.¹⁹ Lopez and Mitchener measure uncertainty based on the realized volatility of exchange rates for 10 European economies in the aftermath of the First World War.²⁰ The results suggest that uncertainty pushed Austria, Germany, Hungary and Poland towards hyperinflation.

II. Measuring economic policy uncertainty

Measuring uncertainty over economic policy is challenging as it is not directly observable. In order to overcome this challenge, Baker et al. develop an index based on the number of articles about economic policy uncertainty relative to all articles in a sample of newspapers in a given time period.²¹ An article is identified as relating to economic policy uncertainty if it contains an economic, policy and uncertainty related term. Once the relative frequency of these articles has been calculated for each newspaper, it is normalized to have unit standard deviation. The normalized newspaper-specific series are then averaged to give an aggregate index, which is scaled to have a mean of 100.

¹⁷ Mathy, ‘How much did uncertainty shocks matter during the Great Depression?’.

¹⁸ Mathy and Ziebarth, ‘How much does political uncertainty matter?’.

¹⁹ Romer, ‘The Great Crash and the onset of the Great Depression’.

²⁰ Lopez and Mitchener, ‘Uncertainty and hyperinflation’.

²¹ Baker et al., ‘Measuring economic policy uncertainty’.

Baker et al. construct indices for 12 modern economies.²² The index for the United Kingdom begins in 1997 and is based on *The Times* and the *Financial Times*. The economic terms are ‘economic’ or ‘economy’. The policy terms include ‘Bank of England’, ‘budget’, ‘deficit’, ‘policy’, ‘regulation’, ‘spending’ or ‘tax’. The uncertainty terms are ‘uncertain’ or ‘uncertainty’. Equivalent terms were originally selected for the United States to minimize the sum of false positives and negatives. Baker et al. also include historical indices for the United States and United Kingdom in an online appendix.²³ Based on the *Guardian* and *The Times*, the historical index for Britain runs from 1900 to 2010 and expands the economic term set to include ‘business’, ‘commerce’, ‘commercial’ or ‘industry’, and adds ‘tariff’ or ‘war’ to the policy terms. However, the impact of this index on the macroeconomy has not been analysed.

I construct a new index of economic policy uncertainty for interwar Britain. This builds on Baker et al. in a few important ways.²⁴ First, the sample of newspapers includes the *Daily Mail* as well as the *Guardian* and *The Times*. Like the *Guardian* and *The Times*, the *Mail* covered economic and financial news, but it also had a significant readership. The average daily circulation in 1930 was 1,845,000 for the *Daily Mail*, 47,000 for the *Guardian* and 187,000 for *The Times*.²⁵ Second, I expand the policy term set to include ‘Bank Rate’ and ‘duty’. These terms were commonplace in interwar Britain. The first described the main instrument of monetary policy; the second referred to a tariff. I also include close variants of the economic, policy and uncertainty terms, such as ‘duties’.

Formally, let X_{it} be the number of articles about economic policy uncertainty in newspaper $i = 1, 2, 3$ in month t , N_{it} be the total number of articles in newspaper i in month t and σ_i be the sample standard deviation of X_{it}/N_{it} , then the raw, nonstandardized EPU index is:

$$Z_t = \sum_{i=1}^3 \frac{1}{3} \times \frac{X_{it}}{N_{it}} \times \frac{1}{\sigma_i} \quad (1)$$

While the standardized EPU index is:

²² Baker et al., ‘Measuring economic policy uncertainty’.

²³ Baker et al., ‘Measuring economic policy uncertainty’.

²⁴ Baker et al., ‘Measuring economic policy uncertainty’.

²⁵ Butler and Freeman, *British political facts*, p. 284.

$$EPU_t = \frac{Z_t}{\bar{Z}_t} \times 100 \quad (2)$$

where $\bar{Z}_t$ is the sample mean of Z .

III. Fluctuations in economic policy uncertainty

III.1. A chronology

The new EPU index is shown in figure 1. The interpretation is that larger (smaller) values are associated with greater (lesser) economic policy uncertainty. What caused these fluctuations in uncertainty?

[INSERT FIGURE 1 ABOUT HERE]

Following the end of the Great War, economic policy uncertainty was at fever pitch. In June 1920, EPU increased by 37 per cent. According to the *Economist*, the public did not know whether the war wealth levy had been abandoned or not:²⁶

At home uncertainty concerning the government's action with regard to the war wealth tax is still the chief preoccupation of the business world. It was definitely stated by a Sunday paper last Sunday that the tax had been abandoned. This apparently was not correct, although it seems to have been true that opinion in the Cabinet has been growing against it with considerable force, and it seems likely that the statement of the *Sunday Express* may turn out to be wrong only in being made a week or so too early.

In addition, there were anxieties related to Irish independence, such as debates in the House of Commons on the 2nd, 14th and 28th and riots in Londonderry on the 19th.²⁷

²⁶ *Economist*, 5 Jun. 1920, pp. 1241-2.

²⁷ *Economist*, various.

The EPU index spiked again in November 1923. The *Economist* writes that the incumbent Prime Minister, Stanley Baldwin, U-turned on the Conservative party's pledge of the previous year of 'no fundamental fiscal change', which 'appealed to an electorate that was weary of legislation and experiment', opting instead for 'fiscal revolution'.²⁸ A snap general election was held on 6 December, resulting in a hung parliament.

On 28 April 1925 the United Kingdom returned to the gold standard at the pre-war parity of £3.85 per ounce. The return was not associated with an immediate change in EPU, which is not surprising as the intention to do so had been announced as early as November 1919.²⁹ However, EPU was almost a third lower on average during the interwar gold standard, relative to the periods before and after. While the disadvantages of the system are well known, an underappreciated advantage seems to have been that a fixed exchange rate along with constrained monetary policy reduced uncertainty.

The index climbed sharply in April 1926. One cause was the looming general strike. Although the strike did not come into force until May, news of growing tension was reported in April. *The Times*, for instance, wrote of 'the uncertainty of the coal trade trouble' and of the 'baffling uncertainties regarding the coal crisis'.³⁰ Another cause was Winston Churchill's second budget as Chancellor. This was expected to be less 'spectacular' than his first, but uncertainty remained over whether taxes would be cut.³¹

The EPU index increased by 89 per cent in February 1930. As the budget loomed on 14 April, there was significant uncertainty over whether the Chancellor, Philip Snowden, would alter the McKenna Duties or the Safeguarding of Industries Act. The *Financial Times* noted several times that the stock market was affected by 'budget uncertainties'.³² Sir Walter Raine, President of the Association of British Chambers of Commerce went to HM Treasury to plead to the Chancellor.³³

Can you see your way to make an immediate statement with regard to the McKenna Duties and the Safeguarding Duties? [...] There is a precedent for what

²⁸ *Economist*, 17 Nov. 1923, p. 863.

²⁹ Solomou, *Themes in macroeconomic history*, p. 93.

³⁰ *The Times*, 10 Apr. 1926, p. 17; *The Times*, 30 Apr. 1926, p. 25.

³¹ *Economist*, 1 May 1926, p. 867.

³² *Financial Times*, 4 Feb. 1930, p. 6; *Financial Times*, 7 Feb. 1930, p. 7.

³³ *The Times*, 28 Feb. 1930, p. 16.

I am suggesting on behalf of industry in the fact that one of your predecessors, Sir Austen Chamberlain, made a declaration in advance of his Budget, in regard to excess profits duties. The situation is much more serious than it was then, and if you can see your way to do something now to cause this uncertainty to be dissipated, you will help trade: whereas if we have to wait until April 14, I am afraid that the damage, so far as this year's trade is concerned, will be very serious.

September 1931 was blighted by a series of major events. First, there was the second budget of the year as well as the increasing likelihood of an early general election. The *Mail* wrote that, 'there is, as is only natural, uncertainty pending to-morrow's Budget announcement [...] But if the folly of a general election next month is persisted in, then we shall have a further period of paralysing uncertainty'.³⁴ The *Economist* noted that there was 'growing talk of an early General Election in this country', while the *Financial Times* observed that there was 'uncertainty regarding the date of the General Election'.³⁵

Another major event was Britain's departure from the gold standard. According to contemporaries, the uncertainty did not stem from the period leading up to the break from gold but the period after. *The Times* noted that 'there remained, however, immense uncertainties arising out of Britain's action in suspending gold redemption', while according to the *Economist* 'the week's events, in short, showed that professional and private investors were uncertain of the extent of possible development under the new currency regime'.³⁶

Policy inertia on multiple fronts came to a head in April 1932. The *Economist* argued that the 'world was in doubt as to our monetary policy'.³⁷ Ahead of Neville Chamberlain's first budget, the *Daily Mail* reported that 'the country is anxiously waiting for a full declaration of future tariff policy [...] Industry cannot plan ahead if it is left in ignorance and uncertainty'.³⁸ The *Financial Times* again referred to 'budget uncertainties', while *The Times* observed that 'this uncertainty applies, it is true, more especially to the Revenue Estimates; for until the outcome of the Lausanne meeting and of the Ottawa Conference is known it will hardly be

³⁴ *Daily Mail*, 9 Sep. 1931, p. 2.

³⁵ *Economist*, 19 Sep. 1931, p. 525; *Financial Times*, 21. Sep. 1931, p. 5.

³⁶ *The Times*, 28 Sep. 1931, p. 20; *Economist*, 26 Sep. 31, p. 572.

³⁷ *Economist*, 30 Apr. 1932, p. 951.

³⁸ *Daily Mail*, 18 Apr. 1932, p. 10.

possible to do much more than guess the yield of many sources of income. Meanwhile on the expenditure side too there must remain an element of uncertainty so long as the world problem of government indebtedness remains unsolved.’³⁹

‘A period of uneasy suspense’ hung over December 1932 as a result of the war debts due to the United States.⁴⁰ The British, French and other European governments had asked the United States to reconsider the payments. According to the *Economist*, ‘uncertainty as to the debt outcome has acted as a drag on all markets, and has probably to some extent injured trade in general’.⁴¹

Uncertainty spiked again in March 1933. One possible cause was Neville Chamberlain’s budget, which was to be delivered in April. Another source of uncertainty was the war debts, which were once again soon due. The *Financial Times* summarised:⁴²

Conflicting stories are in circulation here regarding the war debt instalment due on 15th June and the future of the Liberty bonds. According to the cabled reports from London and elsewhere, widely published here in the past few days, it is evident that the foreign correspondents are as much in the dark as those here at home, and are largely guessing at the position. They have based their stories on a few known facts, plus a little ‘information’ gleaned in talks with officials at Washington – other than Mr. Roosevelt – who are also merely guessing. It is no secret that preliminary talks have been held between Government officials here and in London regarding war debts and the next payment due in June.

The EPU index increased by 77 per cent in April 1937. An important determinant was ‘budget uncertainty’ once again.⁴³ The *Daily Mail* observed that ‘news of the additional defence contribution, which came as a surprise, caused uncertainty’, while the *Financial Times* wrote that there was uncertainty ‘resulting from the profits tax proposals’.⁴⁴

³⁹ *Financial Times*, 20 Apr. 1932, p. 1; *The Times*, 18 Apr. 1932, p. 13.

⁴⁰ *Economist*, 3 Dec. 1932, p. 1015.

⁴¹ *Economist*, 17 Dec. 1932, p. 1136.

⁴² *Financial Times*, 23 Mar. 1933, p. 7.

⁴³ *Financial Times*, 20 Apr. 1937, p. 1.

⁴⁴ *Daily Mail*, 21 Apr. 1937, p. 2; *Financial Times*, 24 Apr. 1937, p. 10.

The final major event came in September 1938, which began with an emergency meeting of the cabinet, escalated into one of Europe's most 'nerve-racking weeks' and ended with the Munich Agreement.⁴⁵

III.2. Comparing EPU indices

The new EPU index is not the first to cover the interwar period in Britain. Baker et al. have produced an index that spans from 1900 until the present.⁴⁶ The two series are positively, although not perfectly, correlated ($r = 0.8$, $p < 0.01$). The new EPU index builds on the existing series in two important ways. First, the search set is expanded to include period-appropriate terms to better capture uncertainty over monetary and tariff policy. Second, the number of newspapers is increased to include not only the *Guardian* and *The Times* but also the *Daily Mail*. The logic for increasing the sample of newspapers is to reduce the amount of variation in the index stemming from idiosyncratic factors such as newspaper-specific bias, OCR error and so on.

There are a number of ways to assess the two EPU indices. One way is to calculate the signal to noise ratio, which is the reciprocal of the coefficient of variation. The new index has a ratio of 3.3, while the existing index has a ratio of 3.2, which suggests that the new index contains more signal relative to noise. Another way is to compare the indices to an independent measure of uncertainty. A common measure of general uncertainty is stock market volatility, measured as the monthly standard deviation of daily stock returns.⁴⁷ As daily data is not available throughout the interwar period, I estimate a GARCH(1,1) model for the logarithmic change in monthly share prices, which yields a time-varying monthly measure of the conditional standard deviation of stock returns.⁴⁸ This measure of uncertainty has a higher correlation with the new index ($r = 0.4$) than with the existing index ($r = 0.3$).

These statistics suggest that the new index provides a better measure of uncertainty in this particular period. In any case, how economic policy uncertainty affected the economy in

⁴⁵ *Economist*, 17 Sep. 1938, p. 529.

⁴⁶ Baker et al., 'Measuring economic policy uncertainty'.

⁴⁷ Mathy and Ziebarth, 'How much does political uncertainty matter?'; Mathy, 'Stock volatility, return jumps and uncertainty shocks during the Great Depression'.

⁴⁸ Daily share price data is available from 1930. The correlation between the monthly standard deviation of the logarithmic change in daily stock prices and the GARCH estimate of the conditional standard deviation of the logarithmic change in monthly stock prices is 0.6 ($p < 0.01$) between 1930 and 1938, which suggests that the latter is a good proxy for the former.

interwar Britain has not been investigated in previous research. It is to this question that we now turn.

IV. The macroeconomic effects of economic policy uncertainty

To measure the macroeconomic effects of economic policy uncertainty, I estimate the following VAR:

$$X_t = B(L)X_{t-1} + U_t \quad (3)$$

where X_t is a vector of endogenous variables that includes the level of the EPU index and a macroeconomic variable of interest (e.g., the natural logarithm of real GDP at factor cost), B is a matrix of coefficients, L is a polynomial in the lag operator with P lags. A time trend and seasonal dummies are also included as exogenous variables.

In terms of P , Baker et al. include 3 months of lags, while Alexopoulos and Cohen use 6.⁴⁹ The Akaike information criteria (AIC) is minimized at 3 lags, while the Schwarz Bayesian information criteria (BIC) is minimized at 2. In the baseline model, I include 3 lags, but as section VI shows the results are robust to $P = 2$ and $P = 6$.

A Cholesky decomposition is used to identify the shocks. Alexopoulos and Cohen and Baker et al. order uncertainty first, which assumes that economic policy uncertainty affects the macroeconomy contemporaneously, but that the macroeconomy does not affect economic policy uncertainty within the period.⁵⁰ I order uncertainty last, which is a more cautious approach that assumes that the economy affects uncertainty contemporaneously, but that uncertainty only affects the economy with a lag. In any case, section VI shows that the results are not sensitive to the ordering of the variables.

The sources and definitions for the data used in the analysis are given in table 1. Data on the debt, expenditure and revenue of the government have been collected from contemporary issues of the *Economist*. The remaining data is from secondary sources. The main economic

⁴⁹ Alexopoulos and Cohen, ‘The power of print’; Baker et al., ‘Measuring economic policy uncertainty’.

⁵⁰ Alexopoulos and Cohen, ‘The power of print’; Baker et al., ‘Measuring economic policy uncertainty’.

outcome of interest is real GDP at factor cost, which has been calculated by allocating the annual total across the months of the year based on the movements in a common factor, which itself is a function of up to 14 indicators of economic activity collected by the *Economist* at the time.⁵¹ The series has been used previously in econometric work.⁵² This and other outcome variables are plotted in figure 2.

[INSERT TABLE 1 ABOUT HERE]

[INSERT FIGURE 2 ABOUT HERE]

IV.1. Baseline results

Turning to the main results of the paper, figure 3 plots the response of economic activity to a one standard deviation economic policy uncertainty shock, where X_t includes the natural logarithm of real GDP at factor cost. The shaded area represents the 95 per cent confidence interval. The implication is that an uncertainty shock had an economically and statistically significant effect on output, declining by a maximum of -0.5 per cent ($t = -3.1$) after six months and returning towards zero thereafter. The effect is statistically significant at the 5 per cent level for the first 18 months.

[INSERT FIGURE 3 ABOUT HERE]

Figure 4 illustrates the impulse response of the economic policy uncertainty index to a one standard deviation innovation to itself. The index increases by 21.6 per cent (relative its sample mean) on impact and decays thereafter.

[INSERT FIGURE 4 ABOUT HERE]

Alexopoulos and Cohen and Baker et al. scale the shock to correspond to the change around a major event, such as 9/11 or the recent financial crisis.⁵³ In order to compare the estimates, I set the shock to a 55 per cent increase (relative to the sample average), which is equal to the

⁵¹ Mitchell et al., ‘Monthly GDP estimates for inter-war Britain’.

⁵² Cloyne et al., ‘Taxes and growth’; Crafts and Mills, ‘Self-defeating austerity?’; Crafts and Mills, ‘Rearmament to the rescue?’.

⁵³ Alexopoulos and Cohen, ‘The power of print’; Baker et al., ‘Measuring economic policy uncertainty’.

change in September 1931 when Britain abandoned the gold standard. On this basis, the peak drop in output is 1.4 per cent, which is between Baker et al.'s and Alexopoulos and Cohen's estimates of 1.1 per cent and 2 per cent, respectively.⁵⁴

In terms of persistence, the peak economic impact occurs after 6 months. While this is similar to Baker et al., it is more rapid than Alexopoulos and Cohen, who find that output continues to decline for up to 18 months. The short, sharp drop in economic activity found in this paper is consistent with Bloom's theoretical model of 'wait-and-see' uncertainty-driven business cycles.⁵⁵

A standout feature of the interwar period relative to other macroeconomic epochs in British history was the volatility of the business cycle.⁵⁶ A variance decomposition can speak to this issue. The results show that economic policy uncertainty explains 22 per cent of the variance in output, which suggests that uncertainty has been an underappreciated cause of macroeconomic volatility in interwar Britain.

IV.2. Other economic outcomes

A key mechanism through which uncertainty impacts the economy is the 'real options effect'.⁵⁷ As decisions are costly to reverse, consumers and firms wait and see under uncertainty, delaying consumption, investment and employment. I therefore investigate the transmission of uncertainty shocks along these dimensions. In order to do so, a series of alternative outcomes of interest are rotated into X_t .

While estimates of GDP are available in this period, the expenditure components are not. As a proxy for consumption, I therefore analyse real turnover, which measures 'the physical amount of goods and services traded' and is available from 1920 to 1936.⁵⁸ As a proxy for both consumption and investment, I use London clearing banks' advances, which is available from 1921, on the basis that these expenditures may have been financed through credit. In

⁵⁴ Alexopoulos and Cohen, 'The power of print'; Baker et al., 'Measuring economic policy uncertainty'.

⁵⁵ Bloom, 'The impact of uncertainty shocks'.

⁵⁶ Solomou, *Themes in macroeconomic history*.

⁵⁷ Bloom, 'The impact of uncertainty shocks'.

⁵⁸ Phelps-Brown and Shackle, 'An index of real turnover'.

terms of employment, the unemployment rate is available throughout, which is measured as the percentage of insured workers unemployed.

Figure 5 shows the response of real turnover, credit and unemployment in response to a one standard deviation uncertainty shock. Panel A shows that there is an economically and statistically significant drop in real turnover of 0.7 per cent ($t = -3.8$), which suggests that consumption declines under uncertainty. Panel B shows that there is a persistent decline in credit of up to 0.8 per cent ($t = -2.9$), which could reflect lower consumption and/or investment. Panel C shows a hump-shaped impact on unemployment, peaking at 0.4 percentage points ($t = 2.6$) after seven months and slowly subsiding after. The effect is statistically significant at the 5 per cent level for the first 18 months. In summary, these results suggest that uncertainty reduced proxies for consumption, investment and employment, which is consistent with the ‘real options effect’.

[INSERT FIGURE 5 ABOUT HERE]

V. Narrative evidence

In this section I analyse qualitative evidence relating to the macroeconomic effects of economic policy uncertainty in interwar Britain. The first type of evidence I consider is economic reports in contemporary newspapers. This evidence is supportive of the uncertainty hypothesis.

On the Safeguarding Act, for example, the *Guardian* noted that ‘industry can adapt itself to any stable and calculable condition, even the condition of a regular tariff; the one condition fatal to enterprise and trade recovery is uncertainty. The Government’s proposal is a proposal to introduce such uncertainty’.⁵⁹ In relation to the possibility of a general election, Winston Churchill observed that ‘the uncertainty is bad from every point of view. It hangs like a cloud over the trade of the country’.⁶⁰ In a letter to the editor of *The Times* in the summer of 1932, signed by the economics departments of the universities of Oxford (including James Meade) and Cambridge (including John Maynard Keynes), the government was urged to ‘explicitly declare its policy in advance. A definite pronouncement of this kind should remove all fears

⁵⁹ *Guardian*, 20 Dec. 1924, p. 13.

⁶⁰ *The Times*, 19 Mar. 1930, p. 20.

of uncontrolled inflation – fears which arise primarily from a sense of uncertainty’.⁶¹ The *Economist* summarized that, ‘business this year has been overshadowed by the economic and political uncertainty at home and abroad’.⁶²

Uncertainty’s depressive effect on unemployment was also widely recognised. In the winter of 1920, the *Daily Mail* observed that ‘among the main causes of unemployment at the present moment [...] is uncertainty in the business world’.⁶³ In the same newspaper a decade later, Sir William Morris, founder of Morris Motors Limited, attacked the incumbent government on the same issue:⁶⁴

No business could be run on the lines on which we try to run England. Whoever heard in the board room of a successful commercial house the counterpart of such childish bickerings and pettifogging personal pin-prickings as those to which we have been treated of late in our supposedly austere and deep-thinking House of Parliament? [...] This is the position we find ourselves in to-day, floundering in a sea of uncertainty [...] the result being colossal unemployment.

While *The Times* noted:⁶⁵

There are manufacturers unable to do their usual amount of trade because of an expectation, or a bare possibility, that Government policy may interfere with their markets and affect the price of their products. Commercial uncertainty is contagious, and uncertainty soon intensifies the depression of which the increase of unemployment is a measure. Enterprise languishes in a period of political uncertainty.

The qualitative evidence also sheds light on some of the mechanisms through which uncertainty affects the macroeconomy. The *Mail* observed that ‘surely the uncertainty as to taxation has had much to do with the lessened popularity of industrial investments’, which is

⁶¹ *The Times*, 5 Jul. 1932, p. 10.

⁶² *Economist*, 30 Jan. 1932, p. 1.

⁶³ *Daily Mail*, 30 Dec. 1920, p. 4.

⁶⁴ *Daily Mail*, 29 Aug. 1930, p. 8.

⁶⁵ *The Times*, 12 Mar. 1930, p. 15.

one of the key mechanisms highlighted in the theoretical literature.⁶⁶ Similarly, on the National Government's financial proposals in 1931, the paper noted that 'uncertainty as to these has played havoc with the stock markets of late'.⁶⁷ Depressed stock prices could be associated with lower consumption through wealth effects.

At the microeconomic level, Sir William Letts, chairman and managing director of Willys Overland Crossley, a car manufacturer, told shareholders at the annual general meeting:⁶⁸

I do not wish to introduce politics or thrust my opinion upon a body of shareholders, but I think it is only right that attention should be directed to what has been and is really hindering our business – the uncertainty regarding the McKenna duties. I believe that no sensible Chancellor of the Exchequer would take these duties off, but uncertainty exists, it is crippling business and holding back activity and energy in our great industry. We rely upon the buying public, and if they are led to believe that prices will be reduced if the duties come off, naturally they prefer to wait and see what happens. The result is that our manufacturing programmes are held up and unemployment in our industry is being increased. All this could be checked if the powers that be would make a definite statement without delay.

Similarly, 'no one in the motor industry can go ahead and lay plans in advance for large and economical production if there is complete uncertainty as to whether the McKenna duties will be maintained'.⁶⁹ The McKenna duties not only affected the car industry but others too: 'motorcar manufacturers and piano manufacturers [...] could not believe that any British administration would be so enslaved by financial pedantry as to keep our industries in disastrous uncertainty, which is absolutely destructive of business'.⁷⁰

Tariff anxieties also hung over the textile industry. To a chorus of 'hear, hear', the chairman of the Fine Cotton Spinners' and Doublers' Association recounted at the annual general meeting in 1930 that 'uncertainty which existed throughout the year as to whether the

⁶⁶ *Daily Mail*, 7 Jun. 1920, p. 2.

⁶⁷ *Daily Mail*, 7 Sep. 1931, p. 3.

⁶⁸ *Guardian*, 25 Feb. 1930, p. 6.

⁶⁹ *Daily Mail*, 13 Nov. 1929, p. 12.

⁷⁰ *Daily Mail*, 16 Apr. 1924, p. 8.

government intended to repeal the Safeguarding and McKenna duties [...] undoubtedly gravely affected [the] particular trade as well as the general trade of the country'.⁷¹ In dress goods, it was expected that business 'held up because of uncertainty as to a tariff will now go to the French instead of being placed here'.⁷² There was also uncertainty over duties on artificial silk, if the 'duties are to be imposed, we would prefer to have them at once rather than have any unnecessary prolongation of the present uncertainty. It is not only stopping the weaving of the artificial silk but also of the cotton which would have gone to build up the fabric in which the artificial silk is used'.⁷³ This uncertainty continued in the rayon industry for at least a decade, 'retarding every branch of the trade from the producer to the shopkeeper'.⁷⁴

Murmurings of amendments to the Great Charter of Electricity also sparked damaging uncertainty. At the ordinary general meeting of the British Electric Traction Company it was 'hoped that the Government will announce at an early date its abandonment of this policy, for it is undoubtedly true that further uncertainty has a serious deterrent effect on enterprise in this important key industry'.⁷⁵

In summary, the qualitative evidence is also supportive of the uncertainty hypothesis. According to contemporaries, policy uncertainty hit a number of industries from cars to textiles. The impact of policy uncertainty on consumption and investment was also recognised, dragging down employment and output.

VI. Robustness

In this section, I assess the sensitivity of the results to alternative measures of uncertainty and economic activity, to variations of the econometric specification and to the inclusion of additional control variables.

VI.1. *Alternative measures of uncertainty*

⁷¹ *Guardian*, 28 May 1930, p. 14.

⁷² *Daily Mail*, 14 Dec. 1923, p. 5.

⁷³ *Guardian*, 20 Jun. 1925, p. 13.

⁷⁴ *Guardian*, 10 Dec. 1935, p. 7.

⁷⁵ *Financial Times*, 3 Jul. 1920, p. 2.

An interesting question is whether the results are robust to alternative measures of uncertainty. Figure 6 shows the response of output to a one standard deviation uncertainty shock to the measure of stock market volatility described in section III, alongside the baseline impulse response and confidence interval. The results are similar, if a little stronger, peaking at 0.7 per cent ($t = -3.5$) after 10 months. Figure 6 also plots the results where EPU in equation 3 is substituted for Baker et al.’s indicator of policy uncertainty. The response is similar to the baseline, peaking at 0.6 per cent ($t = -4.3$). The similarity is unsurprising given that the two measures of policy uncertainty are highly correlated.

[INSERT FIGURE 6 ABOUT HERE]

VI.2. *Alternative measures of economic activity*

There are alternative measures of economic activity available other than real GDP at factor cost. To investigate the sensitivity of the baseline results to these measures, a series of alternatives are rotated in the vector of observables, X_t , such as the natural logarithms of real GDP at market prices and an index of economic activity. Figure 7 plots the impulse response functions from these models, as well as the baseline point estimates and confidence interval.

[INSERT FIGURE 7 ABOUT HERE]

The series for real GDP at factor cost and market prices are based on the same high-frequency indicators but are normalized using different annual estimates of real GDP. As the two series are highly correlated, it is unsurprising that the effects are unchanged. The index of economic activity, however, has been calculated using an alternative econometric methodology and different high-frequency indicators. A drawback of the index is that it is only available between 1925 and 1936. The peak drop of 0.4 per cent ($t = -1.9$) is similar to the baseline but is less precisely estimated, which is a consequence of the shorter sample.

VI.3. *Alternative specifications*

A number of calls had to be made to estimate the model. The first was the number of lags to include. In the baseline case, three months of lags were included, which was motivated both

by the minimization of the AIC and by previous research.⁷⁶ However, the BIC was minimized with two lags. Reducing the lag length raises the peak effect to -0.7 per cent ($t = -3.7$), while the effects remain statistically significant between months one and 14. Alexopoulos and Cohen, on the other hand, include six months of lags in their VAR model.⁷⁷ The inclusion of extra lags also increases the peak effect to -0.7 per cent ($t = -3.7$). The response is statistically significant between months one and 19. The impulse response functions for these alternative specifications are plotted in figure 8.

[INSERT FIGURE 8 ABOUT HERE]

The second call was the causal ordering. In the baseline case, output was ordered before uncertainty, which implies that output affected uncertainty contemporaneously but not vice versa. The sensitivity of the results to this assumption can easily be gauged by reversing the order so that uncertainty is first and output second. The peak effect is unchanged at -0.5 per cent ($t = -2.6$) and is statistically significant between months two and 16.

VI.4. *Additional control variables*

The baseline model was a bivariate VAR. This parsimonious approach was taken not only for its simplicity but also because it has been used in previous research.⁷⁸ However, if there were other determinants of output that were also correlated with economic policy uncertainty, then the impulse responses could be affected.

Table 2 presents the peak effects from a variety of models. Rows eight to 18 show the results from models where a control variable of interest has been rotated in. Row 19 reports the results from a model where all of the control variables have been included.

[INSERT TABLE 2 ABOUT HERE]

The first set of control variables relate to fiscal policy, including the natural logarithm of real government debt, expenditure and revenue. The second set of controls relates to monetary

⁷⁶ Baker et al., ‘Measuring economic policy uncertainty’.

⁷⁷ Alexopoulos and Cohen, ‘The power of print’.

⁷⁸ Alexopoulos and Cohen, ‘The power of print’; Baker et al., ‘Measuring economic policy uncertainty’.

policy, such as Bank Rate and the monetary base ($M0$). I also include the yield on consols, which reflects both fiscal and monetary policy. The third set of controls relates to the general macroeconomy: the natural logarithms of real exports, real wages, retail price index and share prices and the level of the exchange rate. The inclusion of these variables has little impact on the size or precision of the estimated responses.

In order to gauge the sensitivity of the baseline results to alternative specifications, 19 additional models have been estimated, which experiment with alternative measures of uncertainty and economic activity, with the econometric specification and with the inclusion of additional control variables. The results are summarized in table 2: the minimum peak effect was -0.7 per cent ($t = -3.7$), while the maximum was -0.3 per cent ($t = -2.1$). The mean peak was -0.5 per cent, which is same as the baseline estimate. In each and every case, the peak impact was statistically significant at the 5 per cent level. The depressive impact of uncertainty on the British interwar economy is therefore a robust result.

VII. Conclusion

A new index shows that there were significant fluctuations in economic policy uncertainty during the interwar period, due to familiar anxieties over hung parliaments, tariffs and the rewinding of unconventional fiscal and monetary policies, among others. It was also a time of major macroeconomic problems. However, previous studies of interwar Britain have not linked these issues together. This paper argued that the two may well have been related.

The time series evidence revealed a number of important results. First, the impact of a major uncertainty shock, such as the break from the interwar gold standard, was associated with a 1.4 per cent drop in output and a 1.1 percentage point spike in unemployment. Second, the great variability of output was a standout feature of the interwar period. Uncertainty accounted for a fifth of this volatility. The time series evidence is supported by a narrative analysis, which suggests that contemporaries understood the depressive economic consequences of uncertainty in interwar Britain.

A century on from the great anxiety of the interwar period, uncertainty is back. History is never a perfect guide to future events, but unless the relationship between economic policy

uncertainty and the macroeconomy has weakened significantly over time, the economic consequences of events such as Brexit are likely to be bleak.

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Table 1. *Data sources*

<i>Variable</i>	<i>Source</i>	<i>Description</i>
Advances	Capie and Collins, <i>The inter-war British economy</i> , p. 96	London clearing banks. £ millions
Bank Rate	Thomas and Dimsdale, ‘A millennium of macroeconomic data for the UK’	Per cent. End month
Economic activity index	Albers, ‘The prelude and global impact of the Great Depression’	Average 1925-33 = 100
EPU index	See section II	Average 1920-38 = 100
EPU index (alternative)	Baker et al., ‘Measuring economic policy uncertainty’	Average 1920-38 = 100
Exchange rate	Thomas and Dimsdale, ‘A millennium of macroeconomic data for the UK’	\$/£
<i>M0</i>	Capie and Webber, <i>A monetary history of the United Kingdom</i> , pp. 56-7	£ millions. End month
Real exports	Capie and Collins, <i>The inter-war British economy</i> , p. 78	£ millions at 1924 prices
Real GDP at factor cost and market prices	Mitchell et al., ‘Monthly GDP estimates for inter-war Britain’	£ millions at 1938 prices
Real government debt, expenditure and revenue	<i>Economist</i> , various. Collected for month t from the first issue of month $t + 1$	£ millions at 1924 prices. Deflated by the retail price index
Real turnover	Phelps-Brown and Shackle, ‘An index of real turnover’	Average 1930 = 100
Real wages	Capie and Collins, <i>The inter-war British economy</i> , p. 62	Deflated by the retail price index
Retail price index	Capie and Collins, <i>The inter-war British economy</i> , p. 38	Average 1924 = 100

Table 1. *Data sources (continued)*

<i>Variable</i>	<i>Source</i>	<i>Description</i>
Share price index	Thomas and Dimsdale, 'A millennium of macroeconomic data for the UK'	Average 1920-38 = 100. Spliced monthly index weighted by market capitalization
Unemployment	Capie and Collins, <i>The inter-war British economy</i> , p. 63	Per cent
Yield on consols	Capie and Webber, <i>A monetary history of the United Kingdom</i> , pp. 515-8	Per cent. End month

Table 2. *Peak effects from alternative models (%)*

	<i>Specification</i>	<i>Peak effect</i>
(1)	Alternative measure of uncertainty: GARCH	-0.7 (−3.5)
(2)	Alternative measure of uncertainty: Baker et al.	-0.6 (−4.3)
(3)	Alternative measure of economic activity: GDP at market prices	-0.5 (−3.1)
(4)	Alternative measure of economic activity: Economic activity index	-0.4 (−1.9)
(5)	Alternative specification: 2 lags	-0.7 (−3.7)
(6)	Alternative specification: 6 lags	-0.7 (−3.7)
(7)	Alternative specification: Reverse ordering	-0.5 (−2.6)
(8)	Additional control variable: Real government debt	-0.6 (−3.1)
(9)	Additional control variable: Real government expenditure	-0.6 (−3.2)
(10)	Additional control variable: Real government revenue	-0.5 (−3.1)
(11)	Additional control variable: Bank Rate	-0.5 (−3.1)
(12)	Additional control variable: <i>M0</i>	-0.5 (−3.0)
(13)	Additional control variable: Yield on consols	-0.6 (−3.4)
(14)	Additional control variable: Real exports	-0.5 (−3.1)
(15)	Additional control variable: Real wages	-0.5 (−3.2)
(16)	Additional control variable: Retail price index	-0.5 (−3.1)
(17)	Additional control variable: Share prices	-0.3 (−2.1)
(18)	Additional control variable: Exchange rate	-0.4 (−2.6)
(19)	Additional control variables: All	-0.5 (−3.5)
	Baseline	-0.5 (−3.1)
	Minimum	-0.7 (−3.7)
	Maximum	-0.3 (−2.1)
	Mean	-0.5

Note: *t*-statistics in parentheses.

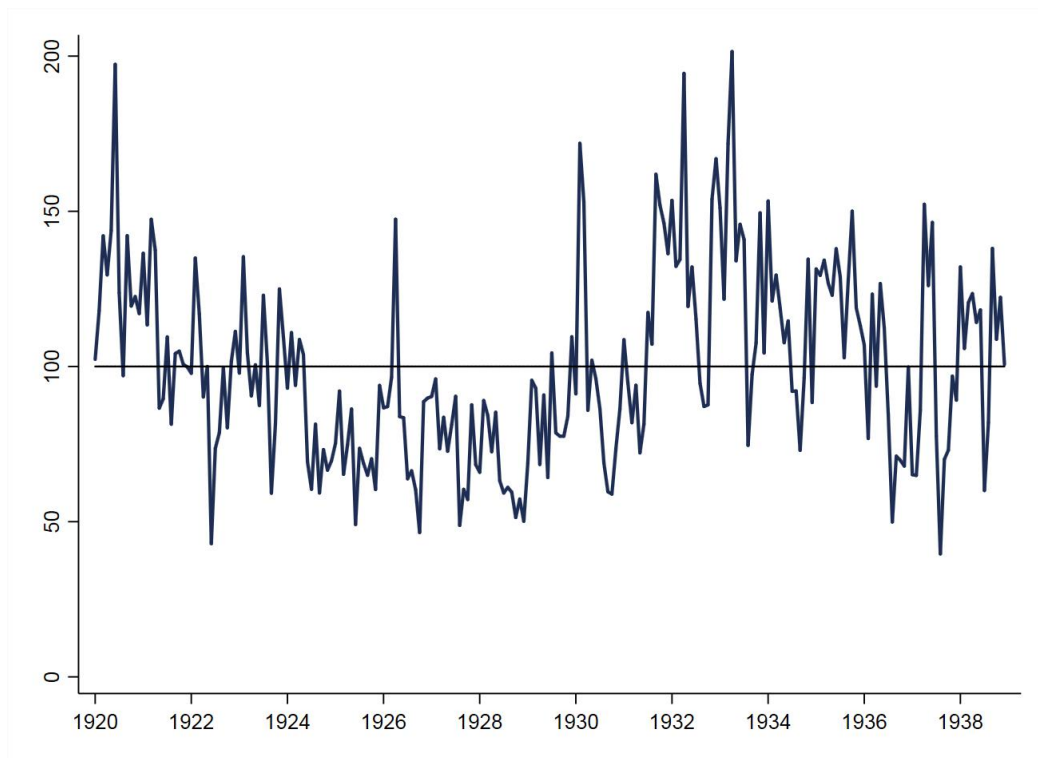


Figure 1. *New economic policy uncertainty index for the United Kingdom, 1920-38 (average 1920-38 = 100)*

Source: See section II.

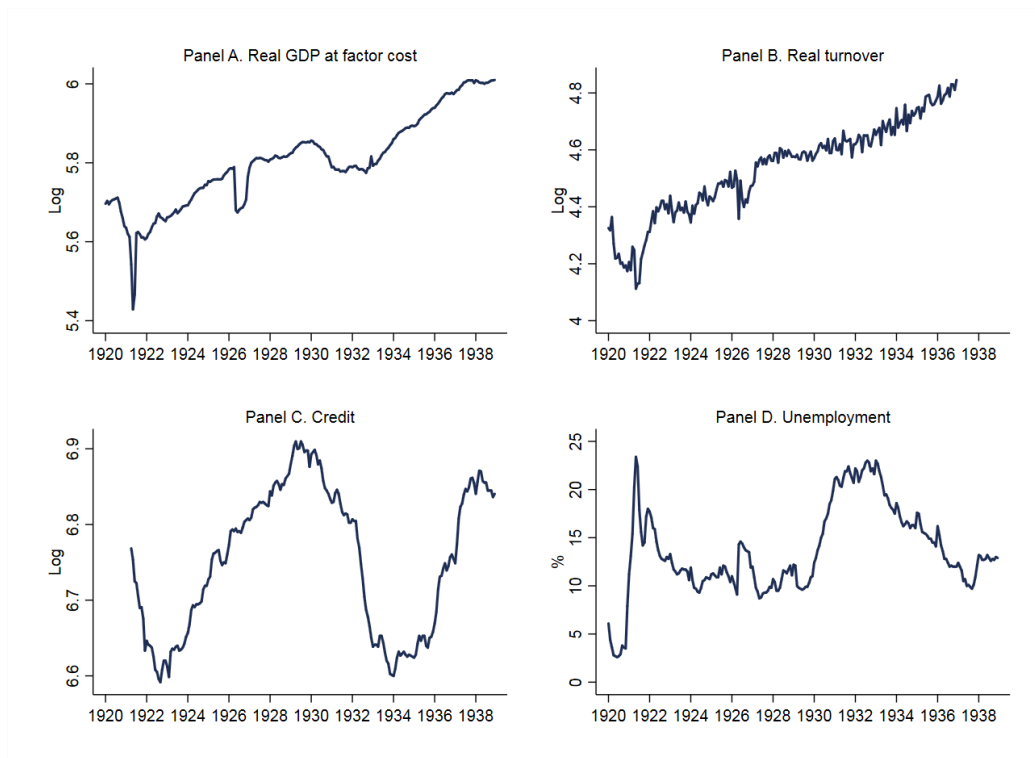


Figure 2. *Real GDP at factor cost, real turnover, credit and unemployment, 1920-38*

Source: See table 1.

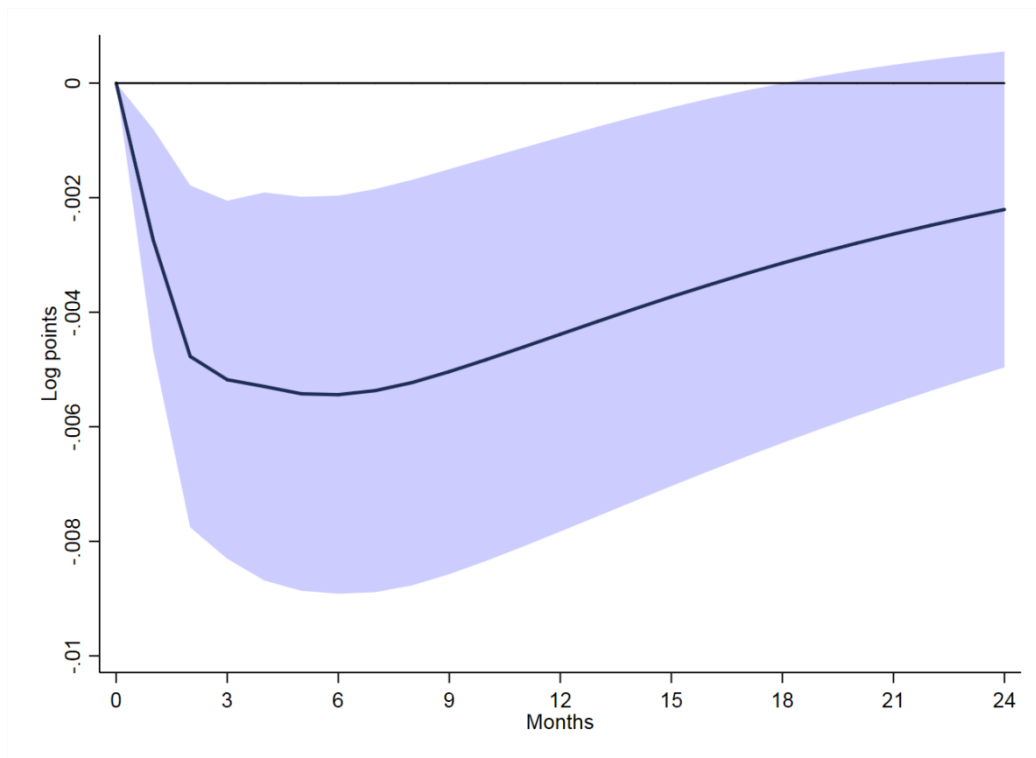


Figure 3. *Response of GDP to an EPU shock*

Note: Shaded area represents the 95 per cent confidence interval.

Source: Author's calculations.

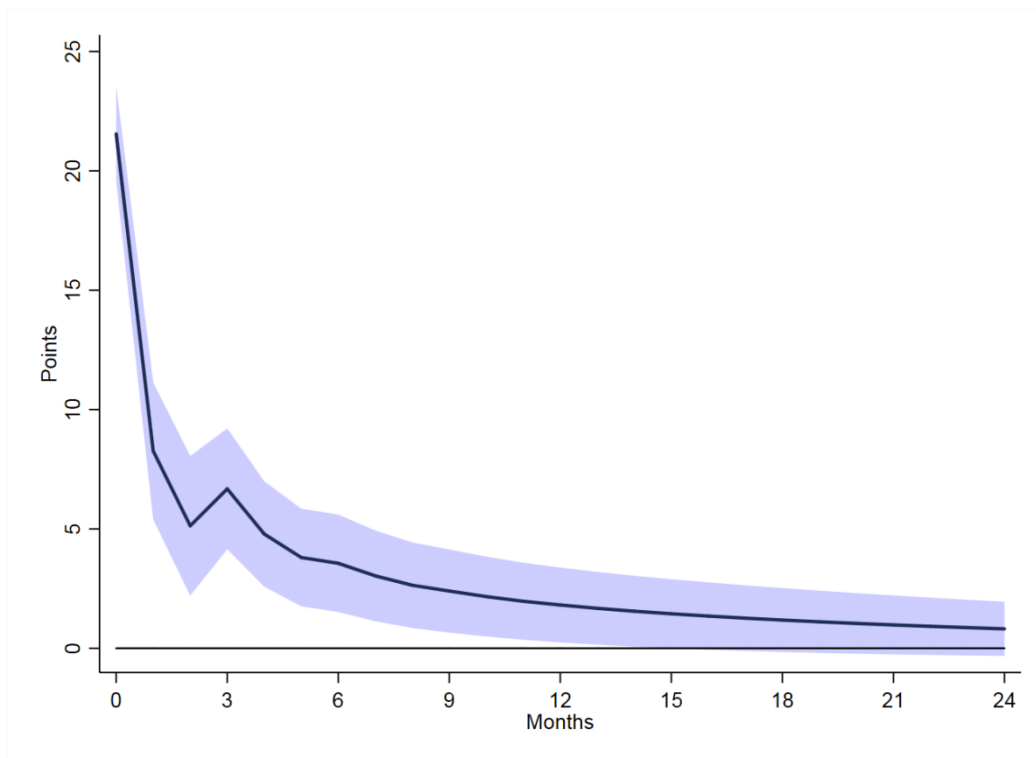


Figure 4. *Response of EPU to an EPU shock*

Note: Shaded area represents the 95 per cent confidence interval.

Source: Author's calculations.

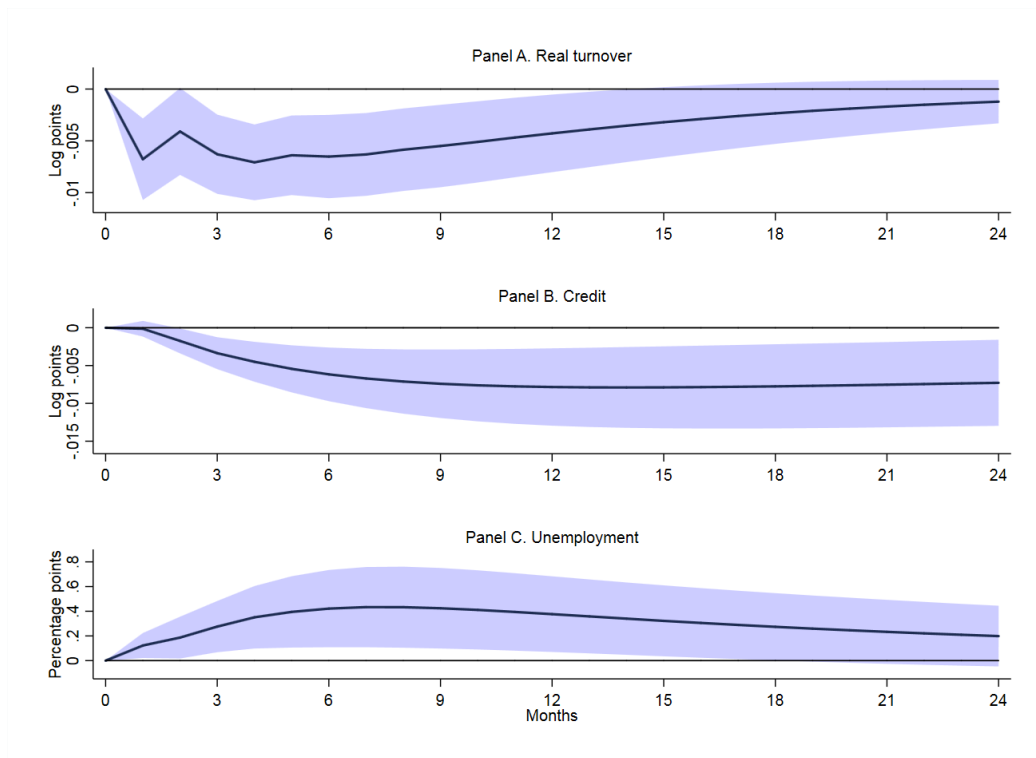


Figure 5. *Response of real turnover, credit and unemployment to an EPU shock*

Note: Shaded areas represent the 95 per cent confidence intervals.

Source: Author's calculations.

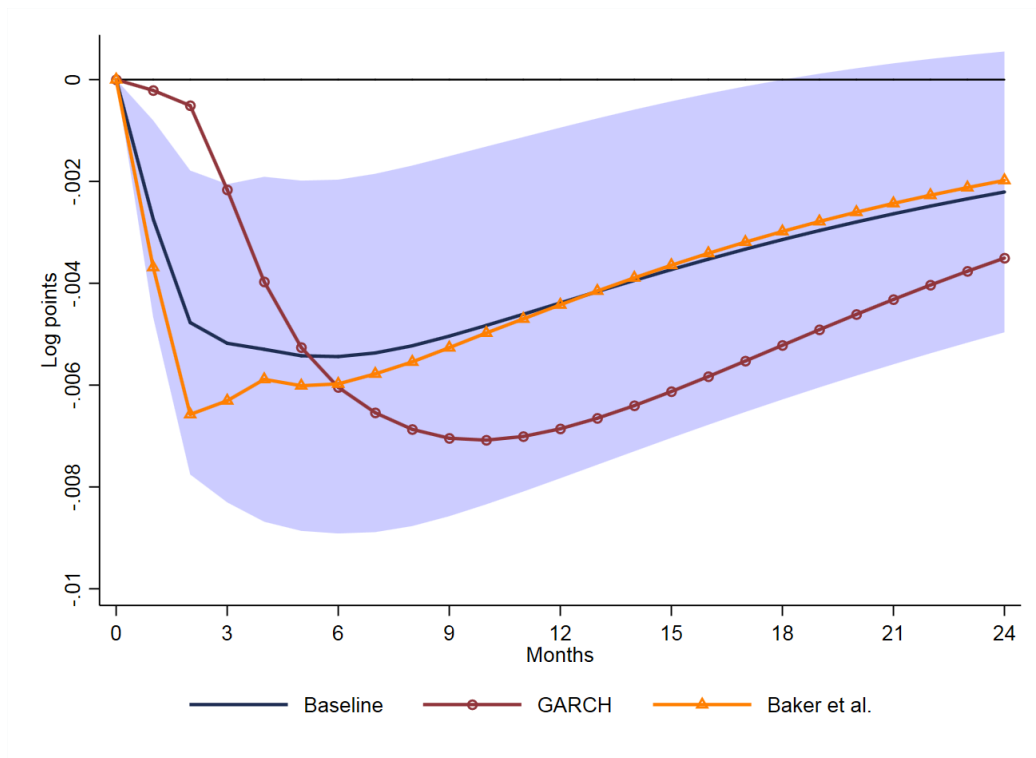


Figure 6. *Sensitivity to alternative measures of uncertainty*

Note: Shaded area represents the 95 per cent confidence interval.

Source: Author's calculations.

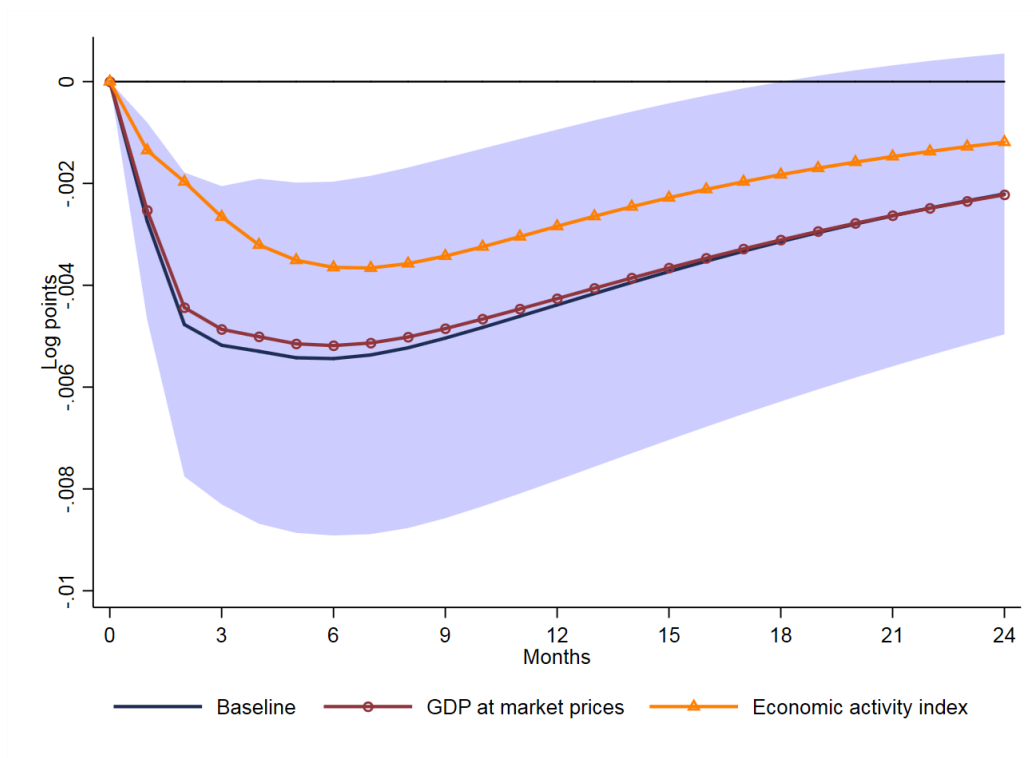


Figure 7. *Sensitivity to alternative measures of economic activity*

Note: Shaded area represents the 95 per cent confidence interval.

Source: Author's calculations.

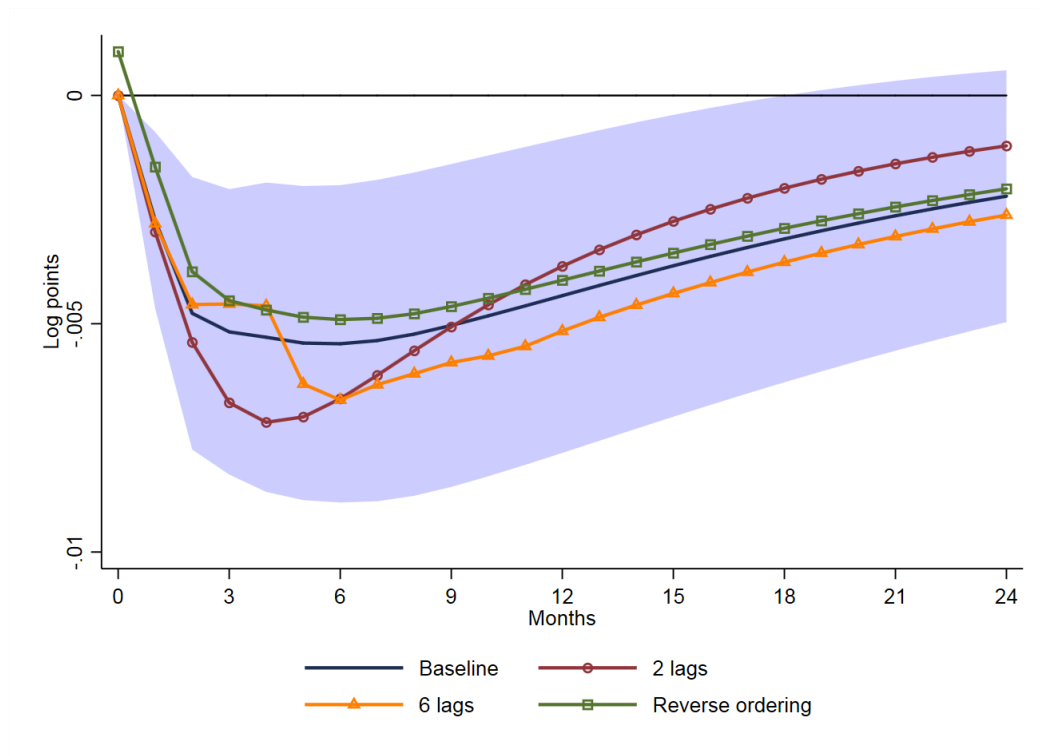


Figure 8. *Sensitivity to alternative specifications*

Note: Shaded area represents the 95 per cent confidence interval.

Source: Author's calculations.