

The UK recession in context — what do three centuries of data tell us?

By Sally Hills and Ryland Thomas of the Bank's Monetary Assessment and Strategy Division and Nicholas Dimsdale of The Queen's College, Oxford.⁽¹⁾

The *Quarterly Bulletin* has a long tradition of using historical data to help analyse the latest developments in the UK economy. To mark the *Bulletin's* 50th anniversary, this article places the recent UK recession in a long-run historical context. It draws on the extensive literature on UK economic history and analyses a wide range of macroeconomic and financial data going back to the 18th century. The UK economy has undergone major structural change over this period but such historical comparisons can provide lessons for the current economic situation.

Introduction

The UK economy recently suffered its deepest recession since the 1930s. The recent recession had several defining characteristics: it took place simultaneously with a global recession; the financial sector was both the source and propagator of the crisis; the exchange rate depreciated sharply; and there was a substantial loosening of monetary policy alongside a marked increase in the fiscal deficit. But despite UK output falling by more than 6% between 2008 Q1 and 2009 Q3, CPI inflation remains above the Government's 2% inflation target.

To mark the 50th anniversary of the *Quarterly Bulletin*, this article places these recent events in a long-run historical context. It looks at an extensive range of macroeconomic and financial data reaching back as far as the early 18th century. It uses these data to draw out some of the key features of historical recessions and recoveries, drawing on the extensive literature on the United Kingdom's economic history.⁽²⁾ This collection of data is provided as an annex to this article.⁽³⁾ Although the UK economy has undergone structural change over this period, the past may contain lessons for the current recovery.

The article is structured as follows. The first section provides a basic chronology of UK economic cycles. It looks at the comparative scale of the recent recession and examines how it fits into the general classification of UK business cycles in the historical literature. The second section considers some of the key drivers of UK business cycles, including the role of external factors, and monetary and fiscal policies. The final section considers the behaviour of nominal variables over the cycle.

An overview of UK business cycles

Over the past half century, enormous effort has gone into constructing historical national income data for the United Kingdom. First, annual GDP estimates were constructed back to the mid-19th century, based on output, income and expenditure approaches (Deane and Cole (1962), Deane (1968) and Feinstein (1972)). These were followed by 'balanced' estimates of GDP growth that attempted to reconcile these different approaches from 1870 onwards (Solomou and Weale (1991) and Sefton and Weale (1995)). More recently, annual GDP estimates have been constructed back to the 18th century using an output-based approach (Broadberry and van Leeuwen (2010)).⁽⁴⁾ And more frequent (monthly and quarterly) estimates of GDP have been constructed for the inter-war years (Mitchell *et al* (2009)). Although there is inevitable uncertainty around historical national accounts data,⁽⁵⁾ collectively these estimates allow a rich historical analysis of UK economic cycles.

This section constructs a simple chronology of business cycles in the United Kingdom, drawing out some general characteristics that allow comparisons to be made with the recent recession.

Taking the data at face value, the volatility of economic growth appears to have changed considerably over time. During the 18th and early 19th centuries, for example, GDP growth

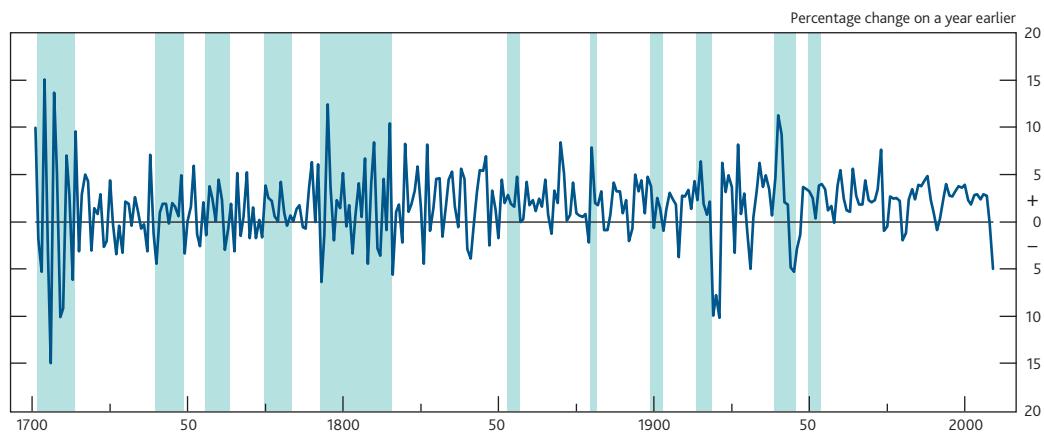
(1) The authors would like to thank Lisa Gupta, Chris Hare, Natalie Hills, Priya Mistry and Amar Radia for their help in producing this article.

(2) For further, more detailed discussion of historical economic cycles, see Dimsdale (1990), Solomou (1994) and Dow (1998).

(3) See www.bankofengland.co.uk/publications/quarterlybulletin/threecenturiesofdata.xls.

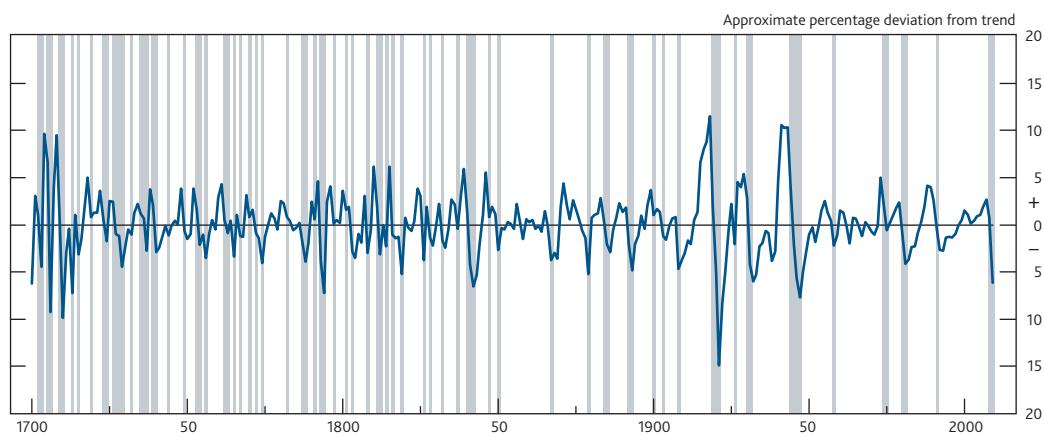
(4) We are very grateful to Steve Broadberry and Bas van Leeuwen for permission to use the provisional results from their work.

(5) See Solomou and Weale (1991), Solomou (1994) and Solomou and Ristuccia (2002).

Chart 1 Annual UK GDP and major war periods^(a)

Sources: Broadberry and van Leeuwen (2010), Mitchell (1988), Sefton and Weale (1995), Solomou and Weale (1991) and ONS.

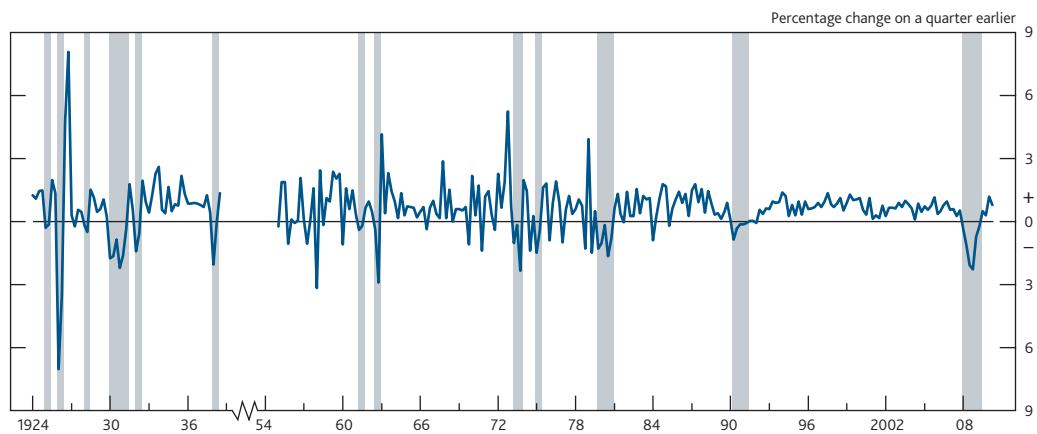
(a) Factor cost measure. See the appendix for details of how these series are combined. Major war periods are shaded in blue.

Chart 2 UK GDP relative to a statistical trend^(a) and annual recessions^(b)

Sources: As in Chart 1.

(a) A Hodrick-Prescott filter with a lambda parameter of 100 was used to detrend GDP at factor cost.

(b) Annual recessions are defined as one or more years of negative calendar-year growth in GDP and are shaded in grey.

Chart 3 UK GDP and recessions^(a) — quarterly data

Sources: Mitchell et al (2009) and ONS. No quarterly GDP data available for 1939 Q1–1954 Q4.

(a) Factor cost measure. Recession periods are shaded in grey and defined as two or more consecutive periods of negative quarterly growth in GDP at factor cost.

appears to have been relatively volatile (**Chart 1**).⁽¹⁾ Using a simple statistical trend, the gaps between major peaks and troughs were relatively short, at between two and three years implying a total cycle of around five years (**Chart 2** and **Table A**).⁽²⁾ While measurement error is undoubtedly more of a problem for this period, Broadberry and van Leeuwen (2010) note the timing of these cycles appears to coincide broadly with those identified by earlier authors using more disaggregated data and other indicators.

Table A Summary of UK GDP cycles^(a)

Period	Annual GDP growth		Average length of cycle (years)		
	Averages	Standard deviation	Downturn	Upturn	Total
1701–1831	1.09	4.32	2.50	2.56	5.06
1831–71	2.21	2.79	2.60	5.40	8.00
1871–1913	1.76	2.24	4.20	4.20	8.40
1921–38	2.56	3.42	2.00	6.50	8.50
1952–92	2.37	2.00	2.71	3.00	5.71
1992–2007	2.93	0.65			

(a) Date ranges chosen represent either peak-to-peak points or trough-to-trough points, apart from 1992–2007 which is treated as a single upswing period. Downturns (upturns) are defined as peak-to-trough (trough-to-peak) periods based largely on the detrended output data in **Chart 2** but also informed by growth rates in **Chart 1**. So downturns will include periods of below-trend growth as well as actual recessions.

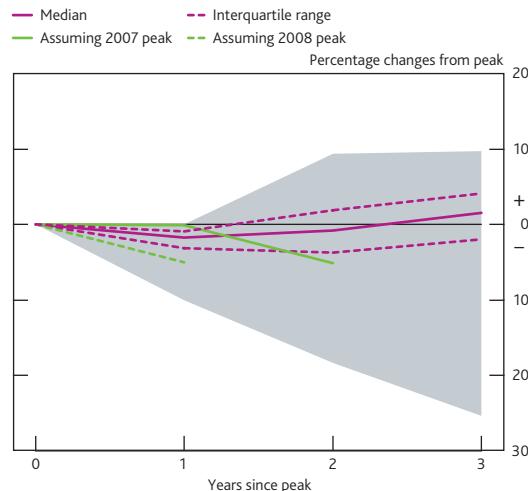
During the mid-to-late 19th century, the average growth rate of the economy picked up and there was less volatility in output (**Table A**). As a result, recessions were rarer and the business cycle lengthened to around eight years.⁽³⁾ But volatility returned in the 20th century, during which there were several major recessions. Business cycles after World War II were typically shorter than those during the 19th century (Matthews *et al* (1982) and Dimsdale (1990)). But the post-World War II period also contained prolonged periods of positive and relatively stable (annual) growth, such as in the late 1950s/early 1960s, and between the early 1990s and the onset of the recent financial crisis.

The scale of decline in output in the recent recession was large but not unprecedented when viewed in a simple historical context. It lies within the broad swathe of past recessions since 1700 (**Chart 4**). And, based on quarterly data (**Charts 3** and **5**), its profile is not dissimilar to certain other post-World War I recessions.

The drivers of UK cycles

This section draws on the economic history literature to examine the key drivers of past economic cycles, linking them to developments in the world economy, domestic fiscal and monetary policy, and past financial crises. The data are split into three periods: 1700–1830; 1830–1913; and 1913–2007. These dates are in part chosen according to the availability of data, but they also correspond approximately to distinct phases in the United Kingdom's economic history.

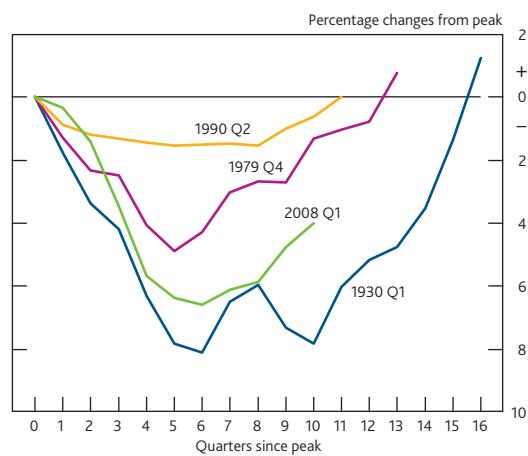
Chart 4 A swathe^(a) of recessions since 1700



Sources: As in **Chart 1**.

(a) The swathe shows the range of percentage falls in the level of GDP from previous cyclical peaks. The chart shows the recent recession using both 2007 and 2008 as the peak year. The recession lasted from 2008 Q2–2009 Q3 but the fall in annual average GDP in 2008 was only 0.1%.

Chart 5 GDP behaviour during major 20th century recessions^(a)



Sources: As in **Chart 3**.

(a) The dates shown mark the peak in output. As discussed in the box on page 48 of the November 2010 *Inflation Report*, the chart defines the pre-recession peak as 1979 Q4 for the early 1980s recession. But the level of output was higher in 1979 Q2, and using that definition the fall in output looks more similar to the recent recession.

The industrialising economy 1700–1830

While data for the 18th and early 19th centuries are inevitably uncertain, there are a number of candidate explanations for relatively volatile economic growth (Gayer *et al* (1953), Ashton (1959), Deane (1965) and Hoppit (1986)).

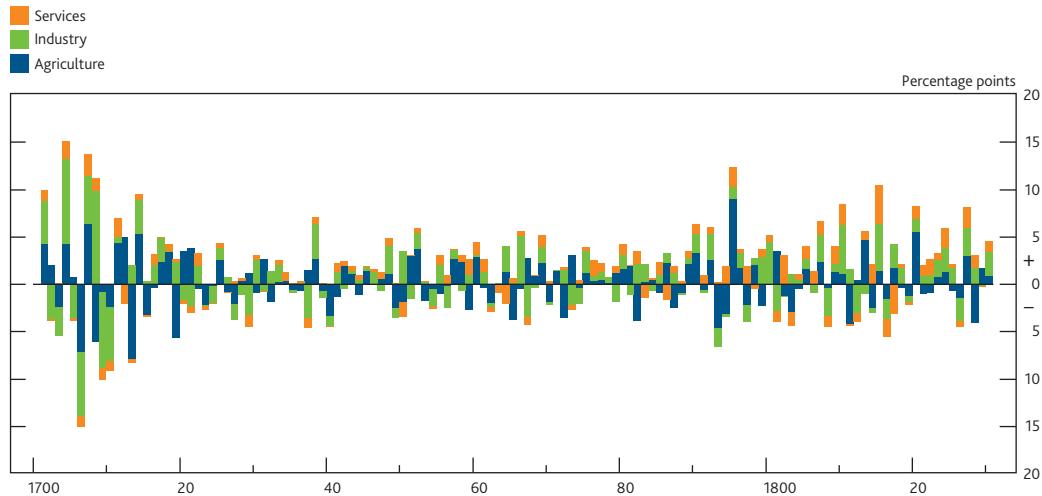
The first of these is the impact of poor harvests. Agricultural output was a large contributor to the swings in output over

(1) Further information on how these composite measures are constructed can be found in the appendix.

(2) The simple statistical trend used is a Hodrick-Prescott filter with a smoothing parameter ('lambda') of 100. Although this filter suffers from well-known 'end point' problems it should still provide a reasonable basis for determining peaks and troughs in the economic cycle. It is unlikely, however, to pick up high-frequency fluctuations in potential supply, so the detrended GDP series in **Chart 2** should not be interpreted as an indicator of inflationary pressure, as is discussed later in this article.

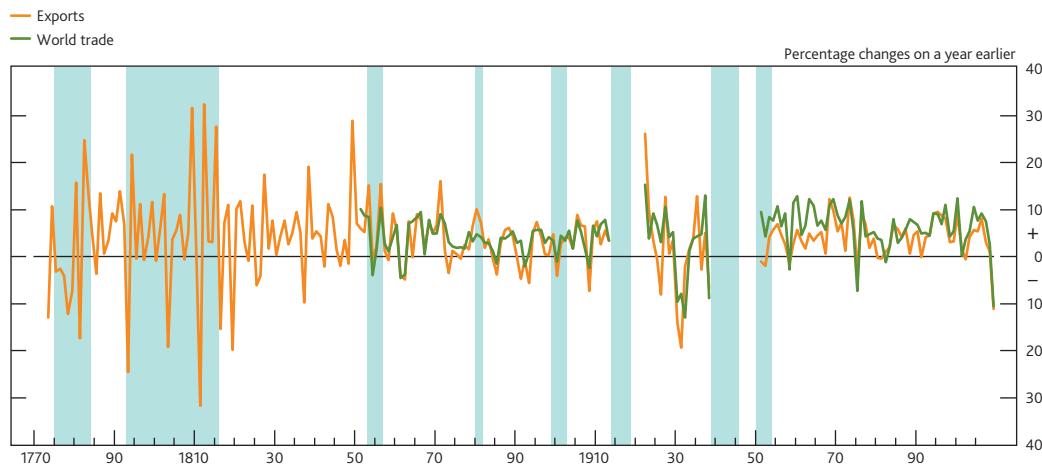
(3) Some of the cycles apparent in the late 19th century may be artefacts of the way in which some of the data were constructed (Solomou (1994)).

Chart 6 Contributions to output growth 1701–1830



Source: Broadberry and van Leeuwen (2010).

Chart 7 Exports and world trade^(a)



Sources: Cuenca Esteban (1997), Domit and Shakir (2010), Feinstein (1972), Lewis (1981), Mitchell (1988), ONS and United Nations.

(a) Both 1914–21 and the period 1939–50 are excluded due to a lack of data availability. Major war periods are shaded in blue.

Chart 8 National debt^(a) to GDP ratio and long-term government bond yields^(b)



Sources: See appendix for nominal GDP; Janssen *et al* (2002), Mitchell (1988), Bank of England and ONS for the national debt and long-term government bond yields. Major war periods are shaded in blue.

(a) Par or nominal values; calendar-year observations represent end financial year stocks (eg 1974 = 1974/75 end-year stock); from 1835/36 terminable annuities are included in the national debt; from 1974/75 public sector net debt is used. For market values, see Janssen *et al* (2002); these are included in the data annex.

(b) These include the corrections made by Harley (1976) for the 1879–1902 period.

this period (**Chart 6**), reflecting in part its 30% share of GDP.⁽¹⁾ And to the extent that agricultural products were used as an input into other production processes, this may have had a further knock-on effect to the industrial sector.

A second reason was that Britain was at war for almost half of this period. The disruption to trade that accompanied these wars frequently led to weaker exports and economic downturns. But wars could also trigger cyclical upturns (Deane (1965)); concerns about potential disruptions to trade could lead to a near-term boost in activity, perhaps explaining the pickup in exports in 1774/75 and 1791/92 (**Chart 7**). And exports of munitions and other war materials also increased in some conflicts.

A third reason for the volatility of growth was the domestic investment cycle. Spending on the investment projects of the time — such as road (turnpike) and canal building — often fluctuated in response to waves of optimism (for example the canal ‘mania’ in the mid-1790s) as the industrialising economy of Britain developed (Feinstein and Pollard (1988)).

In addition, there were a number of financial crises during this period (Ashton (1959) and Hoppit (1986)). In part, these were crises of public finance that had little impact on the private sector and growth more generally, especially in the early to mid-part of the 18th century. These crises mainly reflected fluctuations in the fortunes of war. Public debt rose throughout the 18th century, reaching over twice the level of GDP just after the end of the Napoleonic Wars (**Chart 8**). This level was only surpassed at the end of World War II and is three times as high as the projected peak in the public sector debt ratio in the June 2010 *Budget*. Increases in the public debt ratio resulting from military spending were often associated with increased government bond yields (Barro (1987)) and public finance crises, such as those in 1745 and 1761.

During the second half of the period, financial crises increasingly began to involve the private sector more widely and often occurred at the peak of the economic cycle. This was arguably the natural outcome of the growing pains of a developing industrial economy. Upturns in economic growth, although well founded, often encouraged speculative business activity much of which was financed by a network of trade credit. This financial structure depended heavily on confidence, which often vanished when the economy reached a turning point and expectations of growth were not fulfilled (Hoppit (1986)). The worst crises involved both the public and private sectors. For example, in 1793, there was a sharp rise in government bond yields and a widespread collapse in trade credit, leading to a large increase in bankruptcies.

The Victorian economy 1830–1913

A more regular economic cycle in GDP emerged during the Victorian age. The average rate of growth rose to around

$1\frac{3}{4}\%-2\frac{1}{4}\%$ — double that in the 1700–1830 period — reflecting the growing pace of industrialisation and technological progress. There were few severe downturns and actual recessions were less frequent than in the 18th century.

The improved availability of disaggregated data for this period permits the analysis of individual expenditure components. The literature typically divides these into those that are largely thought to drive the cycle (**Chart 9**) and those that are largely thought to respond to the cycle (**Chart 10**). Drivers of the cycle include: fluctuations in investment and durable consumption spending that are the result of shifts in expectations and ‘animal spirits’; the impact of government purchases resulting from changes in fiscal policy; and movements in exports dependent on the world economy. Components that are thought to be largely responsive to the cycle include non-durable consumption, stockbuilding and imports. If ‘driver’ components have a second-round impact on the other components, they are likely to have a larger impact on growth than measured by their direct contributions to GDP.⁽²⁾

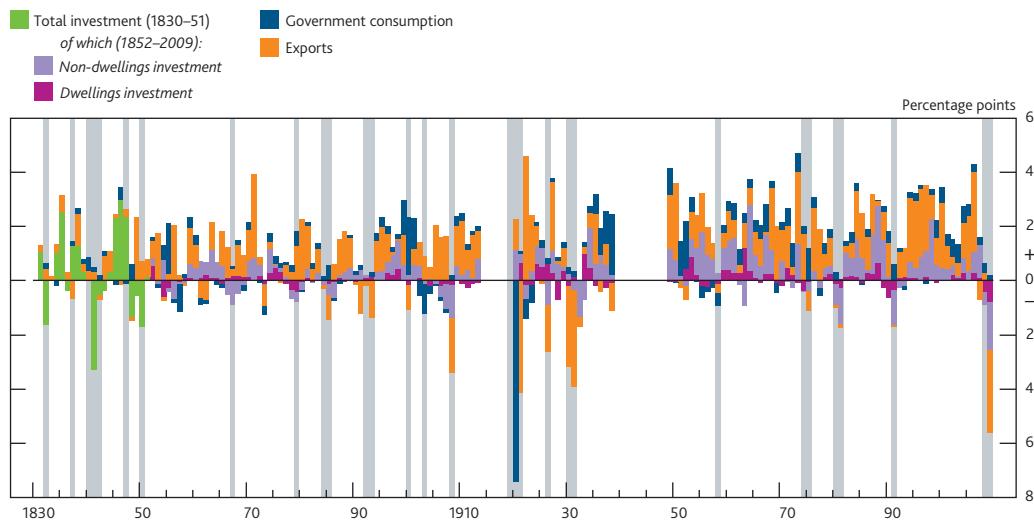
Investment was an important driver of demand growth in the Victorian age (**Chart 9**). The pattern of industrialisation during the 19th century was far from smooth and investment cycles were important. There were waves of railway building throughout the century, and domestic investment made a major contribution to growth in the 1830s and 1840s, largely reflecting railway building. Dwellings investment also contributed to growth in the mid-1870s and to the domestic boom from 1893–99.

Exports also played an important role during the second half of the 19th century (**Chart 9**). Between 1850 and 1875, Britain participated in a boom associated with gold discoveries and a move towards free trade. UK exports and world trade were closely correlated over this period (**Chart 7**). And the relative competitiveness of the UK economy had an increasingly important influence on the export cycle from 1870, as shown by the negative relationship between the real exchange rate and net trade (**Chart 11**).

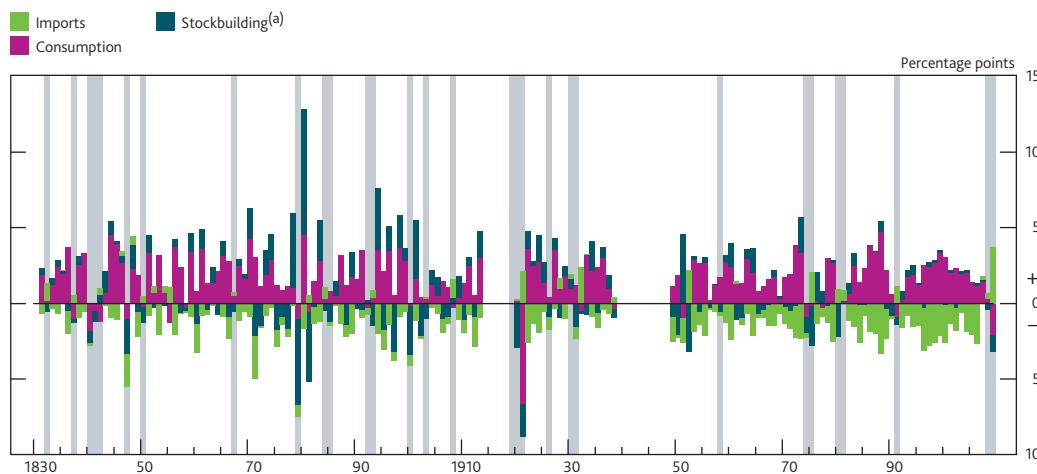
Shifts in consumption behaviour do not appear to have played a major role in economic cycles during this period (Matthews *et al* (1982)). On average, consumption generally tracked incomes, growing at a pace at, or a little below, GDP growth. Consumption was also generally less volatile than GDP growth. Declining fertility and the associated fall in the number of young people in the population did, however, contribute to a structural fall in the consumption-income ratio

(1) Solomou and Wu (2002) argue that the weather and agriculture may also have been important in driving cycles in the late 19th century, although its impact was less given its lower share in GDP.

(2) This split between driver and non-driver components is imperfect. There may be structural changes in savings behaviour, tax rates, inventory holdings and import penetration that might also lead to cyclical changes in output.

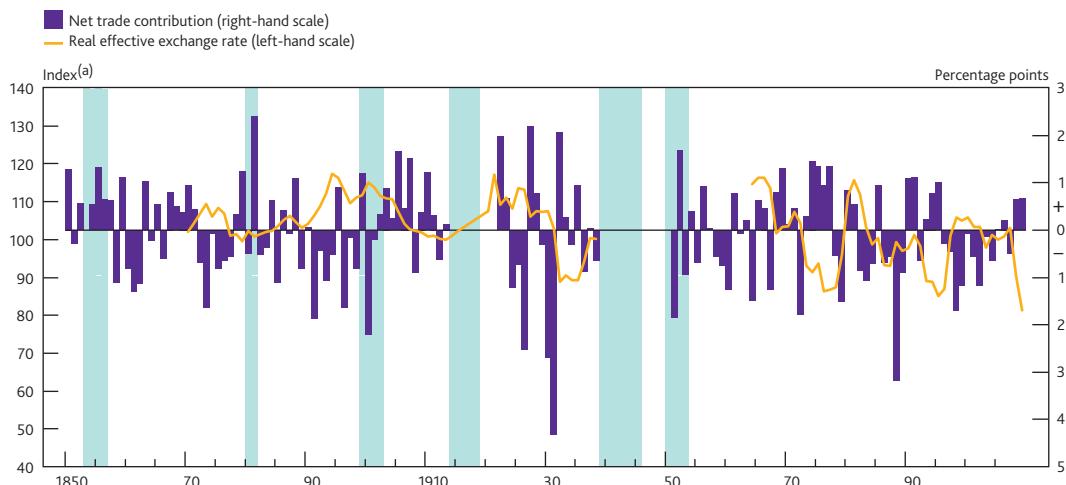
Chart 9 Contributions of 'driver' demand components to GDP growth

Sources: Feinstein (1972), Feinstein and Pollard (1988), Mitchell (1988), Sefton and Weale (1995) and ONS. The exports contribution represents trade in goods only prior to 1870. Data for World War I and 1939–48 are excluded. Annual recessions are shaded in grey.

Chart 10 Contributions of 'non-driver' demand components to GDP growth

Sources: Feinstein (1972), Mitchell (1988), Sefton and Weale (1995) and ONS. The imports contribution represents trade in goods only prior to 1870. Data for World War I and 1939–48 are excluded. Annual recessions are shaded in grey.

(a) Including acquisitions less disposals of valuables.

Chart 11 The net trade contribution to GDP growth and the real exchange rate

Sources: The sources of the net trade contribution data are the same as those in Charts 9 and 10, but between 1830 and 1913 the net trade data are based on later estimates by Feinstein and include services so they do not exactly match the difference between the export and import contributions in Charts 9 and 10. For the real exchange rate, Catão and Solomou (2005) for 1870–1913, Solomou and Vartis (2005) for 1913–30 (excluding Germany), Dimsdale (1981) for 1930–38 and BIS for 1964–2009. The data are linearly interpolated 1913–20. Net trade data for 1914–21 and 1939–50 are excluded. Major war periods are shaded in blue.

(a) Two indices for the real exchange rate are shown: one between 1870–1938 with 1913 = 100, and one between 1964–2009 with 2005 = 100.

in the latter part of the period (Dimsdale (2009)). This rise in the saving ratio contributed to the finance of large capital exports between 1870 and 1914.

Up to 1878, domestic financial crises continued to be a significant factor in downturns (Hicks (1982) and Dimsdale (1990)). In 1867, for example, output fell following the earlier failure of a leading financial institution, Overend and Gurney. A domestic financial crisis also checked the railway boom of the 1840s. And the failure of the City of Glasgow Bank in 1878 was an important factor in aggravating the downturn in that year (Collins (1988)).

After 1878, however, domestic financial crises appear to have played a less significant role, reflecting the increasing stability of the United Kingdom's monetary system. The UK business cycle became more closely aligned with external factors as international linkages became more important following the widespread adoption of the gold standard system of fixed exchange rates (**Chart 12**). Consequently, as during the recent recession, the UK economy was vulnerable to international financial crises, such as the 1907 US financial crisis.

Monetary policy in this period was largely concerned with maintaining adherence to the gold standard, at the heart of which was the Bank of England. After the Bank Charter Act of 1844, the Bank was given the exclusive right to issue notes, but these had to be backed by gold. Bank Rate would typically therefore rise in response to external deficits and flows of gold overseas. This would both attract gold back to the United Kingdom and encourage fewer notes to be held. For example, Bank Rate rose in the late 1830s and 1840s in order to protect reserves as poor harvests and higher overseas corn prices led to a deterioration in the balance of payments (**Chart 13**). But this further exacerbated the downturns during these periods.

Given the absence of major wars over this period, the fiscal position of the United Kingdom was considerably more stable. Throughout the mid-late 19th century, the United Kingdom ran a substantial primary surplus (**Chart 13**), thereby allowing it to service the considerable national debt commitments built up in the 18th and early 19th centuries and maintain a balanced budget overall.⁽¹⁾ Given the growth of national income, the positive primary surplus ensured the national debt to income ratio fell substantially in periods of peacetime (**Chart 8**).

The 20th century UK economy (1913–2007)

Output became more volatile for much of the 20th century and there were several periods of major recession. Fiscal and monetary policies were used more actively to try to stabilise the economy, especially in the post-World War II period. And the United Kingdom changed its monetary policy and

exchange rate regime a number of times, which played a major role in both downturns and recoveries.

The first half of the 20th century was dominated by the two World Wars, interspersed by the 'Great Depression' of the 1930s. In the immediate aftermath of World War I, monetary and fiscal policies were tightened sharply as the authorities attempted to control the initial inflationary effects of the post-war boom. Nominal short-term interest rates were raised sharply, reducing consumption, while exports declined as a result of weaker world activity. And there was a period of severe deflation during which real interest rates rose to unprecedented levels. Nominal rates rose to 5% during the early 1920s following the decision to return to gold at a high (and possibly overvalued) parity (**Charts 12 and 14**).

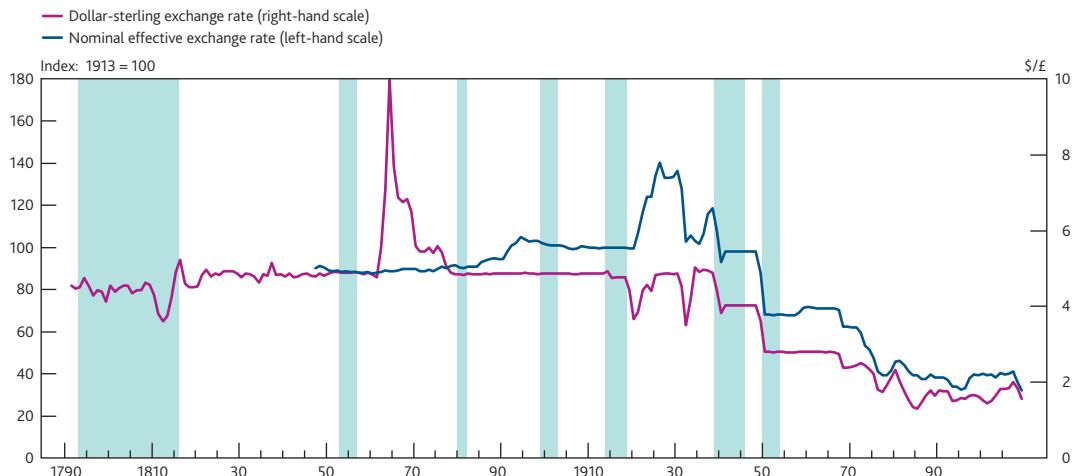
For the United Kingdom, the recession of the 1930s was large by historical standards, but the initial impact on GDP was smaller than that of 1920–21, and overall was considerably less than the output falls experienced in the United States and Germany. This is less true of the rise in unemployment, which was more comparable to the early 1920s and somewhat closer to overseas experience. While exports, and to some extent investment, collapsed in response to the global downturn, consumption was relatively stable (in contrast to 1920–21). That may have reflected a combination of higher real wage growth — as wage growth fell by less than price inflation — and automatic fiscal stabilisers helping to support real incomes (Broadberry (1986)).

Short-term interest rates remained relatively high in the initial stages of the Great Depression, largely as the result of having to maintain sterling's gold standard parity. While nominal rates did fall following similar cuts overseas, falling prices meant that real interest rates remained well above 5%. And nominal rates actually increased in 1931 as pressure on sterling mounted. Economic recovery only came early in 1932 following the suspension of the gold standard in the United Kingdom in late 1931. This made possible a reduction in interest rates in 1932 (after an initial increase to 6% designed to reassure financial markets) and a depreciation of the exchange rate of around 20% (**Chart 12**).

Despite sterling's depreciation, the recovery was driven mainly by domestic demand with both consumption and investment growing strongly, the latter reflected an initial boom in house building followed later by rising industrial investment and growing government spending on rearmament in the build-up to World War II (**Chart 9**). Net trade made a muted contribution, largely because the limited recovery of world trade and the impact of foreign protectionism offset the benefits from sterling's depreciation and the imposition of import tariffs (**Charts 7 and 11**).

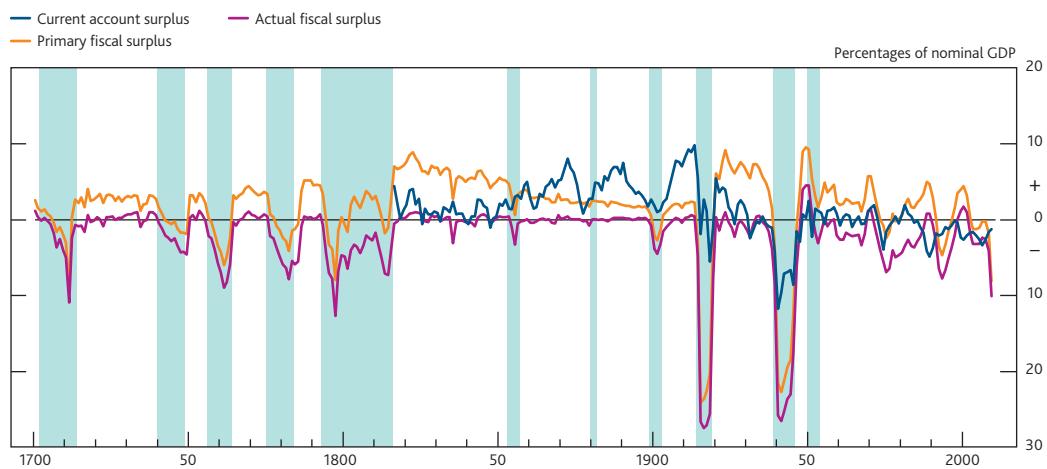
⁽¹⁾ The primary surplus refers to the fiscal surplus excluding interest payments on public sector debt.

Chart 12 Nominal exchange rates



Sources: \$/E, Officer (1996), Federal Reserve *Banking and Monetary Statistics* 1914–41 and 1941–70, and ONS; effective exchange rate, Collins (1986) for 1847–70, Catão and Solomou (2005) for 1870–1913, Solomou and Vartis (2005) for 1913–30 (excluding Germany), Dimsdale (1981) for 1930–38, IMF *International Financial Statistics* for 1957–75 and Bank of England 1975–2009. Effective exchange rate data linearly interpolated 1913–20 and interpolated using \$/E 1938–57. The \$/E exchange rate takes into account deviations from official parities during periods when paper currencies were not convertible into gold: 1797–1821 and 1914–25 for sterling and the 'Greenback' period between 1862–78 for the US dollar. Major war periods are shaded in blue.

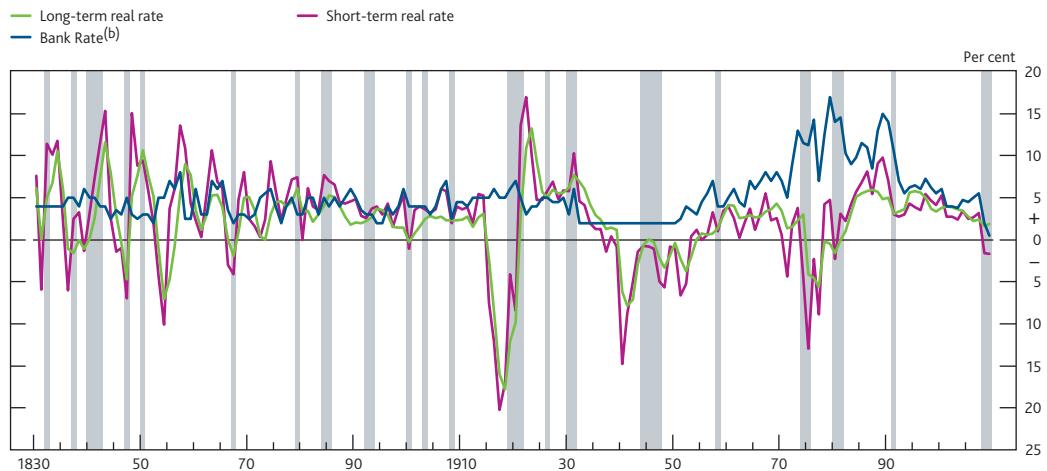
Chart 13 Fiscal^(a) and current account balances



Sources: Middleton (1996), Mitchell (1988), Sefton and Weale (1995) and ONS. Major war periods are shaded in blue.

(a) Exchequer (consolidated fund) surplus from 1700–1899; calendar-year observations represent financial-year totals; from 1900–2009, public sector net lending on a calendar-year basis.

Chart 14 Nominal and real interest rates^(a)



Sources: Janssen et al (2002), Mitchell (1988) and ONS. Annual recessions are shaded in grey.

(a) Real interest rates are defined according to Chadha and Dimsdale (1999). Short-term real interest rates are defined as Bank Rate minus the actual rate of inflation. Long-term real interest rates are defined as the consol yield minus a weighted three-year moving average of inflation.

(b) Bank Rate 1830–1972 and 2006–09, Minimum Lending Rate 1972–81, London clearing banks' base rate 1981–97, repo rate 1997–2006.

During the inter-war period there was increasing public debate about the use of fiscal policy to alleviate unemployment.⁽¹⁾ But, in general, discretionary movements in underlying fiscal policy contributed little to the economic cycle during the late 1920s and early to mid-1930s (Turner (1991) and Middleton (2010)). Rearmament spending, however, probably ensured the quarterly recession of 1938 was mild.

Between 1945 and 2007, the UK economy experienced an average rate of growth of about 2¾% per annum. Despite the well-documented instances of the 'stop-go cycle', fluctuations in the 1950s and 1960s were generally mild and annual growth was positive in downswings as well as in recoveries.⁽²⁾ Fiscal policy was increasingly used in the pursuit of Keynesian demand management policies (Dow (1964) and Hicks (1982)). This was combined with monetary policy actions that largely operated via a variety of direct quantitative controls on credit and banks' balance sheets. In general, all components of demand contributed to the economic cycle during the 1950s and 1960s. Recoveries tended to be led by strong home demand — particularly through spending on consumer durables and an associated fall in the saving ratio (**Chart 15**) — with exports only tending to make a major contribution after exchange rate depreciations.

In the early 1980s, a determined attempt was made to reduce the rate of inflation, which had picked up sharply during the 1970s in response to higher oil prices and an expansionary monetary policy. Policy was geared towards meeting targets for money supply growth, but money growth remained stubbornly resilient. Consequently, nominal short rates remained at or above 12% between 1980 and 1981. The exchange rate also appreciated in response to tight monetary policy and the flow of North Sea oil revenues that had started to come on stream. There followed a large recession between 1980 and 1981 and only a sluggish recovery until the mid-1980s.

Domestic demand was the key driver of the recovery during the 1980s. The strength of sterling and the fall in manufacturing capacity meant (non-oil) exports played little role. By the late 1980s, the strength of output growth began to put upward pressure on inflation. There was a tightening of short-term interest rates, in part to rein in demand but also to match European interest rates leading up to Britain's entry into the Exchange Rate Mechanism (ERM) in October 1990. Real short-term interest rates reached over 9% in 1989, the highest level since the early 1930s (**Chart 14**). This tightening of monetary policy led to a significant recession.

The United Kingdom's exit from the ERM in 1992 was associated with a reduction in nominal short-term interest rates and a depreciation of the exchange rate. From that point on, exports contributed to the recovery. From the introduction of inflation targeting in the early 1990s, both nominal and real

short-term rates remained low and relatively stable. This outcome, and the stability in growth it engendered, reflected in part the impact of inflation targeting (and from 1997, the operational independence of the Bank of England) compared with previous monetary regimes. But the shocks hitting the economy over this period were also relatively benign,⁽³⁾ at least until the onset of the financial crisis in mid-2007.

Following the onset of the recent financial crisis, UK output fell sharply from mid-2008. But a key difference relative to previous recessions was the rapid response of monetary policy. In earlier episodes in the 20th century, the policy response was often delayed (or even reversed). This typically reflected monetary policy attempting to pursue intermediate targets such as maintaining a particular exchange rate or money supply objective.

Nominal variables and the cycle

This section examines how nominal variables — such as money, nominal spending and inflation — have behaved during previous cycles.

Money and nominal spending

The relationship between money and nominal spending forms the basis for a vast swathe of economic literature, dating back to Hume (1752).⁽⁴⁾ In the United Kingdom, there has, historically, been a tight link between the two (**Chart 16**) but that relationship has been less strong since World War II. In particular, during the periods of financial liberalisation in the early 1970s and the 1980s, the growth rate of broad money exceeded that of nominal spending. And a similar pattern emerged during the 'Great Stability' period from the mid-1990s until 2007. It is notable, however, that money and credit growth have tended to move broadly in line with nominal spending growth in the first year or two of recoveries from previous troughs in output (**Chart 18**).

Nominal spending and inflation

Inflation has risen above the 2% target during the recent recession despite the sharp fall in nominal spending. As discussed in the November 2010 *Inflation Report*, CPI inflation is likely to remain above the target throughout 2011, boosted by the increase in VAT effective in January, elevated import price inflation and by some businesses continuing to rebuild profit margins, which were compressed during the recession. Further ahead, CPI inflation is likely to fall back to around the

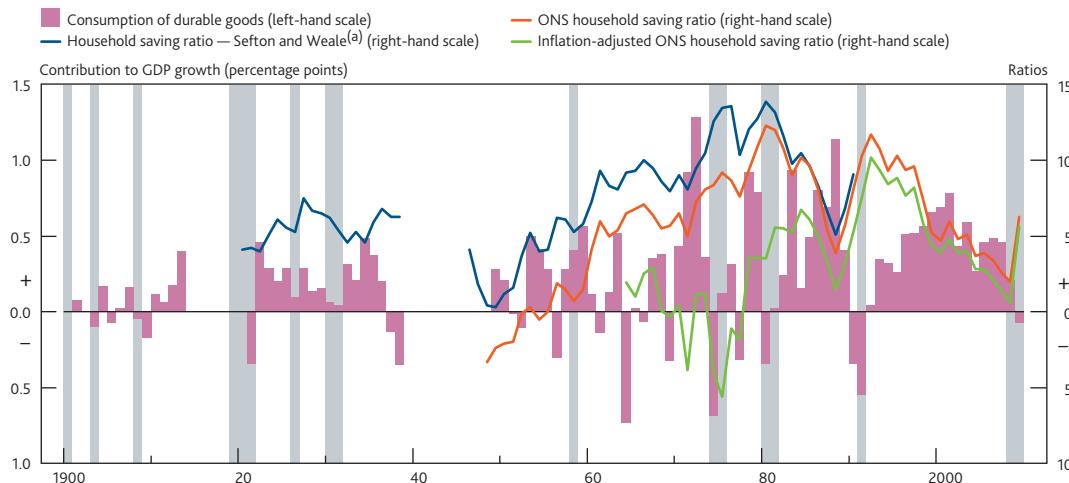
(1) See, for example, the Keynes-Henderson proposals in the 1929 election to use public works to alleviate unemployment.

(2) Dow (1998) argues that a better characterisation of policy during this period was 'go-stop'. UK Governments believed fast economic growth was achievable and attempted to stimulate demand through supportive fiscal policy. This policy was subsequently reversed as demand outstripped potential supply leading to balance of payments difficulties and inflationary pressure.

(3) See King (2003).

(4) See, for example, Hawtrey (1913), Friedman and Schwartz (1963), Benati (2006) and Schularick and Taylor (2009).

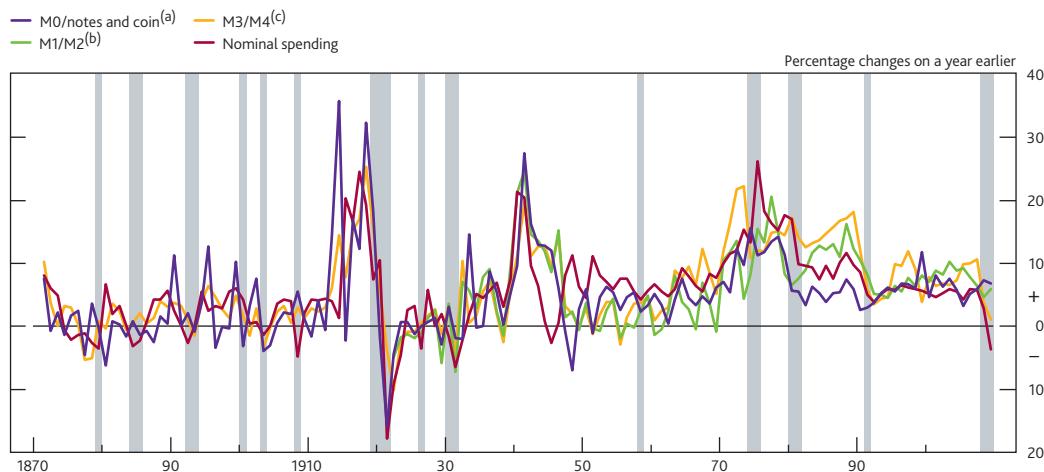
Chart 15 Consumer durables and the saving ratio



Sources: Mitchell (1988), Sefton and Weale (1995), ONS and Bank calculations. No data available for the consumption of durable goods' contribution for 1914–20 and 1939–48. Sefton and Weale's household saving ratio data for 1939–45 are excluded. Annual recessions are shaded in grey.

(a) Sefton and Weale's estimate is based on a definition of the saving ratio from an earlier system of national accounts to the current ESA95 system used by the ONS.

Chart 16 Money and nominal spending



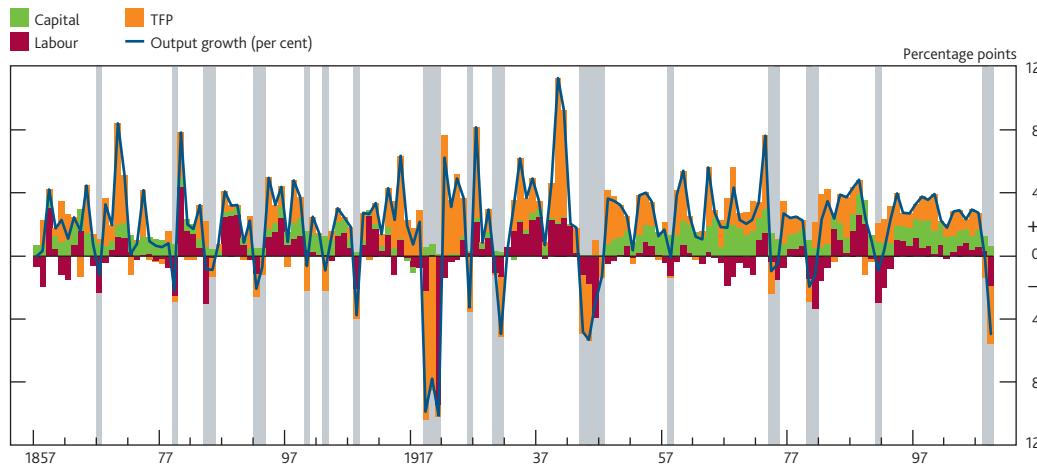
Sources: Capie and Webber (1985), Mitchell (1988), Sefton and Weale (1995), Solomou and Weale (1991) and ONS. Annual recessions are shaded in grey.

(a) M0 1870–1969, notes and coin 1969–2009.

(b) M1 1921–82, M2 1982–2009.

(c) M3 1870–1962, M4 1963–97, M4 excluding intermediate OFCs 1998–2009.

Chart 17 Contributions of capital,^(a) labour^(b) and total factor productivity (TFP)^(c) to annual output growth



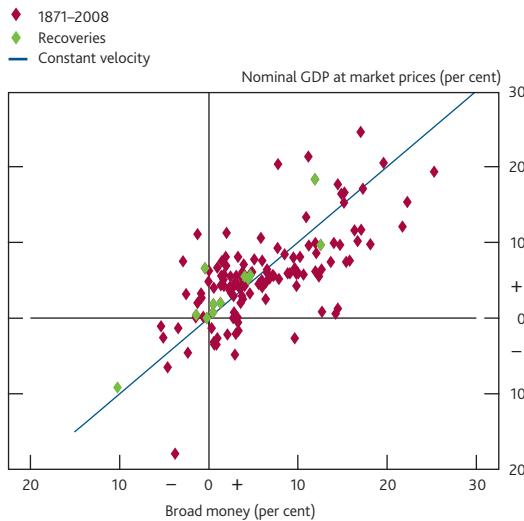
Sources: GDP as in Chart 1. Total hours worked from Feinstein (1972), Mitchell (1988) and ONS. Capital stock and services data from Feinstein and Pollard (1988), ONS and Bank calculations. Labour and capital shares from Feinstein (1972). Annual recessions are shaded in grey.

(a) Capital is defined as the non-housing whole-economy capital stock prior to 1963 and non-housing whole-economy capital services thereafter.

(b) Labour is defined as whole-economy total hours worked. Average hours data from Feinstein are linearly interpolated to create annual data between 1856 and 1972.

(c) TFP is defined as GDP growth minus the contributions of labour and capital weighted by their shares in output. The labour share includes the income of the self-employed.

Chart 18 Annual growth of broad money and nominal spending

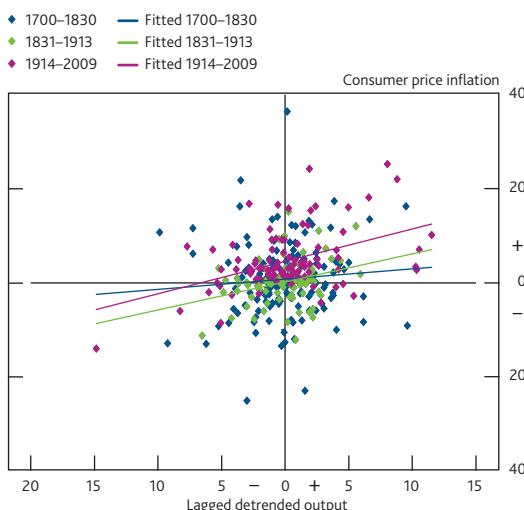


Sources: As in Chart 16.

target, as the effects of higher import prices and VAT diminish, and persistent economic slack, particularly in the labour market, continues to restrain the growth of wages and prices. This subsection examines the extent to which these features are unusual given historical experience.

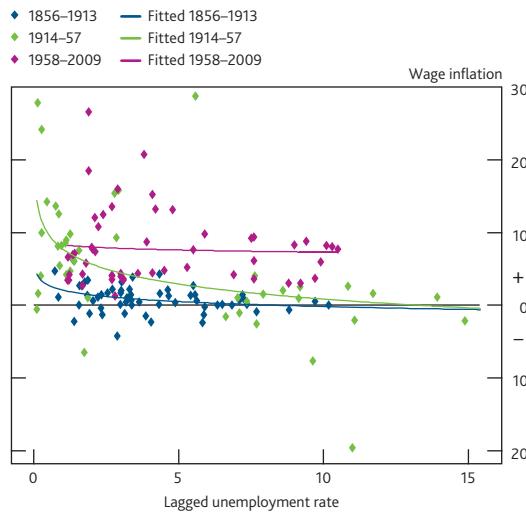
It is not unusual for weak output to be accompanied by only small changes in consumer price inflation. There is, for example, a large economic literature that examines the flatness of the ‘Phillips curve’ relationship between either inflation and detrended measures of output (Chart 19), or nominal wage inflation and unemployment (Chart 20). Over time, inflation is likely to have been affected by a range of other factors, including import prices, inflation expectations and movements in potential supply that are not captured by a simple statistical trend.

Chart 19 The reduced-form Phillips curve relationship (1700–2009)



Sources: Inflation is taken from Mitchell (1988) and ONS; detrended output defined as in Chart 2. Detrended output is lagged by one year.

Chart 20 The reduced-form wage Phillips curve relationship (1856–2009)



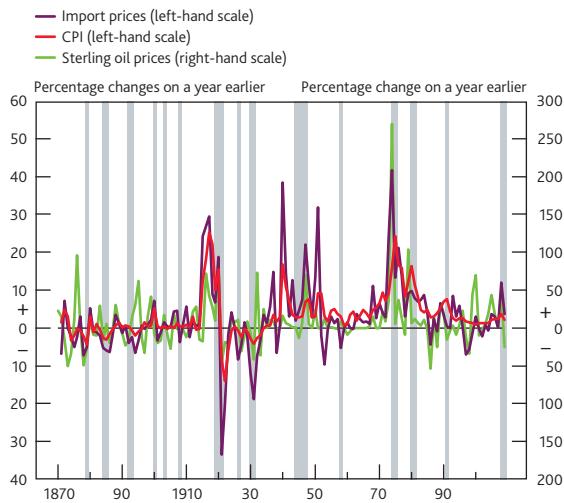
Sources: Crafts and Mills (1994), Feinstein (1972) and ONS. Unemployment rate is claimant count measure, and is lagged by one year.

It is possible that past recessions have been associated with a period of slower growth in potential supply due to a slowdown in underlying productivity growth. Underlying productivity cannot be observed directly, only actual. A simple decomposition of output growth suggests that actual total factor productivity (TFP) — also known as the ‘Solow residual’ — has tended to move procyclically in the past (Chart 17).⁽¹⁾ It is important to recognise, however, that such procyclical movements in actual TFP might just reflect cyclical changes in companies’ utilisation of both their capital and labour inputs rather than a slowdown in underlying technological progress. For example, if companies believed that a downturn would be brief, they may have chosen to hoard labour — that is, maintain employment despite falls in output — or mothball capacity — that is, put capital temporarily out of use. In the longer term, both wage growth and inflation would have eventually fallen as companies cut back on labour inputs or lowered margins.

Low factor utilisation may, however, still have reduced potential supply growth through ‘hysteresis effects’. For example, low labour utilisation in the early 1980s ultimately led to rising long-term unemployment that may have reduced the downward pressure on wages, helping to explain the weakness of the wage-unemployment relationship in the post-war period (Layard, Nickell and Jackman (1991)).

Movements in relative prices — such as commodity and import prices — can also affect the observed relationship between output and inflation. This was particularly the case in the post-World War II period, when rising import and commodity prices often coincided with recessionary periods,

(1) The Solow residual measures the difference between output growth and the contribution of capital and labour inputs. Different concepts of potential supply (and their components) are discussed further in the box on page 106 of Benito et al (2010).

Chart 21 Consumer, import and oil prices

Sources: Feinstein (1972), Mitchell (1988), BP and ONS. Annual recessions are shaded in grey.

masking the relationship between output and inflation (**Chart 21**). For example, wage pressure increased during the 1970s following the increases in oil prices (Layard and Nickell (1987)).

It is also likely that the 1970s were accompanied by a pickup in inflation expectations given higher oil prices and the lack of a credible monetary policy framework. These expectations

became ingrained in the wage-bargaining and price-setting processes. And they proved hard to shift during both the money-targeting and exchange rate targeting regimes of the 1980s and early 1990s, despite relatively tight monetary policy and the presence of two large recessions. Inflation, and inflation expectations, only stabilised following the introduction of inflation targeting in 1992 (Bean (2004)).

Conclusions

The recession of 2008–09 had parallels with earlier slowdowns in the UK economy. Recessions in the 18th century and much of the 19th century generally involved domestic financial crises of one form or other. And financial crises abroad often had a large impact on the United Kingdom in the late 19th and early 20th centuries, given the increasingly interconnected nature of global goods and financial markets.

There are also some lessons we can draw from the past about the nature of the current recovery. Some of these lessons are optimistic. For example, real exchange rate depreciations — such as those experienced during the recent recession — have generally supported economic recoveries. History also emphasises the important role that monetary policy has to play.

Appendix

(a) Construction of real GDP data in Charts 1, 2, 4 and 17

The measure of real output used in these charts is GDP at factor cost. This is consistent with the concept used in previous exercises that combine or balance the estimates from the output, income and expenditure approaches and is almost identical to the current ONS preferred measure of output (GVA at basic prices). A continuous time series is generated back to 1700 by combining the various estimates in the literature in the following way:

- 1700–1830 Broadberry and van Leeuwen (2010), GDP growth at constant factor cost based on an output approach.
- 1830–55 GDP growth at constant 1900 factor cost from Feinstein's extensions to Deane's (1968) estimates based on an expenditure approach (available in Mitchell (1988), page 837).
- 1855–70 Feinstein's Compromise index of GDP at factor cost, available in Mitchell (1988), page 836.
- 1870–1913 Solomou and Weale (1991) balanced measure of GDP at constant 1900 factor cost, Table 3.
- 1913–20 Feinstein's Compromise index of GDP at factor cost available in Mitchell (1988), page 836.
- 1920–48 Sefton and Weale (1995) balanced measure of GDP at constant 1938 factor cost, Table A.3.
- 1948–2009 ONS GDP at factor cost, chained-volume measure, 2006 reference year prices.

In the data annex spreadsheet, the different estimates are spliced together to form a continuous chained-volume measure based on 2006 reference year prices.

(b) Contributions to GDP in Charts 9, 10 and 11

These charts use contributions to the expenditure-side estimate of GDP at market prices ($GDP(E)$). Contributions are calculated within each of the historical chains of data as follows:

- 1830–1920 Contributions to $GDP(E)$ at constant 1900 market prices based on Feinstein's extensions to Deane's (1968) estimates (available in Mitchell (1988), page 837).
- 1920–48 Contributions to Sefton and Weale's (1995) balanced measure of GDP at market prices, Table A.3.
- 1948–2009 Contributions to $GDP(E)$ at market prices. ONS annual chain-linking methodology means that chained-volume estimates of the components of expenditure only add up to the chained-volume estimate of $GDP(E)$ in the reference year (currently 2006) and beyond. So an annual chain-linked contributions formula is used prior to 2006. This involves multiplying the growth rate of each expenditure component by its nominal share of $GDP(E)$ in the previous calendar year.

(c) Nominal GDP series used in Charts 7, 13, 16 and 18

These charts are based on GDP at current market prices. A spliced series was obtained from the following components:

- 1700–1830 Broadberry and van Leeuwen (2010), GDP at current factor cost based on an output approach.
- 1830–55 GDP growth at current market prices from Feinstein's extensions to Deane's (1968) estimates based on an expenditure approach (available in Mitchell (1988), page 831).
- 1855–70 Feinstein's Compromise index of GDP at current factor cost (available in Mitchell (1988), page 836), multiplied by the ratio of $GDP(E)$ at market prices to $GDP(E)$ at factor cost from Feinstein's extensions to Deane's (1968) estimates based on an expenditure approach (available in Mitchell (1988), page 831).
- 1870–1913 Solomou and Weale (1991) balanced measure of GDP at factor cost, Table 3, multiplied by the ratio of $GDP(E)$ at market prices to $GDP(E)$ at factor cost from Feinstein's extensions to Deane's (1968) estimates based on an expenditure approach (available in Mitchell (1988), page 831).
- 1913–20 Feinstein's Compromise index of GDP at current factor cost prices (available in Mitchell (1988), page 836), multiplied by the ratio of $GDP(E)$ at market prices to $GDP(E)$ at factor cost from Feinstein's extensions to Deane's (1968) estimates based on an expenditure approach (available in Mitchell (1988), page 831).
- 1920–48 Sefton and Weale (1995) balanced measure of GDP at current market prices, Table A.3.
- 1948–2009 ONS GDP at current market prices.

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