



Measuring inflation expectations in interwar Britain

Jason Lennard¹ | Finn Meinecke² | Solomos Solomou³

¹Department of Economic History,
London School of Economics, Centre for
Economic Policy Research, Centre for
Macroeconomics, and Economic Statistics
Centre of Excellence

²Bank of England

³Faculty of Economics, University of
Cambridge

Correspondence

Jason Lennard

Email: J.C.Lennard@lse.ac.uk

Abstract

What caused the recovery from the British Great Depression? A leading explanation – the ‘expectations channel’ – suggests that a shift in expected inflation lowered real interest rates and stimulated consumption and investment. However, few studies have measured, or tested the economic consequences of, inflation expectations. In this paper, we collect high-frequency information from primary and secondary sources to measure expected inflation in the United Kingdom between the wars. A high-frequency vector autoregression suggests that inflation expectations were an important source of the early stages of economic recovery in interwar Britain.

KEYWORDS

Great Depression, inflation expectations, interwar Britain, regime change

JEL CLASSIFICATION

E3, E6, N14

Expectations ... and not anything else, constitute the immediate and direct causes or antecedents of industrial fluctuations.

Arthur Pigou, *Industrial fluctuations*

Economic policy has been seen as a necessary feature to escape from the forces of falling prices and output during the Great Depression. In particular, the break from the gold standard in the

Finn Meinecke started working on this paper while he was a graduate student at St John's College, University of Cambridge.

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early 1930s changed the policy trilemma faced by policymakers, allowing the potential use of discretionary monetary policy to respond to the depression. One aspect of this is the idea that a policy regime change was necessary to end the depression path of the early 1930s. Temin defines a policy regime as ‘an abstraction from a single decision; it represents the systematic and predictable part of all decisions’.¹ A policy regime change implies a shift in expectations, and in the circumstances of the Great Depression, this meant the substitution of inflationary expectations to end the deflationary vortex.

Despite this notional policy freedom, the existing evidence suggests that the countries devaluing early in the 1930s failed to use discretionary policy as an effective tool to aid economic recovery. [Eichengreen and Sachs](#) report that it took up to two years before countries felt able to adopt a more expansionary monetary policy.² Temin argues that Britain did not experience a policy regime change with the devaluation of September 1931, suggesting that this was because the contractionary policy framework of the gold standard was maintained.³ [Ellison, Lee, and O’Rourke](#) generalize this result to all the countries, including British India, Denmark, and Sweden, following the UK devaluation in 1931, stating:⁴

It is striking that all four exceptions left gold right at the start, in September 1931. Eichengreen ... notes that the early devaluers were reluctant to engage in expansionary open-market operations despite the fact that they had quit gold: sterling area money supplies remained essentially unchanged during 1932. In order to release their golden fetters, it was necessary for policymakers to abandon not only the gold standard’s institutions but also the gold standard’s ethos.

Such evidence does not rule out a policy regime change that arises over time, a path that is consistent with an adaptive learning process of expectation formation. According to [Crafts](#), breaking away from the gold standard, implementing the ‘cheap money’ policy, imposing the General Tariff, and announcing an informal price-level target created a consistent policy framework, raising inflation expectations, lowering real interest rates, and stimulating expenditure.⁵ [Crafts](#)’s historical description implies that the sequencing of policy announcements may have contributed to the formation of a new policy regime in the United Kingdom. Measuring inflation expectations will help in evaluating the time profile of how policy regime change arose in the United Kingdom during the 1930s.

The international evidence on the recovery of the 1930s is consistent with the idea that generating policy regime change is time specific. Comparative evidence for thirty countries considered by [Ellison et al.](#) shows that most of the countries that devalued later in the 1930s saw a shift in inflationary expectations and a fall in real interest rates, whilst the countries that devalued early failed to do so.⁶ The evidence for the United States suggests that devaluation in 1933 caused a regime change in economic policy, shifting inflation expectations.⁷

¹ [Temin](#), *Lessons from the Great Depression*, p. 91.

² [Eichengreen and Sachs](#), ‘Exchange rates and recovery’.

³ [Temin](#), *Lessons from the Great Depression*.

⁴ [Ellison et al.](#), ‘The ends of 30 big depressions’.

⁵ [Crafts](#), ‘Returning to growth’; [idem](#), ‘What does the 1930s’ experience tell us’; [idem](#), *Forging ahead*.

⁶ [Ellison et al.](#), ‘The ends of 30 big depressions’.

⁷ [Temin and Wigmore](#), ‘The end of one big deflation’; [Eggertsson](#), ‘Great expectations’; [Romer](#), ‘It takes a regime shift’; [Jalil and Rua](#), ‘Inflation expectations and recovery’; [Edwards](#), ‘Change of monetary regime’.



The existence of time heterogeneity in the capacity of policymakers to generate policy regime change suggests that a more detailed analysis of the UK experience, as a case study of an early devaluation, will help us understand how policy regime change was generated, with implications for our understanding of policy regime change more generally for the 1930s.

This paper is related to a growing literature on inflation expectations in interwar Britain. Crafts was the first to clearly advance the expectations hypothesis. Although he does not measure expectations, Crafts identifies the elements of the United Kingdom's macroeconomic policy regime change that might have shifted expectations.⁸ Gwiazdowski builds a New Keynesian model that lays the theoretical foundations for an expectations channel in the 1930s recovery.⁹ Gwiazdowski and Chouliarakis construct a monthly news index based on the *Financial Times*, *The Guardian*, *The Scotsman*, *The Telegraph*, and *The Times* and combine it with a narrative from qualitative sources, finding a turning point in May 1933.¹⁰

This article contributes to this literature in three significant ways. First, given the difficulty of observing expectations, we use high-frequency estimates from three different sources. We collect spot and future commodity prices from *The Times*, construct a quantitative measure of news about inflation and deflation from a balanced sample of four newspapers using an objective term set, and add data on the term premium. Given that there is no single measure that is perfect, we also study the common component of these series as a useful aggregate measure of inflation expectations.

Second, we consider the time profile of expectation change in the United Kingdom over the transition from depression to recovery. We relate our quantitative measures of inflation expectations to a qualitative description of the policy framework, which complements the work of Crafts and provides a better understanding of how expectations changed in the United Kingdom during the Great Depression.

Third, we include inflation expectations in a high-frequency vector autoregression (VAR) to explore how expectations affected the British economy, finding a significant, positive impact in the early phase of the recovery.

I | A CONCISE HISTORY OF ECONOMIC POLICY

A short introduction to economic policy in interwar Britain will help us to understand the major policy changes that may or may not have shifted inflation expectations. According to Crafts, there were four key changes that led to the recovery in the 1930s:¹¹ first, leaving the gold standard, which occurred on 21 September 1931; second, implementing the 'cheap money' policy, which saw Bank rate cut in steps from six per cent to two per cent from 18 February 1932 to 30 June 1932 and maintained at this level until August 1939;¹² third, passing the Import Duties Act that levied a 10 per cent tariff on many imported goods, which was effective from 1 March 1932;¹³ and fourth, declaring the intent to restore prices to pre-Depression levels. Crafts suggests that the target of raising prices to the level of 1929 was announced by the Chancellor at the British Empire

⁸ Crafts, 'Returning to growth'; *idem*, 'What does the 1930s' experience tell us'; *idem*, *Forging ahead*.

⁹ Gwiazdowski, 'Stabilisation policy and recovery'.

¹⁰ Gwiazdowski and Chouliarakis, 'Regime change and recovery'.

¹¹ Crafts, 'Returning to growth'; *idem*, 'What does the 1930s' experience tell us'; *idem*, *Forging ahead*.

¹² Mitchell, *British historical statistics*, p. 682.

¹³ Chadha *et al.*, 'Exchange rates, tariffs and prices'.

**TABLE 1** Chronology of economic policy changes in the 1930s

Policy	Date
<i>United Kingdom</i>	
Gold standard suspended	21 September 1931
'Cheap money' policy	18 February 1932, 10 March 1932, 17 March 1932, 21 April 1932, 12 May 1932, 30 June 1932
Import Duties Act	1 March 1932
Price-level target	9 May 1932
<i>International</i>	
Gold standard suspended in Germany	July 1931
Gold standard suspended in Canada	October 1931
British Empire Economic Conference, Ottawa	21 July 1932 to 20 August 1932
Gold standard suspended in the United States	March 1933
World Economic Conference, London	12 June 1933 to 27 July 1933

Notes: This table shows the dates of major changes to economic policy in the early 1930s.

Sources: See section I.

Economic Conference in Ottawa in July 1932.¹⁴ We have been able to trace an earlier announcement, at the budget on 9 May 1932, and an alternative target, to return wholesale prices to the level of 1928.¹⁵

International changes in economic policy may also have had an impact on domestic inflation expectations. A chief candidate is the suspension of the gold standard in the United States in March 1933.¹⁶ These policy changes are summarized in table 1.

II | DATA AND METHODOLOGY

Commodity futures prices are a classic source of inflation expectations in historical contexts.¹⁷ However, although commodity prices are widely used in the literature, they have not been studied in the United Kingdom between the wars. The logic is that the difference between prices of different maturities is equal to the expected price change of the commodity. To understand the intuition, let $S_{i,t}$ be the spot price of commodity i at time t and $F_{i,t}(j)$ be the price of the j -period ahead forward contract, where the price is set at t for delivery in $t + j$. Then:

$$F_{i,t}(j) = E_t S_{i,t+j} \quad (1)$$

where $E_t S_{i,t+j}$ is the expectation at time t of the spot price at $t + j$. Arbitrage suggests that the equality in Equation (1) should hold. Suppose that the j -period ahead futures price is above the expectation of the spot price at $t + j$ ($F_{i,t}(j) > E_t S_{i,t+j}$); then market participants can sell

¹⁴ Crafts, 'Returning to growth'.

¹⁵ Hansard (Commons), 5th ser., CCLXV, 9 May 1932, cols. 1671–4.

¹⁶ Crafts, 'What does the 1930s' experience tell us'.

¹⁷ Hamilton, 'Monetary factors'; *idem*, 'Was the deflation during the Great Depression anticipated?'; Voth, 'Inflationary expectations'; Perez and Siegler, 'Inflationary expectations'; Shibamoto and Shizume, 'Exchange rate adjustment'.



the product on the futures market and buy the commodity at the spot price in the future. These sales push down the futures price to the expected spot price.¹⁸

With a measure of expected prices, it is straightforward to calculate expected inflation. First, take logarithms of Equation (1), as is conventional in the literature.¹⁹ Second, subtract the log spot price from both sides:

$$f_{i,t}(j) - s_{i,t} = E_t s_{i,t+j} - s_{i,t} \quad (2)$$

The equation shows that expected inflation between t and $t + j$ ($E_t s_{i,t+j} - s_{i,t}$) is equal to the difference between the log j -period ahead futures price and the log spot price of commodity i ($f_{i,t}(j) - s_{i,t}$). The beauty of Equation (2) is that while the right-hand side is unobservable ($E_t s_{i,t+j} - s_{i,t}$), the left-hand side is observable ($f_{i,t}(j) - s_{i,t}$).

The equation may only hold, however, if the following conditions are met: (i) agents are risk neutral, (ii) the market is not segmented or underdeveloped, and (iii) there are no storage costs.²⁰ As a futures price may reflect not only the expected future spot price but also the carrying costs involved with storing the goods until maturity, it is common to calculate the $j - 1$ period expected inflation as the difference between a j -period futures price and the one-month futures contract:²¹

$$E_t \pi_{i,t+j-1} = f_{i,t}(j) - f_{i,t}(1) \quad (3)$$

However, there are two issues with Equation (3) that have not been acknowledged in the literature. First, it is assumed that storage is a cost that is common to both $f_{i,t}(j)$ and $f_{i,t}(1)$. As a result, it is differenced out. However, if the storage cost is changing in j , as is probably the case, then Equation (3) is not much better than (2). Second, the interpretation as $j - 1$ expected inflation is incorrect. In fact, it represents expected inflation at time t of inflation between $t + 1$ and $t + j$, which may be close but is not the precise statistic of interest. These arguments are detailed in online [appendix A](#).

Beyond the question of whether $f_{i,t}(j) - s_{i,t}$ or $f_{i,t}(j) - f_{i,t}(1)$ is an accurate measure of the inflation expectations for a specific commodity, there is the additional question of how this relates to aggregate expected inflation.²² The observed commodities may make up a small fraction of the aggregate price index or may be uncorrelated with other prices.

With these caveats in mind, we move on to test the expectations hypothesis with the available data. A valuable source of spot and futures prices is the 'Home Commercial Markets' section of *The Times*. Although these data have been used by economic historians before to test option price efficiency, they have not been used to study inflation expectations.²³ *The Times* regularly reported prices for copper, cotton, and tin, as well as for some other commodities on an irregular basis.²⁴ In

¹⁸ Hamilton, 'Monetary factors'; *idem*, 'Was the deflation during the Great Depression anticipated?'

¹⁹ Hamilton, 'Monetary factors'; Voth, 'Inflationary expectations'; Perez and Siegler, 'Inflationary expectations'; Shibamoto and Shizume, 'Exchange rate adjustment'.

²⁰ Hamilton, 'Monetary factors'; *idem*, 'Was the deflation during the Great Depression anticipated?'; Voth, 'Inflationary expectations'; Binder, 'Estimation of historical inflation expectations'.

²¹ Voth, 'Inflationary expectations'; Shibamoto and Shizume, 'Exchange rate adjustment'.

²² Hamilton, 'Was the deflation during the Great Depression anticipated?'

²³ Chambers and Saleuddin, 'Commodity option pricing efficiency'.

²⁴ Online appendix B provides some institutional detail for copper, cotton, and tin markets.



order to construct a high-frequency series, we transcribe the Friday prices on the spot and futures market (1, 3, 6, 11, and 12 months) when available. If prices were not reported for Friday, we use the prices for the previous day. When a buy and sell price was reported, we transcribe both and calculate the arithmetic mean. The sample period is 2 January 1920 to 29 December 1939. Overall, there are almost 15 000 price-week observations.

How important were these commodities in aggregate price indices? The Board of Trade's wholesale price index was a key economic statistic in the interwar period, reflecting the prices paid by retailers to producers.²⁵ According to the Board of Trade's description of how the index was constructed, cotton was allocated the third-highest weight (five per cent), while copper and tin received less weight (two per cent and 0.5 per cent, respectively).²⁶

As the various prices may be affected by idiosyncratic factors such as commodity-specific demand and supply shocks and the length of the futures contract, we develop a new model to aggregate the commodity prices into a single series. To do so, we pool the commodity price expectations and estimate Equation (4) by ordinary least squares (OLS):

$$f_{i,t}(j) - s_{i,t} = \alpha_i + \gamma_t + \beta j_{i,t} + e_{i,j,t} \quad (4)$$

where α_i are commodity fixed effects that allow for differences in the mean expected price change by commodity; j is the length of the futures contract, which should help to account for storage costs; and $e_{i,j,t}$ is an idiosyncratic error term.²⁷ γ_t are time fixed effects, which measure the mean expected price change (in log points), conditional on the aforementioned controls.²⁸ The logic of Equation (4) is: (i) to purge the individual commodity price expectations of uninformative variation and (ii) to aggregate many individual commodity price expectations into a single measure.²⁹

An interesting method to measure unobserved economic statistics is to use text as data, which has been used to study inflation expectations and uncertainty in historical contexts.³⁰ Applied to expected inflation, this 'quantitative news' approach involves counting the number of articles about inflation and deflation in newspapers. The reasoning is that 'media coverage reflects and shapes the macroeconomic expectations of the public'.³¹

²⁵ Chadha et al., 'Exchange rates, tariffs and prices'.

²⁶ Board of Trade Journal, 24 Jan. 1935, p. iv.

²⁷ As a result of data limitations, some of the commodity prices have later start dates, others have earlier end dates, and all have some missing observations. An advantage of this regression-based aggregation over an alternative method such as principal components analysis is that it handles missing data.

²⁸ The output is reported in online appendix table C1.

²⁹ Online appendix figure C1 investigates how the aggregation is affected by alternative treatments of maturity, such as using $\ln j$ instead of j and adding j^2 to Equation (4). Figure C2 explores the sensitivity of the aggregation to a weighted regression, where the weights reflect the shares in the wholesale price index (Board of Trade Journal, 24 Jan. 1935, p. iv). Figure C3 compares the results for the full sample with those for a shorter sample of January 1930, which was the peak in economic activity, to January 1934, which marked the return to the pre-Depression level (Mitchell et al., 'Monthly GDP estimates'). In each case, the results are similar.

³⁰ Binder, 'Estimation of historical inflation expectations'; Jalil and Rua, 'Inflation expectations and recovery'; Daniel and ter Steege, 'Inflation expectations'; Baker et al., 'Measuring economic policy uncertainty'; Mathy and Zierbarth, 'How much does political uncertainty matter?'; Lennard, 'Uncertainty and the Great Slump'; Mathy, 'How much did uncertainty shocks matter?'.

³¹ Binder, 'Estimation of historical inflation expectations'.



The first step is to select a sample of newspapers. The two key criteria are: (i) that the newspapers, as ‘shapers’ of expectations, are influential and (ii) that the newspapers are balanced in terms of political slant.³² In the centre, we study the *Financial Times*, which has been described as the ‘stockbroker’s bible’ between the wars and has been used to measure historical sentiment, and *The Economist*, which has been used to gauge historical expectations.³³ To either side, we have *The Guardian* to the left with a readership of 47 000 in 1930 and *The Times* to the right with a readership of 187 000 in 1930.³⁴ These papers have been used to study economic policy uncertainty in interwar Britain.³⁵

The second step is to select the term set. Binder used (inflation OR reflation) AND (price OR prices) for the inflation set and deflation AND (price OR prices) for the deflation set.³⁶ Jalil and Rua used (inflation OR inflationary) and (deflation OR deflationary).³⁷ While these seem to be reasonable choices, it is not clear what the objective basis is for the inclusion and exclusion of terms. Some important questions are whether the included terms were used to describe historical price changes and whether other excluded terms might have been used.

In order to give empirical foundations to our quantitative news estimates, we conduct an audit study.³⁸ First, we read a randomly-selected issue from a randomly-selected newspaper. We randomize in two dimensions to capture variation in language over time and across newspapers. Second, we record whether the article was about inflation or deflation and, if so, what terms were used to describe the price changes. Third, we experiment with different combinations of these candidate terms to minimize the sum of the false-negative rate (articles that were about inflation expectations that were excluded) and false-positive rate (articles that were not about inflation expectations that were included) in the sample of articles to determine the optimal term set.

A challenge is that the vast majority of news is not about price changes. Thus, if we were to read a large volume of articles, only a few would be about the subject of interest, meaning that more time would be devoted to reading articles about the ‘Armed robbers’ haul in busy City Street’, ‘Newmarket prospects’, and other topics of general interest than reading articles about inflation or deflation. Across the four publications, 99.6 per cent of articles between 1920 and 1939 made no mention of inflation or deflation. Therefore, we condition on the article containing ‘inflation OR deflation’, which are the only terms common to Binder and Jalil and Rua’s studies.³⁹ In order to overcome the same challenge in an audit study on uncertainty, Baker et al. also condition on a set of predetermined terms.⁴⁰

As the volume of terms used in the audit involves a prohibitively large number of potential combinations, we simplify the exercise by stemming, which is a common approach to reduce

³² Gentzkow and Shapiro, ‘What drives media slant?’; Baker et al., ‘Measuring economic policy uncertainty’; Lennard, ‘Uncertainty and the great slump’.

³³ Butler and Freeman, *British political facts*, pp. 278, 287; Kynaston, *The Financial Times*; Hanna et al., ‘News media and investor sentiment’; Barsky and De Long, ‘Forecasting pre-World War I inflation’; Crafts and Mills, ‘Rearmament to the rescue?’; eisdem, ‘Self-defeating austerity?’.

³⁴ Butler and Freeman, *British political facts*, pp. 278, 280, 284.

³⁵ Lennard, ‘Uncertainty and the great slump’.

³⁶ Binder, ‘Estimation of historical inflation expectations’.

³⁷ Jalil and Rua, ‘Inflation expectations and recovery’.

³⁸ Baker et al., ‘Measuring economic policy uncertainty’.

³⁹ Binder, ‘Estimation of historical inflation expectations’; Jalil and Rua, ‘Inflation expectations and recovery’.

⁴⁰ Baker et al., ‘Measuring economic policy uncertainty’.

complexity when using text as data.⁴¹ This involves replacing words with their root, so that inflated, inflation, and inflationary are replaced by their stem: *inflat*. By combining the root with the Boolean operator, *, the single term ‘*inflat**’ can be substituted for the other terms with the same stem. In order to identify the roots, we use the Porter stemmer.⁴²

The audit study suggests that the optimal inflation and deflation term sets are simply ‘*inflat**’ and ‘*deflat**’, respectively.⁴³ While adding terms, such as ‘*reflat**’ or ‘*price**’, tends to lower the false-negative rate, this is offset by a rise in the false-positive rate.

A possible criticism of the quantitative news approach is the difficulty in separating domestic from international news. Crude conditions that specify the article must contain a geographic term are not sufficient, as it is often implied that a report is about domestic affairs unless otherwise stated. For example, just 16.1 per cent of the articles that we identified in our audit study as being about domestic inflation expectations used a geographical term. Of those that did, a wide variety of terms were used, such as ‘British’, ‘domestic’, ‘England’, ‘English’, ‘home’, ‘internal’, and ‘Great Britain’. In any case, it may not be desirable to distinguish by location, as this imposes an autarkic model of expectation formation. It may be that not only news in the United Kingdom but also major international shocks shaped the expectations of British agents. Reports of inflationary spikes in France, Germany, or the United States may have shifted agents’ inflation expectations in the United Kingdom.

The sample period is 1 January 1920 to 31 December 1938, which yields 6940 daily observations.

As a proof of concept, we construct estimates of quantitative news with precisely the same terms and newspapers but for more recent times. We then investigate the association with modern measures of inflation expectations, including household expectations from surveys by the European Commission and Gallup, professional forecaster expectations from the National Institute of Economic and Social Research, and financial market expectations derived from the government liability curve.⁴⁴ The analysis runs from 1961, when the household expectations data begins, up to 2003, when the Guardian Historical Archives end. Online [appendix](#) table D2 shows that there are statistically significant associations between our estimates of quantitative news and established measures of inflation expectations.⁴⁵

Another source of information on inflation expectations is the term structure of interest rates. Under the expectations hypothesis, long rates are a forward convolution of future expected short rates.⁴⁶ As a result, an increase in expectations of future economic activity or inflation results in a rise in expected future short rates, which leads to an increase in the term premium.⁴⁷ In the Fisher equation, there is a one-to-one relationship between nominal interest rates and inflation expectations, holding real interest rates constant. In empirical work, a positive yield curve, where long rates are higher than short rates, is a predictor of growth and inflation, whereas an inverted yield curve with long rates below short rates is a predictor of recessions.

⁴¹ Gentzkow et al., ‘Text as data’.

⁴² Porter, ‘An algorithm for suffix stripping’.

⁴³ The results of the audit study are reported in online appendix table D1.

⁴⁴ Chadha et al., ‘Economic trends’.

⁴⁵ Binder, ‘Estimation of historical inflation expectations’, also finds a positive correlation between quantitative news and consumer expectations for the United States between 1978 and 1997.

⁴⁶ Campbell and Shiller, ‘Yield spreads and interest rate movements’.

⁴⁷ Ellison et al., ‘The ends of 30 big depressions’.

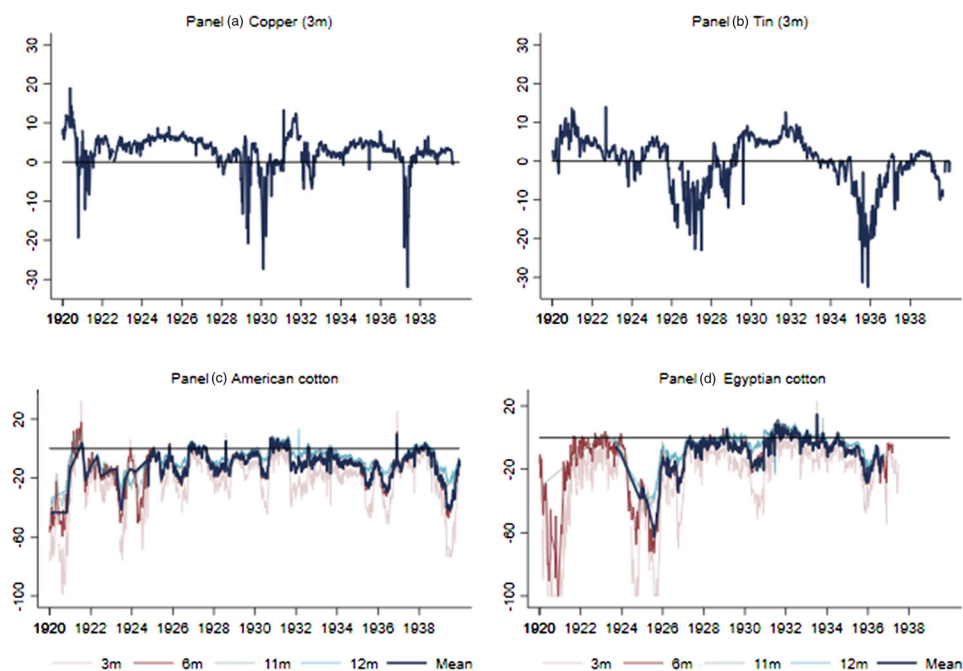


FIGURE 1 Forward premium of commodity prices, 1920–39 (%). *Notes:* This figure shows the weekly inflation expectations of copper, tin, and cotton prices. All series have been annualized by multiplying by $12/j$ and winsorized at $\pm 100\%$. *Sources:* The ‘Home Commercial Markets’ section of *The Times* between 1920 and 1939 and Equation (2) [Colour figure can be viewed at wileyonlinelibrary.com]

Following Ellison et al., we study the difference between the yields on 10- and 3-year zero coupon government bonds, which have been adjusted for call and conversion provisions.⁴⁸ The sample period is January 1920 to December 1938, which results in 228 monthly observations.

As the nominal yield is likely to have other influences than inflation expectations alone – the preferred habitat theory, for example, suggests that investors have a preferred investment time-frame and require compensation for investing in securities with different maturities – the term structure in isolation should not be seen as equating to the level of inflation expectations but rather as containing information about inflation expectations. Movements in the term structure should be informative about changes in the macroeconomic outlook.

III | QUANTITATIVE EVIDENCE

What do commodity prices tell us about inflation expectations in interwar Britain? Figure 1 shows the individual commodity price expectations; figure 2 plots the aggregated series.⁴⁹ In the aftermath of the Great War, there were large deflationary expectations, which preceded the actual fall in prices. Expected deflation returned in the spring of 1930, coinciding with the start of the slump

⁴⁸ Ibid.; Ellison and Scott, ‘Managing the UK national debt’.

⁴⁹ Online appendix table C2 reports the correlation matrix for the series in figures 1 and 2.

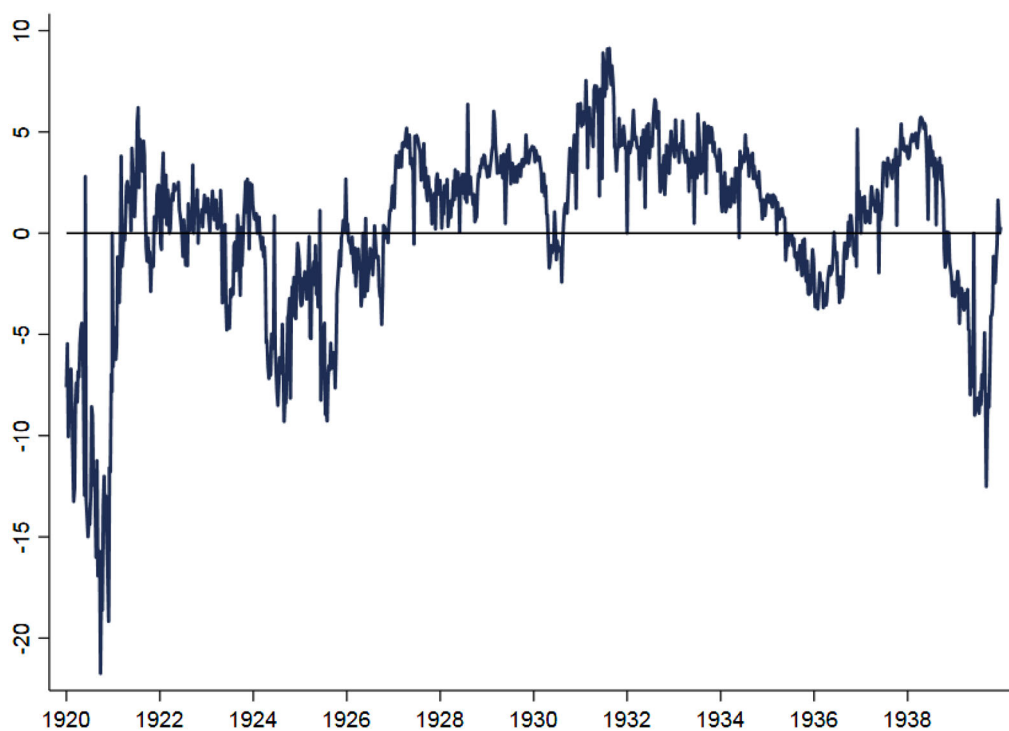


FIGURE 2 Inflation expectations implied by commodity prices, 1920–39 (%). *Notes:* This figure shows the weekly inflation expectations of commodity prices. *Sources:* The ‘Home Commercial Markets’ section of *The Times* between 1920 and 1939 and Equations (2) and (4) [Colour figure can be viewed at wileyonlinelibrary.com]

in economic activity.⁵⁰ However, expectations were largely positive from the end of August 1930. While expectations responded to some of the policy changes that underpinned the regime change – such as four of the six cuts in Bank rates between February and June 1932 and developments at the Ottawa conference from July 1932 – the gains were relatively modest and transitory.

Moving on to quantitative news, figure 3 shows the series of inflationary and deflationary news coverage. There are three major discontinuities. First, from 21 September 1931, the day that the United Kingdom abandoned the gold standard, there was a spike in reporting on inflation, persisting until the end of October. Second, there was a jump in January 1933, when many articles discussed the domestic and global prospect of inflation. Third, there was a sustained increase from 18 April 1933, when Roosevelt supported legislation to devalue the dollar.⁵¹ From this point, inflation coverage remained high throughout 1933, particularly during the World Economic Conference.⁵²

Figure 4 plots the difference between the adjusted yields on 10- and 3-year zero coupon government bonds.⁵³ While there are some interesting swings in the 1920s, it is the early 1930s that

⁵⁰ Mitchell et al., ‘Monthly GDP estimates’.

⁵¹ Temin and Wigmore, ‘The end of one big deflation’.

⁵² To verify our series of quantitative news, we report the results of a narrative analysis in online appendix E.

⁵³ Ellison and Scott, ‘Managing the UK national debt’.

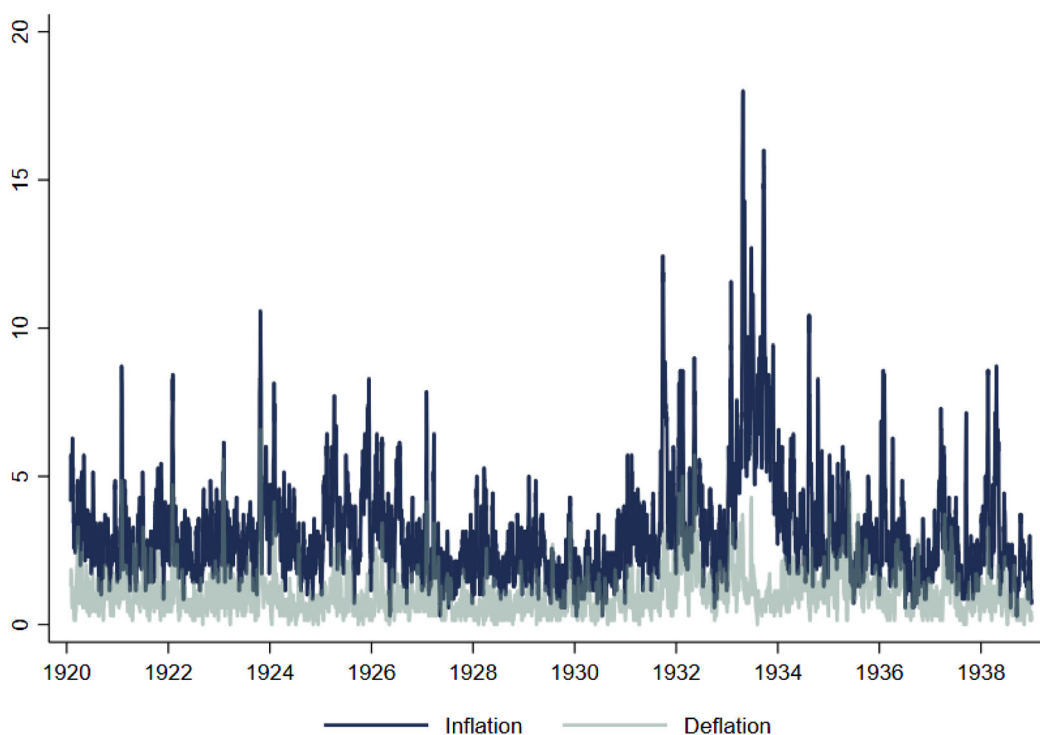


FIGURE 3 Inflation expectations implied by newspapers, 1920–38. *Notes:* This figure shows the (seven-day moving average) daily number of articles about inflation or deflation in a sample of newspapers (*The Economist*, *Financial Times*, *The Guardian*, and *The Times*) from 1920 to 1938 based on the term set: ‘inflat*’ and ‘deflat*’. *Sources:* See section II [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 2 Comparing measures of inflation expectations

	Commodity prices	Quantitative news	Term premium
Commodity prices	1		
Quantitative news	0.13*	1	
Term premium	0.04	0.24***	1

Notes: This table shows the correlation matrix for various series of monthly inflation expectations. The sample period is January 1920 to December 1938. *, **, and *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

Sources: See fig. 2–4.

are most striking. The yield curve was inverted – short rates were above long rates – intermittently from February 1929 and persistently between June 1931 and December 1932. However, from January 1933, there was a sharp increase so that the term premium was large and positive. The yield curve remained upward sloping thereafter. This analysis suggests that there was a reversal in expectations from deflationary to inflationary at the start of 1933.

An interesting question is how much of the variation in each estimate of inflation expectations is common and how much is idiosyncratic. Table 2 reports a correlation matrix for the

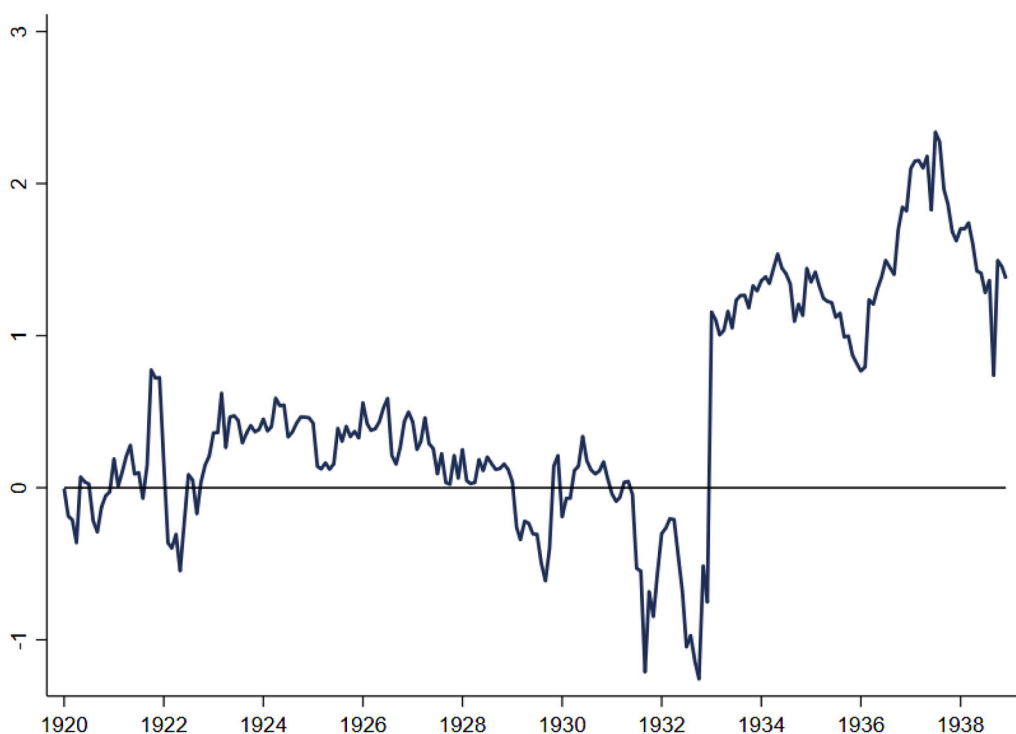


FIGURE 4 Inflation expectations implied by the term premium, 1920–38 (percentage points). *Notes:* This figure shows the monthly difference between the adjusted yields on 10- and 3-year zero coupon government bonds. *Sources:* Ellison and Scott, ‘Managing the UK national debt’ [Colour figure can be viewed at wileyonlinelibrary.com]

series based on commodity prices, quantitative news, and the term premium.⁵⁴ The results suggest that although there is some common variation, there is also a good deal of idiosyncratic movement.⁵⁵

As we lack a direct measure of inflation expectations during the interwar period, it is important to emphasize that our three estimates each capture aspects of inflation expectations rather than the true measure. Moreover, the time horizon differs across the three estimates. In the case of commodity prices, we are observing market expectations at various frequencies between one month and one year; in the case of the term premium, we are observing expectations up to a 10-year horizon; and in the case of quantitative news, we are capturing an unknown time horizon into the future.

Accepting that it is impossible to identify which measure of inflation expectations provides the best estimate, we take a statistical approach to summarize the information in the three measures using principal components analysis, based on the standardized series and the covariance matrix, which yields a weighted average of the standardized series. The weights are reported in table 3.⁵⁶

⁵⁴ Henceforth, the measure of quantitative news is based on the difference between the number of inflationary and deflationary articles.

⁵⁵ Online appendix table F1 moves from static to dynamic correlations. Some non-contemporaneous correlations are statistically different from zero.

**TABLE 3** Principal components analysis

	Weights
Commodity prices	0.39
Quantitative news	0.68
Term premium	0.62

Notes: This table shows the weights estimated by principal components analysis and the covariance matrix. The sample period is January 1920 to December 1938.

Sources: See fig. 2–4.

As the principal component is not in meaningful units, we normalize it using a few different approaches. First, we match the mean of retail price inflation or wholesale price inflation, which was -1.4 per cent or -3.0 per cent between 1920 and 1938.⁵⁷ Second, we regress leads of actual retail or wholesale price inflation on the principal component and use the fitted values as the scaled measure of inflation expectations, which is unbiased under rational expectations.⁵⁸ These measures of inflation expectations are presented in figure 5.

In what follows, our preferred measure is the principal component expressed in the retail price inflation space. We prefer mean adjustment over Binder's approach because it is not a generated regressor.⁵⁹ Therefore, ordinary standard errors are valid. We prefer retail price inflation over wholesale price inflation, as this is probably the more appropriate deflator in theory. However, as each of the series in figure 5 are perfectly correlated – all are linear combinations of the unscaled principal component – the econometric results reported below are unaffected.

To give an objective foundation to our subjective narrative of the major turning points in inflation expectations, we test for structural breaks. To do so, we estimate Bai and Perron tests for multiple unknown break points for each series of inflation expectations between January 1920 and December 1938, allowing for a maximum of five structural breaks in each series.⁶⁰

The results are reported in table 4. Focusing on the early 1930s and the aggregate principal components measure of inflation expectations suggests that an identifiable shift occurred in January 1933, remaining persistently high throughout the year, before returning to more normal levels in 1934.

A comparison of British and American inflation expectations offers useful information on possible common forces in the early 1930s. Figure 6 plots the aggregate measure for the United Kingdom and various estimates for the United States based on (i) commodity prices by Hamilton, (ii) a continuous measure of quantitative news by Binder, and (iii) a binary measure of quantitative

⁵⁶ Online appendix table G1 shows how much variation in each measure of expectations is explained by the principal component. Table G2 and figure G1 include the number of articles about inflation and deflation separately in the principal components analysis, rather than a single measure of the difference. Figure G2 plots an aggregate measure based on a dynamic factor model. Online appendix figure H3 uses the individual measures of inflation expectations when evaluating the impact of expectations on outcomes.

⁵⁷ Capie and Collins, *The inter-war British economy*; Kapetanios et al., 'A new summary measure'.

⁵⁸ Binder, 'Estimation of historical inflation expectations'.

⁵⁹ Binder, 'Estimation of historical inflation expectations'.

⁶⁰ Bai and Perron, 'Estimating and testing linear models'. Since the tests can be sensitive to sample period, we also estimate structural breaks over the period January 1928 to December 1936. The results are robust to these sample changes.

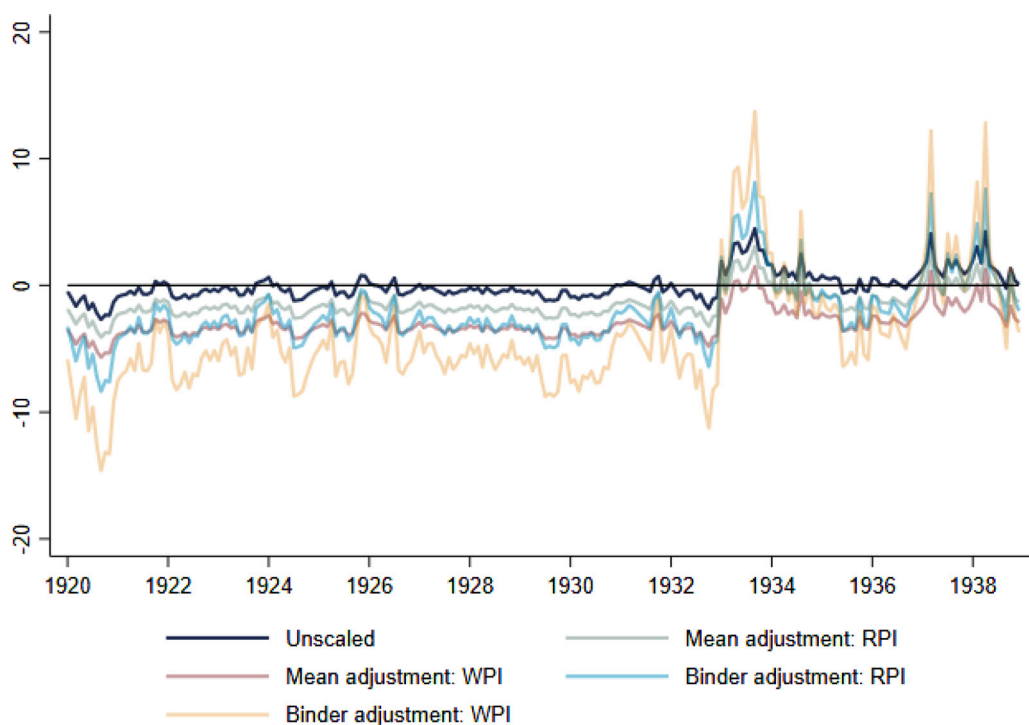


FIGURE 5 Aggregate measures of inflation expectations, 1920–38 (%). *Notes:* This figure shows monthly inflation expectations estimated by principal components analysis and the covariance matrix. The sample period is January 1920 to December 1938. WPI = wholesale price index, RPI = retail price index. *Sources:* See fig. 2–4 [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 4 Structural breaks in inflation expectations

	Frequency	Break dates			
		1	2	3	4
Commodity prices	Weekly	27 October 1922	15 October 1926	10 October 1930	9 November 1934
Quantitative news	Daily	5 October 1923	15 August 1926	2 September 1931	2 September 1934
Term premium	Monthly	December 1922	February 1929	January 1933	March 1936
Aggregate measure	Monthly	November 1922	January 1933		

Notes: This table shows the dates of structural breaks in various series of inflation expectations based on [Bai and Perron](#) tests. The sample period is January 1920 to December 1938.

Sources: See fig. 2–4.

news by [Jalil and Rua](#).⁶¹ Despite differences in economic conditions – deflation and depression were deeper in the United States – and in the policy response – regime change was earlier and more gradual in the United Kingdom – inflation expectations were quite similar. The correlation of British inflation expectations with [Hamilton's](#) series is 0.38 ($p < 0.01$) and, with [Binder's](#)

⁶¹ [Hamilton](#), 'Was the deflation during the Great Depression anticipated?'; [Binder](#), 'Estimation of historical inflation expectations'; [Jalil and Rua](#), 'Inflation expectations and recovery'.

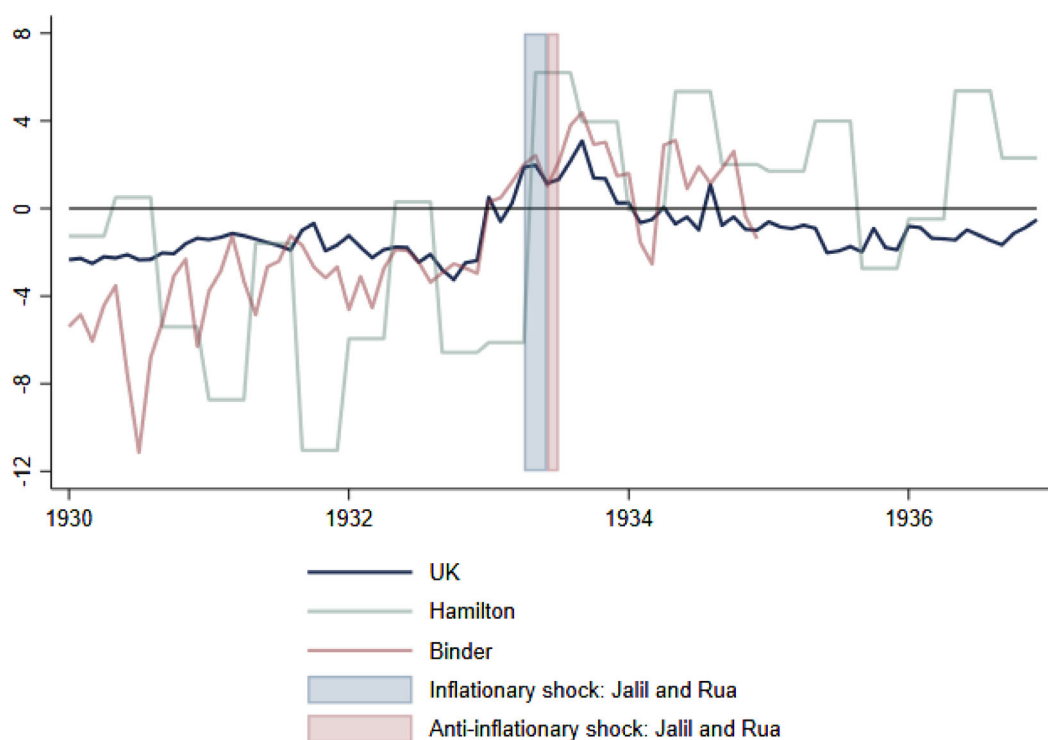


FIGURE 6 Comparing measures of inflation expectations, 1930-6: The United Kingdom versus the United States (%). *Notes:* This figure shows various monthly inflation expectations. The sample period is January 1930 to December 1936. *Sources:* For the United Kingdom, see fig. 2-4. For the United States, [Hamilton](#), 'Was the deflation during the Great Depression anticipated?'; [Binder](#), 'Estimation of historical inflation expectations'; and [Jalil and Rua](#), 'Inflation expectations and recovery' [Colour figure can be viewed at wileyonlinelibrary.com]

estimates, is 0.79 ($p < 0.01$).⁶² All of the series decisively switch from deflation to inflation by the spring of 1933. Thereafter, each measure of inflation expectations gradually stabilized at a lower level.

The common movement suggests that inflationary expectations were determined by forces that affected both countries. Both shared the same policy aims – Roosevelt and Chamberlain, the British Chancellor, were striving to return to the pre-Depression price level, implying a willingness to accept a one-off period of inflation. The timing of this policy shift was earlier in the United Kingdom (May 1932) than in the United States (March 1933), but the United Kingdom found it harder to shift inflationary expectations given the difficulties of breaking from the gold standard policy framework. However, by early 1933 the common goal was yielding results in both countries, which was reinforced at the World Economic Conference in the summer.

Another possible explanation for the Atlantic upturn is the common improvement in global commodity prices. In the United Kingdom, there was a jump in the average spot price between the first and second quarter of 1933 for copper (19.1 per cent), tin (28.6 per cent), American cotton

⁶² [Hamilton](#), 'Was the deflation during the Great Depression anticipated?'; [Binder](#), 'Estimation of historical inflation expectations'.



(15.2 per cent), and Egyptian cotton (10.5 per cent).⁶³ In the United States, there was a general rise in farm product prices in the spring of 1933, which has been linked to greater expectations of prices in the future.⁶⁴

In the United States, which was a major commodity and agricultural producer, with commodity prices being set in global markets, the US devaluation generated an immediate effect on expected inflation, giving rise to the so-called ‘farm channel’.⁶⁵ In the United Kingdom, which was a major importer of food and raw materials, the policy of keeping the exchange rate low with intervention from the Exchange Equalisation Account helped to stabilize the deflationary path of the depression by importing inflation.⁶⁶

The new measures suggest that there was a discontinuity in inflation expectations. Did this shift in expectations spur the recovery?

In theory, the dynamic investment-saving (IS) equation of the New Keynesian model implies that an increase in inflation expectations increases output relative to its natural level by reducing the real interest rate.⁶⁷ Figure 7 charts the ex-ante real interest rate, according to the Fisher equation, where inflation expectations are (approximately) equal to the nominal interest rate minus expected inflation. The nominal interest rates are Bank rate, the prime bank bill rate, the yield on treasury bills, and the yield on consols.⁶⁸ The first three are short-term interest rates, and the fourth is long-term. The series of inflation expectations is the composite measure.

The figure shows that real interest rates were rather high after leaving the gold standard as Bank rate was held at six per cent. However, from the end of 1931, real rates began to come down. Between January and November 1933, ex-ante real interest rates on short-term instruments, such as Bank rate, prime bank bills, and Treasury bills, were often negative.

While the Fisher equation implies that inflation expectations and the ex-ante real interest rate move one-for-one, the dynamic IS equation suggests that the relationship between inflation expectations and the output gap is governed by the elasticity of intertemporal substitution. A low elasticity implies that the output gap will respond sluggishly to changes in expected inflation. Therefore, how economic activity responds to changes in expectations is an empirical question.

To answer this question, we estimate a model developed by Leduc, Sill, and Stark for the modern US economy that incorporates inflation expectations into a vector autoregression (VAR).⁶⁹ The model includes a measure of inflation expectations, retail price inflation, (log) real gross domestic product (GDP) at factor cost, and the yield on treasury bills. The variables, sources, and descriptions are summarized in table 5. In terms of lags, we include one of each endogenous variable, according to the minimization of Schwarz’s Bayesian information criterion. To account for seasonality, we include monthly dummies as exogenous variables. Following Leduc et al., we use a recursive identification scheme, ordering expectations first so that expectations affect, but are not affected by, the other variables contemporaneously. The logic is that, when agents form

⁶³ A caveat is that futures prices also rose so that the difference between futures and spot prices was stable. However, it could be that spot or futures prices, as opposed to the difference between them, contain more information about expectations; Saleuddin and Coffman, ‘Can inflation expectations be measured’.

⁶⁴ Hausman et al., ‘Recovery from the Great Depression’.

⁶⁵ *Ibid.*

⁶⁶ Howson, ‘The management of sterling’.

⁶⁷ Galí, ‘The state of New-Keynesian economics’.

⁶⁸ Capie and Webber, *A monetary history*.

⁶⁹ Leduc et al., ‘Self-fulfilling expectations’.

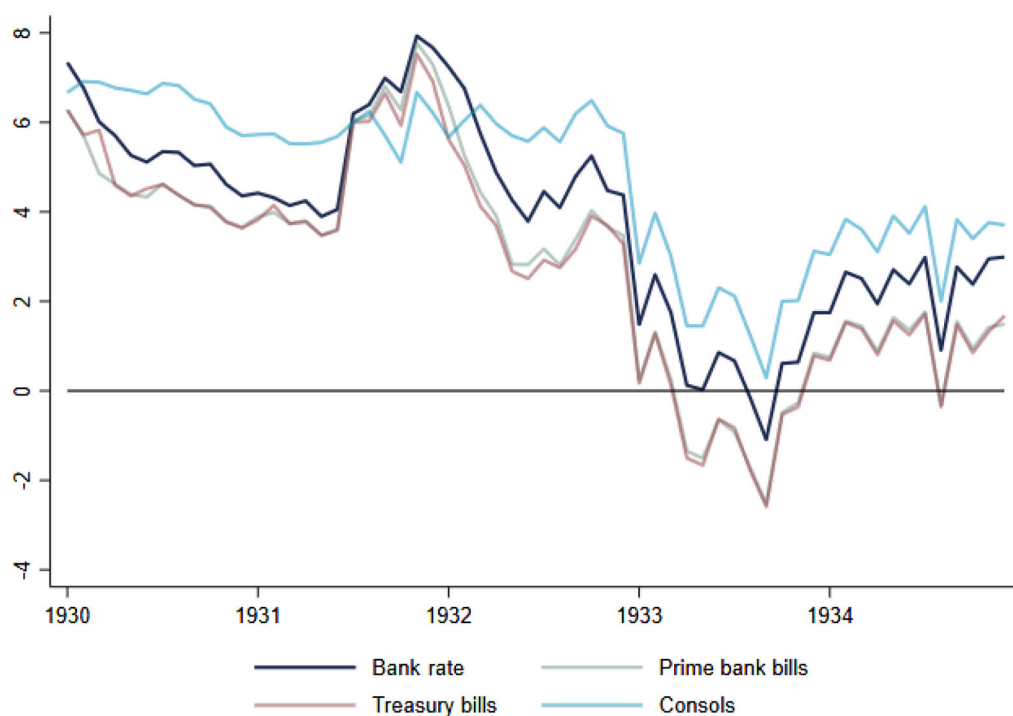


FIGURE 7 Ex-ante real interest rates, 1930–4 (%). *Notes:* This figure shows monthly real interest rates. *Sources:* Capie and Webber, ‘A monetary history’, an aggregate measure of inflation expectations, and the Fisher equation [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 5 Data sources

Variable	Source	Description
Inflation expectations	See section III	Per cent
Retail price inflation	Capie and Collins, ‘The inter-war British economy’	Calculated as the 12-month change in the retail price index; per cent
Real GDP at factor cost	Mitchell et al., ‘Monthly GDP estimates’	Seasonally adjusted at source; £ millions; 1938 prices
Treasury bill yield	Capie and Webber, ‘A monetary history’	Month end; per cent

Notes: This table details the data used in the baseline VAR model.

Source: Author’s creation.

expectations at time t , they do not know the outcome of the other variables for t . To maximize the plausibility of this assumption, we use monthly data.

The results are presented in figure 8. Panel A shows that, in response to a one-percentage-point increase in inflation expectations, retail price inflation rises by up to 0.87 percentage points ($t = 2.63$) after seven months. Thereafter, inflation declines and is not statistically different from zero after 12 months. The positive response of inflation to changes in inflation expectations is consistent with the New Keynesian Phillips curve.

Panel B shows that, following a one percentage point increase in inflation expectations, real GDP rises by a maximum of 1.13 per cent ($t = 2.62$) after 12 months. The effect subsides thereafter

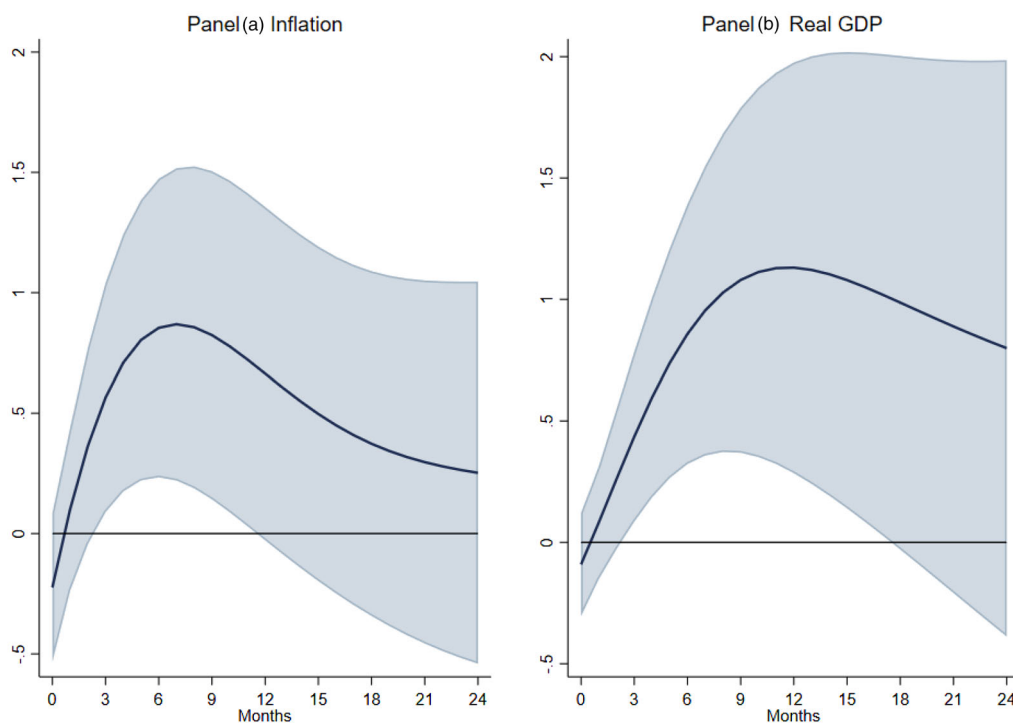


FIGURE 8 The response of inflation and real GDP to inflation expectations (%). *Notes:* This figure shows the response of inflation and real GDP to a one percentage point change in inflation expectations. The sample period is January 1930 to December 1934. The shaded area spans the 95% confidence interval. *Sources:* A VAR model and data listed in table 5 [Colour figure can be viewed at wileyonlinelibrary.com]

and is not distinguishable from zero after 18 months. That inflation expectations are positively associated with economic activity is consistent with the dynamic IS equation.

In terms of robustness, online appendix figures H1 and H2 show that these findings are not sensitive to including three lags (in line with the minimization of Akaike's information criterion), reversing the ordering so that inflation expectations are affected by, but do not affect, the other variables contemporaneously, including various measures of fiscal policy – log government expenditure, revenue, and debt – and using alternative measures of output – real GDP at market prices and an economic activity index.⁷⁰

As a robustness exercise, we also substitute the aggregate measure of inflation expectations for the disaggregated series. As a result, we run three more VAR models, rotating in either commodity prices, quantitative news, or the term premium as the measure of inflation expectations. Online appendix figure H3 reports the impulse response functions. The weakest effects are associated with commodity prices. While inflation and output rise, the response is not statistically significant from zero. The strongest effects are associated with quantitative news, which slightly exceeds the baseline estimates. In the middle, but much closer to quantitative news than commodity prices, is the term premium, which is marginally below the baseline response.

⁷⁰ Lennard, 'Uncertainty and the Great Slump'; Mitchell et al., 'Monthly GDP estimates'; Albers, 'The prelude and global impact of the Great Depression'.

**TABLE 6** Granger causality

	<i>p</i>-values in parentheses
Do inflation expectations Granger-cause inflation?	Yes (0.00)
Does inflation Granger-cause inflation expectations?	No (0.28)
Do inflation expectations Granger-cause real GDP?	Yes (0.00)
Does real GDP Granger-cause inflation expectations?	No (0.64)

Notes: This table shows the *p*-values for the null hypothesis that all coefficients are equal to zero. The sample period is January 1930 to December 1934.

Sources: A VAR model and data listed in table 5.

The results suggest a robust link between inflation expectations and economic activity. An interesting extension would be to investigate the transmission mechanism. According to the New Keynesian model, the first step in the chain is higher inflation expectations feeding into lower ex-ante real interest rates. The intermediate step is lower real rates stimulating consumption and investment. Unfortunately, high-frequency information on the components of GDP are not available for the interwar period, preventing us from exploring whether it was consumption or investment that was most sensitive to changes in ex-ante real interest rates. The final step is simply an accounting exercise, where higher consumption and investment raise GDP one for one.

A valid concern is the endogenous formation of expectations. Do expectations affect economic outcomes, or do economic outcomes affect expectations? In the narrow sense of Granger causality, it seems that expectations affect, but are not affected by, economic outcomes. As table 6 shows, inflation expectations Granger-cause inflation ($p < 0.01$) and real GDP ($p < 0.01$). However, inflation ($p = 0.28$) and real GDP ($p = 0.64$) do not Granger-cause inflation expectations. The Granger causality results are informative about lag exogeneity if not contemporaneous exogeneity, whereas the robustness test with the alternative ordering is informative about the importance of the contemporaneous correlation. Together, these exercises should help to alleviate concerns about endogeneity.

What accounted for the recovery from the Great Depression in the United Kingdom? This question can be answered with a historical decomposition based on the estimated VAR model. Figure 9 plots the contribution of each variable in the model to real GDP growth. The model suggests that deflationary expectations were a persistent drag on growth until November 1931 and a regular impediment thereafter. It was not until April 1933 that inflation expectations were a sustained stimulus to economic activity. From that point until the pre-recession peak was surpassed in January 1934, real GDP increased by 5.6 per cent, of which inflation expectations accounted for 69 per cent. Measured from the trough of the depression in September 1932 to January 1934, real GDP increased by 8.9 per cent, of which inflation expectations accounted for 35 per cent. These results imply an active expectations channel in ending the slump of the early 1930s. Although the impact of expectations on recovery can be identified in parts of 1932, what stands out is the volatility of the effect in this early phase – a result that is consistent with the idea that the early devaluation in the United Kingdom was unable to generate a one-off persistent shift in expectations. Only in 1933 do we observe a significant expectations effect that plays a central role in giving momentum to the early stages of UK economic recovery.

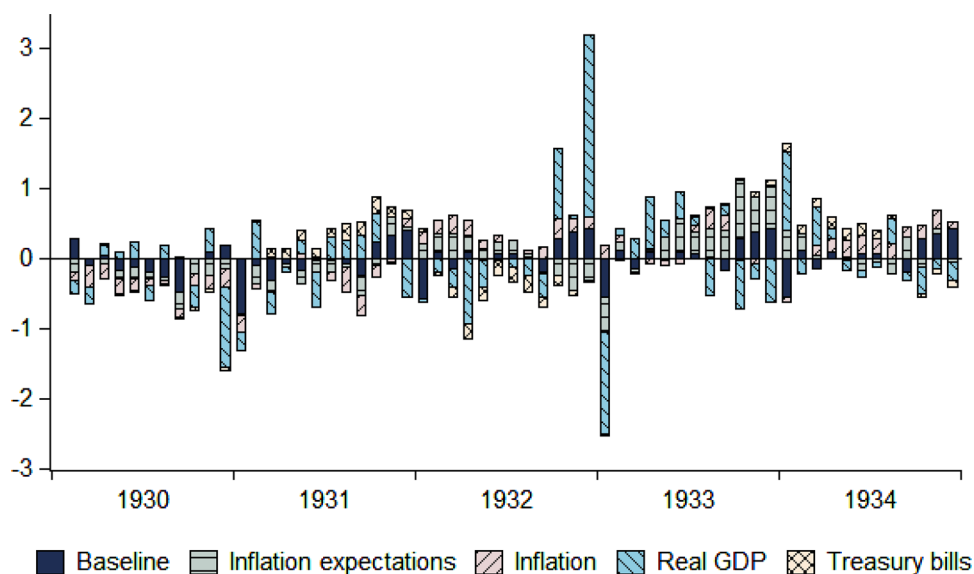


FIGURE 9 A historical decomposition of real GDP growth (%). *Notes:* This figure shows a historical decomposition of real GDP growth. The sample period is March 1930 to December 1934. *Sources:* A VAR model and data listed in table 5 [Colour figure can be viewed at wileyonlinelibrary.com]

IV | QUALITATIVE EVIDENCE

Given the challenge of reconstructing an unobserved economic statistic such as inflation expectations, narrative evidence is a readily available and valuable complement. The most useful sources have been contemporary newspapers and parliamentary debates and reports. We have ordered this section chronologically so that we can trace how expectations evolved over time.

The account begins in the midst of the depression with the appointment of a committee by the Chancellor of the Exchequer, which included Lord Macmillan (as Chairman) and John Maynard Keynes, to recommend how to stimulate trade, commerce, and employment. As far as we have been able to tell, the ‘Macmillan Report’, published on 13 July 1931, was the first quasi-official declaration to raise prices: ‘A large rise towards the price level of 1928 is greatly to be desired ... We recommend that this objective be accepted as the guiding aim of the monetary policy of this country. The acceptance of such an objective will represent in itself a great and notable change.’⁷¹

Yet this recommendation did not become policy for some time. Following the suspension of the gold standard on 21 September 1931, the Board of Trade agreed with the Grocers’ Federation of the United Kingdom to ‘cooperate with the Government in every possible way to keep prices at the present level’ and with the Liverpool Provision Trade Association to ‘cooperate as fully as possible with the Government in the present situation regarding the maintenance of prices and the prevention of undue inflation of prices’.⁷² Thus, the government was publicly colluding with industry not to push prices up but to keep them down.

⁷¹ *Committee on Finance & Industry Report*, pp. 116–7.

⁷² *The Times*, 23 Sept. 1931, p. 6.



The fear of inflation was maintained into 1932. The *Daily Telegraph* wrote that ‘the currency is sound, the possibility of inflation no longer exists, internal prices are either stable or falling. The whole economic edifice is being adjusted to new conditions and long before the other great countries are over their impending difficulties we shall have put our house in order’.⁷³ *The Times* reported that ‘even now we witness in the House of Commons and elsewhere repeated statements that it is a matter for congratulation that our internal prices are not rising’.⁷⁴

In the budget of 1932, however, the Chancellor embraced the recommendations of the Macmillan Report:⁷⁵

The Government do desire to see a rise in wholesale prices in this country and, although not to the same extent, a rise in retail prices, because it is clear that, if industries in this country, by a rise in wholesale prices, can once more make profits, then we are getting back to the condition which we all desire to see when confidence will be restored, when business will be ready to take advantage of cheap and abundant money, and when we may expect to see our businesses expand and employment once more increase.

While this was Chamberlain’s clearest commitment to return ‘towards the price level of 1928’, it was not unambiguous.⁷⁶ By aiming for a rise in wholesale prices (producer prices) greater than the rise in retail prices (consumer prices), the government was managing expectations to engineer a shift in relative prices, which is a challenging and nuanced message to communicate.

The commitment to raising prices was cemented at the British Empire Economic Conference of 1932 in Ottawa, which ran from 21 July to 20 August. The objective of ‘raising prices and stimulating trade’ was discussed from the opening of the conference.⁷⁷ It was reported that ‘a rise throughout the world in the general levels of wholesale prices is in the highest degree desirable. The evil of falling prices must be attacked by the Government and individual action in all its causes which are political, economic, financial or monetary’.⁷⁸ The target was to increase prices ‘to a height more in keeping with the level of costs, including the burden of debts and other fixed and semi-fixed charges’.⁷⁹

The need to end deflation and depression was reiterated over the coming years, which suggests that economic policy was struggling to turn the tide, at least to the extent that Roosevelt would later achieve in his first 100 days.⁸⁰ For example, *The Times* suggested that ‘the recession in business has gone farther than ever before. Positive measures of assistance may now be needed, in addition to the removal of obstacles, to secure recovery from depression of unprecedented depth. The outstanding positive measure which claims our attention is reflation’.⁸¹ *The Guardian* wrote that ‘it is evident that all the other troubles are either caused or aggravated by the disastrous fall

⁷³ *Daily Telegraph*, 10 Feb. 1932, p. 5.

⁷⁴ *The Times*, 11 Apr. 1932, p. 19.

⁷⁵ Hansard (Commons), 5th ser., CCLXV, 9 May 1932, col. 1671.

⁷⁶ *Ibid.*, col. 1674.

⁷⁷ *The Times*, 22 July 1932, p. 14.

⁷⁸ *Financial Times*, 13 Aug. 1932, p. 5.

⁷⁹ *Ibid.*

⁸⁰ Eggertsson, ‘Great expectations’.

⁸¹ *The Times*, 4 Nov. 1932, p. 15.



of the price level'.⁸² Chamberlain stated to the House of Commons in February 1933 that 'we have got to raise wholesale prices'.⁸³

While domestic economic policy was targeted at reflation, it was perceived that there were some international obstacles in the way. One fear was that if British prices rose in isolation, then exports would suffer further: 'If all we do is to raise our own internal prices, then we will lose still more of the little export trade we have so far managed to keep ... Unless reflation can be carried through upon an international scale it must be more limited'.⁸⁴ The task of international coordination was on the agenda of the World Economic Conference in London in the summer of 1933. Although the conference ended in an impasse, there were commitments to 'price boosting' from a number of countries, including Australia, the United Kingdom, and the United States.⁸⁵

By the spring of 1934, it was clear that recovery was well underway. Announcing the budget, Chamberlain reported.⁸⁶

In 1932 many dark clouds still hung round the horizon. In 1933, although the outlook was distinctly brighter, there was no settled feeling that we were about to enjoy a spell of fine weather. To-day the atmosphere is distinctly brighter. The events of the last 12 months have shown gratifying evidence that the efforts of His Majesty's Government are bearing fruit. There is a small but distinct rise in wholesale prices ... The volume of our industrial production has very much gone up and equilibrium has practically been restored in the balance of payments. If you look to what I might call the tell-tale statistics, the unemployment figures and statistics of such things as retail trade, consumption of electricity, transport, iron and steel production and house building, in every case you see a definite revival of activity ... If I might borrow an illustration from the titles of two well-known works of fiction, I would say that we have now finished the story of *Bleak House* and that we are sitting down this afternoon to enjoy the first chapter of *Great Expectations*.

The Economist summarized the recovery in Britain and beyond.⁸⁷

The experience of the last two years shows conclusively that recovery in the emancipated countries has been only partially a recovery of exports, and far more a general internal recovery. Great Britain, the United States, Scandinavia and South Africa are obvious examples ... But the fundamental fact remains that the emancipated countries have succeeded in raising their price levels toward adjustment with their cost levels, while the gold countries have not. This is perhaps the major fact of the economic history of the last two years ... In almost every case money has been cheapened, credit expanded, conversions undertaken, foreign exchange control relaxed, and anxiety about the trade balance and the Budget generally relieved. But these are exactly the measures most calculated to raise prices and reduce costs and so promote

⁸² *Guardian*, 7 Feb. 1933, p. 9.

⁸³ Hansard (Commons), 5th ser., CCLXXIV, 16 Feb. 1933, col. 1227.

⁸⁴ *Financial Times*, 3 Apr. 1933, p. 7.

⁸⁵ *Economist*, 24 June 1933, p. 1341.

⁸⁶ Hansard (Commons), 5th ser., CCLXXXVIII3, 17 Apr. 1934, col. 906.

⁸⁷ *Economist*, 23 June 1934, pp. 1360–1.



revival; for revival has come through lower interest charges as well as higher prices in the emancipated countries.

How did inflation, actual and expected, stimulate recovery? The media coverage discussed a number of mechanisms. *The Times* elaborated on a textbook channel, that inflation or reflation is 'proof to producers that they will not produce in vain and to consumers that they had better buy quickly while prices are low', which might stimulate aggregate demand and aggregate supply.⁸⁸ Sir Arthur Salter, in a radio broadcast, echoed Irving Fisher's theory of debt deflation:⁸⁹

If a 'world policy of controlled reflation' could be achieved, whether by this or an alternative method, every problem with which they were faced would be lightened. Enterprise would be as much stimulated, as it had been depressed by deflation; the burden of debts would be lightened: the dangers of wholesale bankruptcy - and default which were threatening the whole credit system would be lightened.

J. A. Hobson thought that raising prices would have wide-ranging benefits:⁹⁰

If prices could be put upon a fairly stable basis of the pre-depression period idle plant and labour could everywhere be employed with profit to employers, surplus savings would everywhere flow into new productive enterprises, credit (alike long and short) would be put to secure and profitable uses both for domestic and international trade, every burden of fixed interest indebtedness would be lightened, and confidence would be established in all business and financial quarters.

While the narrative evidence suggests that recovery was achieved sometime between the World Economic Conference in the summer of 1933 and the budget in spring 1934, it does not necessarily imply a causal role to inflation expectations, which may have been affected by, but did not affect, the return to growth. This issue of endogeneity was pointed out by Lionel Robbins: 'when the conditions of profitability and confidence were restored, some measure of price recovery was almost inevitable.'⁹¹

V | CONCLUSIONS

The case study of the United Kingdom provides a better understanding of how policy regime change was generated in the 1930s. The countries exiting the gold standard early, such as the United Kingdom, found it difficult to break from the existing policy framework of the gold standard. Although the devaluation created the possibility of greater policy freedoms, these were not initially taken up. In fact, the opposite seems to have been the case, as in the summer of 1931, the balanced budget was used to confirm that price stability was a key objective of the government and monetary policy remained tight. However, by mid-1932 the government was beginning

⁸⁸ *The Times*, 29 Nov. 1932, p. 15.

⁸⁹ Fisher, 'The debt-deflation theory'; *The Times*, 10 Jan. 1933, p. 6.

⁹⁰ *Guardian*, 7 Feb. 1933, p. 9.

⁹¹ *Guardian*, 19 Nov. 1933, p. 25.



to accept that some temporary inflation was needed. By pursuing an informal price level target, this was seen as one-off stabilizing inflation that could contribute to raising firm profitability and investment, with positive effects on economic recovery.

The evidence suggests that the effects of the 1931 devaluation on inflationary expectations were short-lived. During 1931 and the first half of 1932, the devaluation, the expansionary monetary policy, and the General Tariff were not effective at ending the cycle of depression. By May 1932 the Chancellor tried hard to convince the public of a consistent policy framework to raise inflationary expectations by targeting a pre-Depression price level with a view to aiding economic recovery. Combined with the balanced budget, the aim of returning to the pre-Depression price level created expectations of a brief period of inflation, allaying fears of runaway hyperinflation. The evidence suggests that, by early 1933, inflationary expectations were shifting in the right direction. The policies pursued were already correlated with an economic recovery that started in the summer of 1932. The time profile of economic recovery made the attempt to create a temporary rise in inflation expectations to achieve the pre-Depression price level easier for the government. Edwards notes that by 1933 Roosevelt himself was convinced that the British devaluation had helped Britain recover from the Great Depression, influencing him in pushing for the devaluation of the dollar.⁹²

Given the time profile of the shifting expectations, this allowed both national and international forces to play a role. In documenting the path of UK inflationary expectations, we have identified significant co-movement with expectations in the United States, which suggests that inflation expectations are determined by national and global forces. A two-way relationship can be identified in that the United Kingdom and the United States agreed on the need to return to a pre-Depression price level. As the network of major countries pursuing this common goal expanded, the path became more credible.

The impact of inflation expectations was important in the initial stages of the economic recovery. Given the Bank of England did not reduce Bank rate below two per cent, a shift in inflationary expectations in 1933 proved critical to bringing down real interest rates, which had a beneficial short-term effect at a critical stage in the recovery from the Great Depression.

The differences in the path of inflation expectations between countries devaluing early and late in the 1930s provides interesting information on how policy regime change was generated. There is now unambiguous evidence that late devaluers were able to benefit from a more rapid shift in inflationary expectations than was the case for the early devaluers. The different experiences of early and late devaluers suggests that the late devaluers were able to benefit from observing the policy experiments emerging from 1931 in a global learning process. As noted above, Roosevelt was influenced by the British experience when deciding on the devaluation of the dollar. The reciprocal of this is that the early devaluers may have also seen a positive effect from Roosevelt's policy framework in 1933. This two-way relationship arising from global learning is important to understanding how the uncoordinated national policy responses of the 1930s impacted on inflation expectations and economic recovery. The significant covariation in inflationary expectation measures for the United Kingdom and the United States in the 1930s points in this direction and should provide a rich area for future research.

Comparing our results to the existing literature, we observe some similarities and differences that are noteworthy. Crafts suggested that the sequence of policies in 1931 and 1932 was able to shift inflationary expectations in the United Kingdom.⁹³ The qualitative evidence we have considered

⁹² Edwards, 'Monetary policy'.

⁹³ Crafts, 'Returning to growth'; *idem*, 'What does the 1930s' experience tell us'; *idem*, *Forging ahead*.



confirms that the start of this process is clear in 1932 but the quantitative evidence suggests that the most significant inflationary expectation changes took place in early 1933. The fact that UK expectations moved before Roosevelt's policy regime change indicates that the time spent in 1932 to generate a one-off shift in inflation expectations was bearing fruit. However, the persistence of this effect throughout 1933 suggests that, as the number of countries exiting the old policy regime of the gold exchange standard increased, this is likely to have impacted favourably on UK inflation expectations.

The evidence we have presented is also in line with the results of Ellison et al., who find that the early devaluers did not witness a shift in inflationary expectations.⁹⁴ Our evidence is consistent with this for the UK case, but clearly the United Kingdom was able to shift inflationary expectations over time. Ellison et al. report two measures of inflation expectations, the term structure of interest rates and a model-based measure. Our results complement their work by showing that a broad set of expectation measures agree with their term structure evidence, showing a clear effect from early 1933. However, our measure of inflation expectations differs from their model-based evidence, which suggests a structural break in inflation expectations in October 1933.

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