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"MUDDLING THROUGH OR TUNNELLING THROUGH?" UK MONETARY AND FISCAL EXCEPTIONALISM AND THE GREAT INFLATION

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"Muddling Through or Tunnelling Through?" UK Monetary and Fiscal Exceptionalism and the Great Inflation

Michael D. Bordo, Oliver Bush, and Ryland Thomas

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ABSTRACT

Discussion of the causes of the Great Inflation in the UK during the 1970s has centred around the relative importance of two potential explanations, which we label "bad luck" – the occurrence of unusually large commodity price and supply-side shocks - and "bad policy" reflecting failures in both monetary and prices and incomes policies. By reconsidering the historical and empirical record of inflation from 1950s to the early 1990s we show that the persistence of the Great Inflation in the UK cannot fully be explained by these factors, although these can account for some of the major fluctuations. Instead, underlying inflation and inflation expectations appear to be the result of a sequence of regime shifts. We argue those regime shifts are as much related to fundamental changes in fiscal policy as they are to monetary policy and union reforms. Our empirical evidence suggests that fiscal policy was at the heart of many of the problems in the UK during the Great Inflation. In contrast to most of British history, it was not used to stabilise the public finances. Instead, it was used to keep unemployment down and growth up, to subsidise losers from terms of trade shocks and to secure deals with the unions.

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Britain's difficulties in the 1970's arise from ill-designed policies based upon long and widely held misconceptions about how the economy works. The basic error committed has been to neglect to control the money supply while pursuing an unrealistically low unemployment target, primarily by fiscal means

David Laidler, American Economic Review 1976

Whether the budget was in balance or had a surplus or deficit was a secondary consideration (indeed for some policy makers it was of virtually no importance).

Douglas Wass, Permanent Secretary to the Treasury 1974-1982 writing in 2008

….the historical evidence provide(s) little reason for being optimistic about the efficacy of a plan for gradual monetary restraint which is simultaneously soft on the government deficit.

Thomas Sargent, *Stopping Moderate Inflations*, 1981

Introduction

In the context of UK historical experience, the inflation rates observed in the 1970s were unique in terms of their scale and persistence. Inflation reached a peak of around 25% in the summer of 1975 and was generally higher than in other advanced economies throughout the decade. Unlike other episodes of double-digit inflation over the past 100 years, it was not brought down quickly and proved extremely costly to eradicate in the 1980s and 1990s. So, it is important to important to understand the reasons for the UK's poor relative performance in this period.

The Great Inflation has naturally been the subject of intense study and scrutiny already. The burgeoning fiscal and current account deficits that emerged in the 1970s, coupled with double-digit money growth and a de-anchoring of inflation expectations, are suggestive of significant macroeconomic policy errors, at least from the modern-day perspective of how monetary and fiscal policies should operate. Much of the focus has typically been on identifying common generic causes of the rise in inflation observed across many of the major economies. The conventional wisdom attributes it to a combination of cost push forces (commodity price shocks and union-driven wage pressure), coupled with over-accommodative monetary policies, with different weights placed on the "bad luck" versus the "bad policy" elements of the story. Rather less attention has been paid to the question of why the experience of the UK was markedly different to that in many other advanced economies. Superficially the Great Inflation period offers an example of UK exceptionalism with several bursts of wage and price increases that were not observed in other advanced economies in quite the same way. We consider the extent to which this truly reflected UK exceptionalism in its approach to economic policy and in the development of its economic institutions in the period after World War 2.

In this paper we reconsider the historical and empirical record of inflation in the UK from the early 1960s to the operational independence of the Bank of England in 1997. We re-examine the phases of inflation in detail and re-evaluate some of the leading hypotheses in the literature alongside some of the key empirical metrics that are typically used to motivate them. Much of the debate in the literature centres around the relative importance of "bad luck" – due to the unusually large commodity and supply-side shocks that hit the economy – and "bad policy" – due to the inability by the monetary authorities to respond to those shocks

aggressively enough and a general belief that prices and incomes policies were the means to bring inflation down.

An important consideration for studying this period is that the modern-day perspective on macroeconomic stabilisation policy, based on the centrality of monetary policy, is an anachronistic lens through which to view and judge 1970s policymaking. Policymakers, financial market participants and other agents in the economy did not look at the economy in this way. Much contemporary thinking in the UK reflected a Keynesian emphasis on fiscal policy as the key instrument for demand management, reflecting an in-built scepticism of the power of interest rates to affect spending that had emerged in the immediate post-war period and crystallised in the Radcliffe Report of the late 1950s. From the 1960s, monetarist thinking began to be increasingly influential in policy and economic circles. The UK developed its own brand of monetarism based on targeting broader measures of the money supply from the late 1970s onwards. This was based on the credit counterparts framework, which included an important role for fiscal policy and debt management as part of the fabric of overall monetary control. This thinking is far removed from modern conventional wisdom on how monetary policy should be conducted.

The focus on monetary policy means that radical changes in the conduct of fiscal policy in Britain over this period are often understated in the recent literature. For most of modern British history, the primary objective of fiscal policy in peacetime has been to stabilise the public finances. We show that at some point after WW2 this traditional objective was almost completely forgotten, replaced by Keynesian demand management and other social objectives. In this period, inflation, with all its costs, often played the role of stabilising the public finances. Financial markets, commentators and other agents in the economy increasingly began to make the links between fiscal deficits and inflation, albeit couched in the monetarist-credit counterparts framework in vogue at the time. We argue that the reason why inflation was higher and more persistent than other economies in the 1970s ultimately has fiscal roots.

We also argue that changes in the fiscal policy regime were the key to bringing inflation back under control in the 1980s and early 1990s. The modern literature suggests that monetary policy was often not tightened sufficiently in response to inflationary shocks. However, nominal interest rates across the yield curve often exceeded 15% in the 1970s and 1980s in a belated attempt to control inflation and to try and ensure deficits could be financed by debt sales. That level of nominal interest rates proved to be a monetary policy threshold beyond which the authorities were not willing to go. Perhaps this was because they doubted the efficacy of further tightening or the willingness of agents in the economy to bear such a front-end loaded impact on incomes, even if real interest rates were low or negative. In each case, it was recognised that fiscal consolidation was the only path to securing low inflation as a complement to already tight monetary policy. We argue that inflation and, importantly, inflation expectations were only kept under control through a sequence of fiscal regime shifts. Each of these shifts involved a consolidation but also marked a progressive shift in fiscal regime that built on the foundations of the previous one. UK inflation was ultimately brought under control as much by changes in the fiscal policy regime as by the post-1979 changes in monetary policy regime and supply-side reforms emphasised in the current literature.

A purely modern perspective also abstracts from deeper historical, structural, and institutional forces that governed UK fiscal policy decisions, which it is also important to assess and understand. We discuss four underlying structural and institutional trends in the UK economy that worked to undermine fiscal sustainability in the UK in the early 1970s. These factors, some of which were unique to the UK, meant that any attempt to solve inflationary problems in the UK through monetary policy alone were doomed to be unsuccessful.

Many of the structural problems undermining fiscal sustainability emanated from the controlled economy that had emerged by the end of World War 2. Those structures progressively were dismantled over a period of four decades until the liberalised, service-sector focused "NICE" (non-inflationary constant expansion) economy emerged in the mid-late 1990s. Those factors and their interaction with monetary and fiscal policy are an important part of the narrative of how UK inflation evolved in the second half of the C20th.

The plan of the paper is as follows. We first discuss the existing narrative in the literature on the reasons for the different phases of inflation in the UK between the late 1960s and early 1990s, highlighting the "bad luck" and "bad policy" hypotheses discussed in previous work with simple empirical metrics. This is supported by a detailed narrative history which can be found in Appendix 1 of this paper.[1] We review and summarise the literature with representative historical decompositions using both a structural VAR and structural econometric model approach to review the existing literature. We argue that those decompositions do not provide a complete characterisation of the Great Inflation in the UK and use evidence on inflation expectations to highlight the importance of regime shifts that can be plausibly linked to shifts in the fiscal regime. We then discuss some of the statistical and narrative evidence on fiscal policy viewed through the lens of both modern and contemporary "fiscal theories" of inflation. We then discuss four important structural developments we believe are underplayed in the existing narrative and how these crystallised in the form of unsustainable fiscal deficits in the mid-1970s. We conclude by examining what this means for the "muddling through" characterisation by Weldon (2021) and the "Rocky Road" description by Batini and Nelson (2009) that are often applied to the evolution of the UK's monetary and fiscal policy regime in the second half of the C20th. We conclude by drawing out the interesting parallels with the current persistence of inflation in the UK.

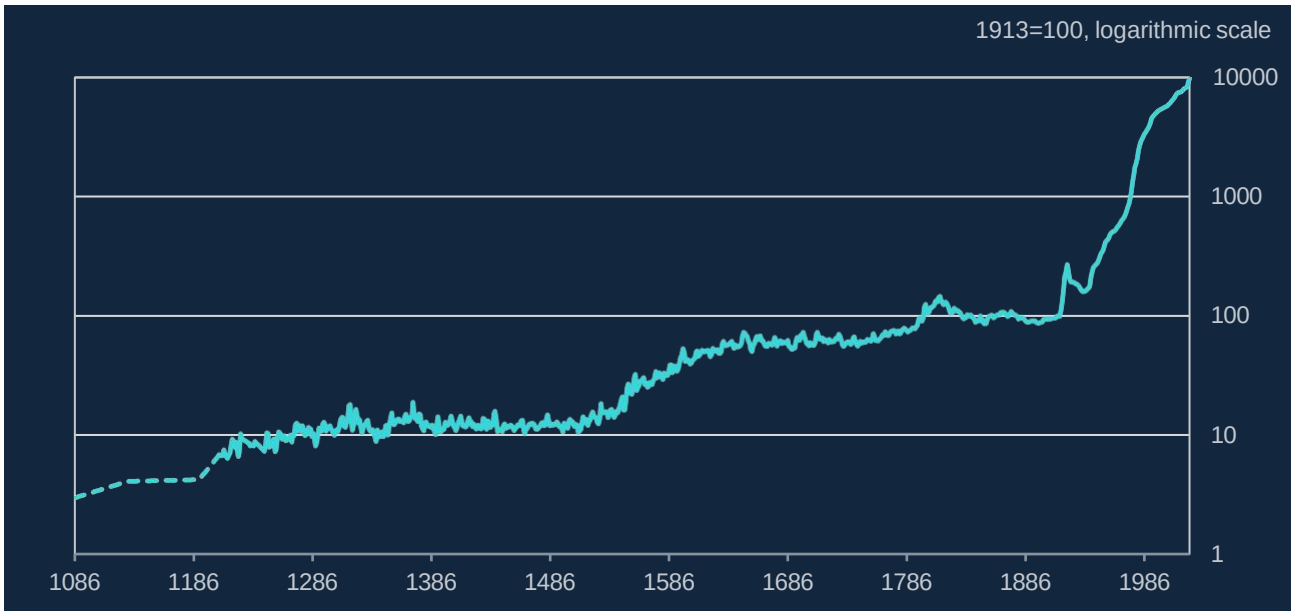
[1] This can be found at https://www.bankofengland.co.uk/working-paper/2025/muddling-through-or-tunnelling-through-uk-monetary-and-fiscal-exceptionalism-and-the-great-inflation

I Nominal trends in the late C20th

(i) UK Inflation in the C20th - a long historical perspective

UK inflation data is available back to the Domesday Book which allows a long perspective on shifts in underlying inflationary trends. The historical record shows long periods of price stability broken by periods of sustained inflation in the early C13th, C16th and late C18th (**Chart 1.1**). But it is the C20th where UK inflation fundamentally became an entrenched phenomenon. Prices increased by around 100 times between 1900 and 2023. Part of that reflected substantial inflation during both of the world wars. After World War 2, it also reflected a growing acceptance that in peacetime a low positive rate of measured inflation was consistent with the concept of price stability.

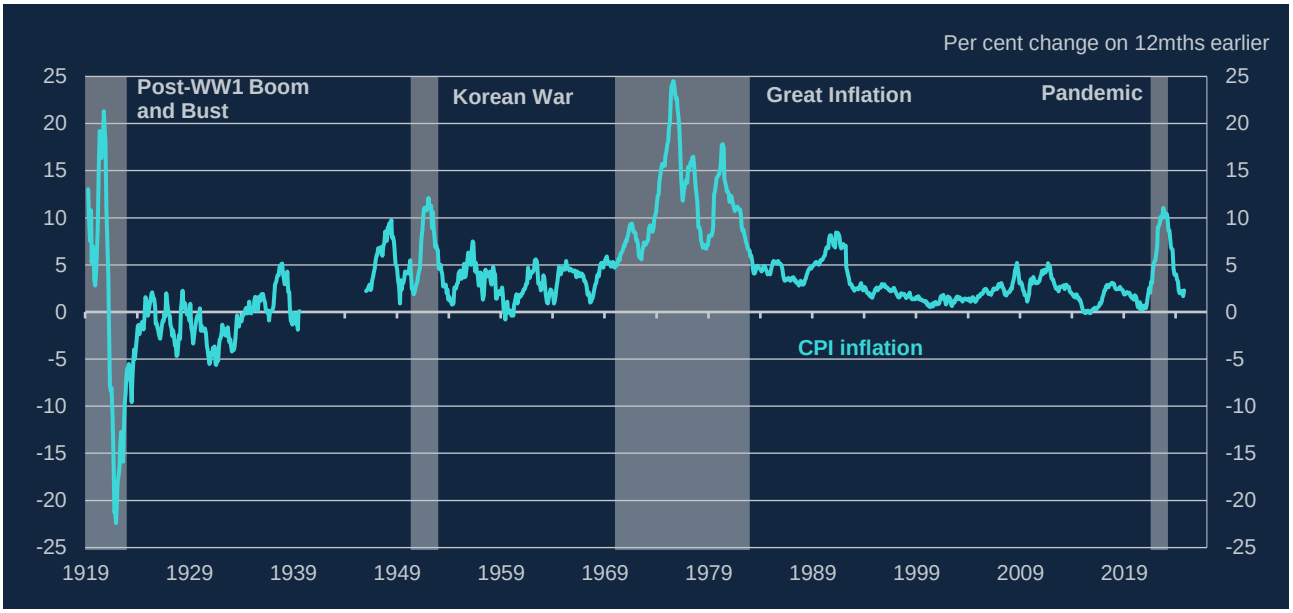
Chart 1.1: Prices in the UK since the Domesday Book



Sources: Bailey (2023)

During the C20th there were several episodes of double-digit inflation outside the world war periods, which evolved very differently from each other but are often associated with similar forces underlying the inflation in the early 2020s (**Chart 1.2**). In the early 1920s there was rapid inflation following the post-WW1 boom in commodities which quickly turned to deflation as the authorities tightened both monetary and fiscal policy, in part out of a desire to set back the clock to the pre-WW1 regime of Gladstonian finance and adherence to the Gold Standard. In the 1950s the rapid inflation during the Korean War led to the re-activation of monetary policy following the long period of cheap money in place since the Great Depression of the 1930s. This appeared to end well with close to an immaculate disinflation with little rise in unemployment. The pattern of inflation following the 2020/21 pandemic appears remarkably similar to that of the early 1950s with inflation brought under control after a similar reactivation of conventional monetary policy in response to a rapid rise in international commodity prices following the war in Ukraine. So it is really the "rollercoaster" pattern of successive double-digit inflation episodes from the early 1960s through to the late 1990s that stands out from the other episodes, explaining why it has been the focus of intense study.

Chart 1.2: Three episodes of double-digit inflation in the C20th



Sources: Thomas and Dimsdale (2017), ONS and authors' calculations.

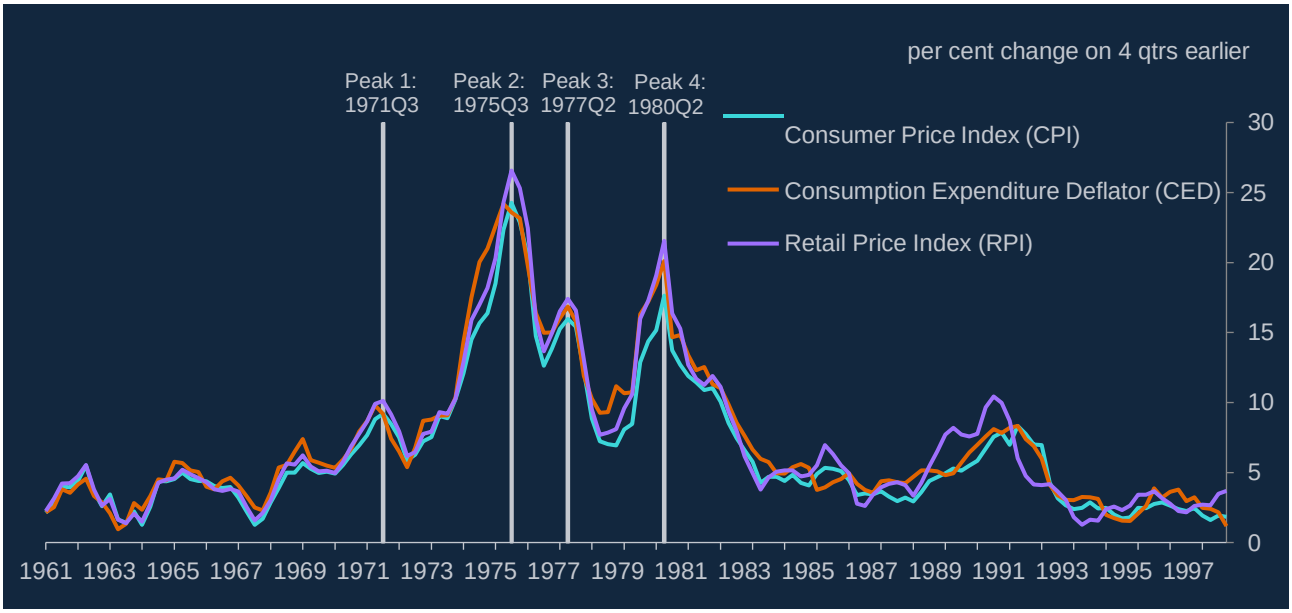
(ii) The rollercoaster ride of inflation in the late C20th – nominal trends since the 1960s

The essential facts that need to be explained over the Great Inflation period can be summarised in 5 charts.

Chart 1.3 shows several different distinct phases of inflation on different measures of consumer price inflation[1]. Although there are differences in the measures, all peak around the same time. Going into the 1960s it was close to zero and averaged around 3.5% per year until the late 1960s when it started picking up rapidly following £'s devaluation in 1967. It peaked at around 10% in 1971Q3, before falling back to around 6% a year later. The next phase started shortly after the floatation of sterling in June 1972. This led to a long upward phase peaking in 1975Q3 during which there was the first of two large oil price shocks at the end of 1973. There was then a significant fall back in inflation until the middle of 1976, before a further peak in 1977 following a large depreciation of sterling over that year. From that point on, inflation began to fall back before another surge in 1979-1980 following the so-called Winter of Discontent and a second oil price shock following the fall of the Shah in Iran. However, during the late 1980s inflation once again picked up peaking at over 10% on the contemporary RPI based measure of inflation in 1990 and slightly less on the modern measure of CPI inflation.

[1] The chart shows the retail price index (RPI), which was the measure used by contemporaries at the time, and a retrospectively-modelled version of the current CPI index. See Consumer price inflation, historical data, UK 1950 to 1988 - Office for National Statistics. Unlike the RPI, the CPI excludes owner-occupied housing costs (based on mortgage interest payments in the RPI) and council tax, includes university accommodation fees and stockbroker charges, and the averaging of price quotes at the elementary level of aggregation is exclusively based on using the Jevons and Dutot averaging formulae (the preferred choice of many statistical agencies) instead of a mixture of Carli and Dutot formulae. The chart also shows the household consumption expenditure deflator (CED) derived from the national accounts. This includes owner-occupied housing on an imputed rental basis. Unlike the CPI and RPI, which are chained Laspeyres indices that use expenditure weights from the previous year, the CED is implicitly a chained-Paasche index or weighted harmonic average of price relatives using current period expenditure weights.

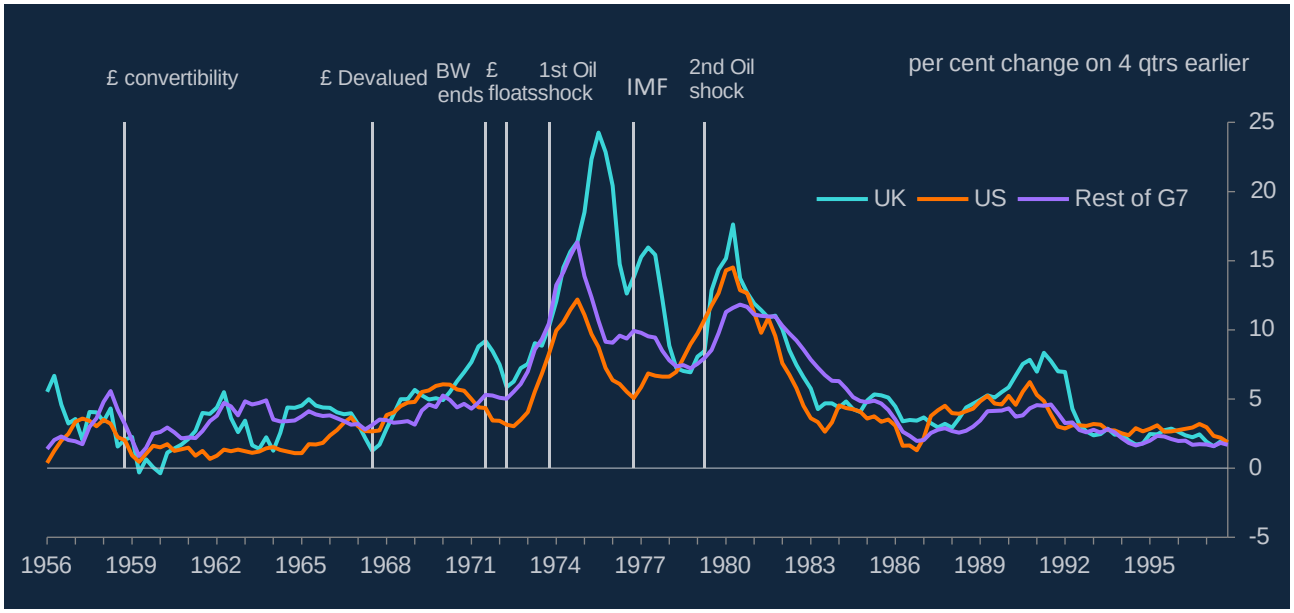
Chart 1.3 Consumer price inflation: 1961-1997



Sources: ONS

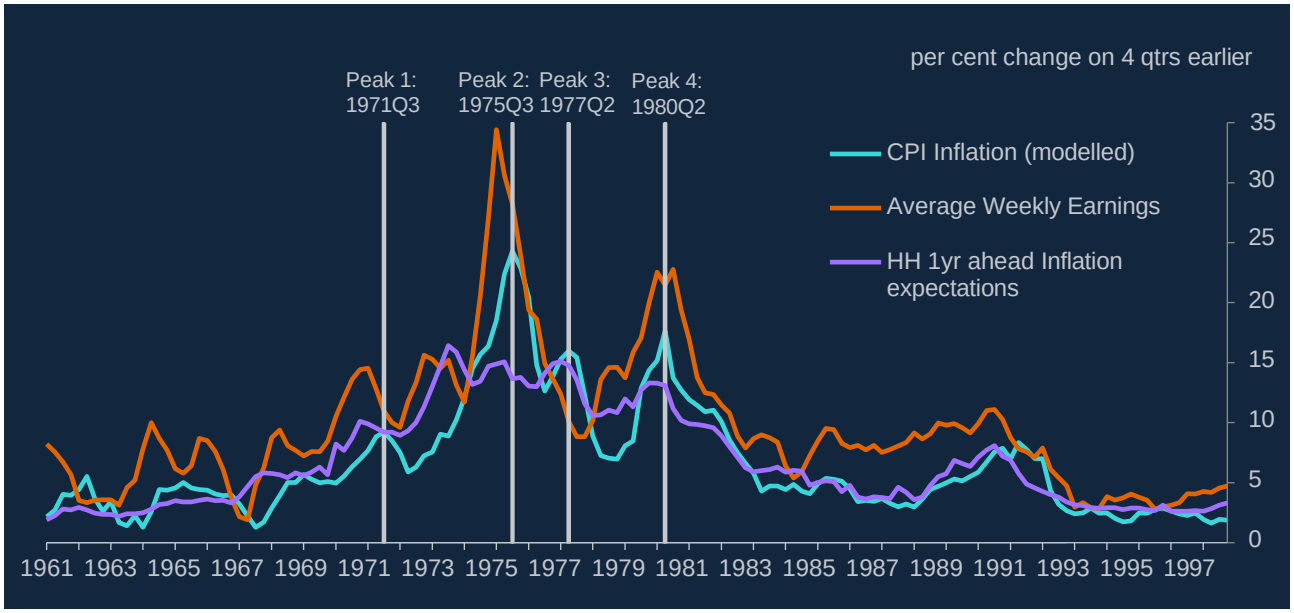
[Chart 1.4](#) shows that the pattern of UK inflation was very different to that in the US and other G7 countries, with perhaps the exception of Italy. The UK showed an unusually large surge in inflation in the late 1960s and peaked almost a year later than average G7 inflation rates following the first oil price shock in 1973/4. The increase in inflation following the second oil price shock in 1979 was more synchronous with other economies but the UK peak was unusually large. Again only Italy shows a similar profile to that of the UK. This suggests that the UK experience was relatively unique and that there are idiosyncratic factors at work that need identifying.

Chart 1.4: Inflation in the UK, the US and the rest of the G7, 1956-1997



Sources: ONS, FRED.

Chart 1.5: Earnings growth, CPI inflation and household inflation expectations: 1961-1997

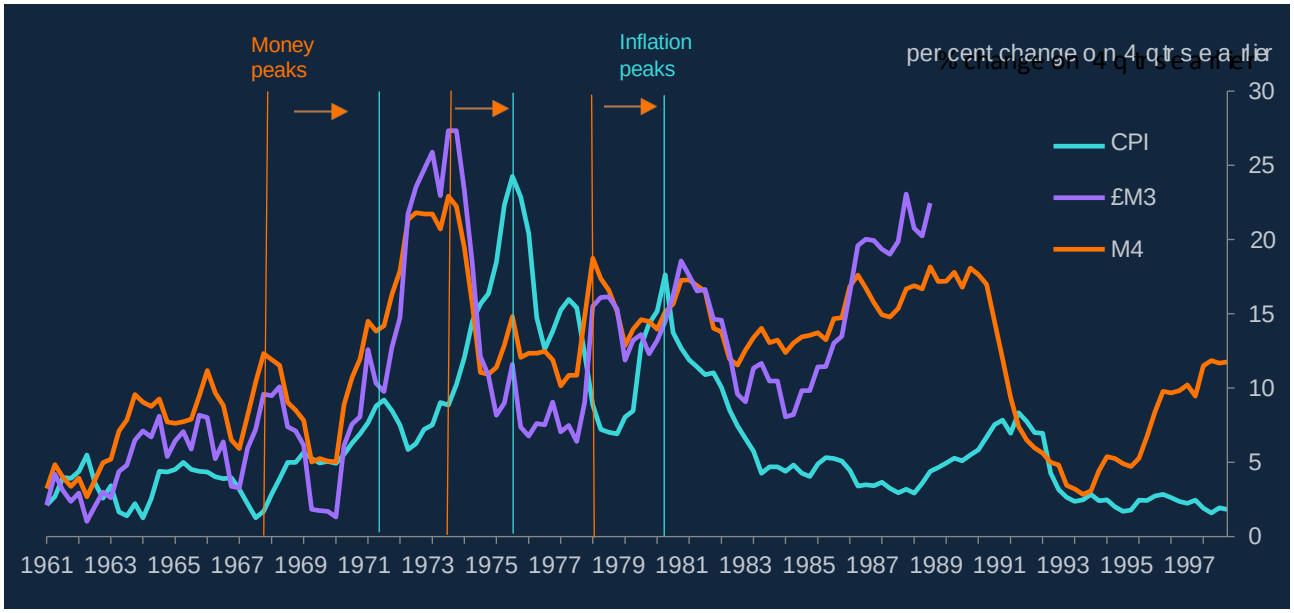


Sources: ONS

Chart 1.5 shows CPI inflation alongside measures of wage inflation and household 1-year ahead inflation expectations derived from contemporary Gallup surveys (Batchelor and Orr (1988)). It shows that fluctuations in wage inflation often peaked before those of price inflation. In the mid-late 1980s, wage inflation remained stubbornly high despite the apparent success in bring headline inflation back into single figures. Not all of this reflected underlying productivity improvements and inflation eventually picked up once more in 1989-90 with wage inflation back into double digits.

Movements in inflation expectations appear to anticipate both wage and price inflation, a feature Batchelor and Orr (1988) describe as "weak rationality". As in the US, they begin to pick up in the late 1960s, well before the commodity price shocks in the 1970s (Reis (2021)). Interestingly, they appear relatively unresponsive to the fluctuations in inflation in the 1970s, suggesting little prima facia evidence of adaptive expectations. Indeed, they remain relatively stable until two downward shifts, in 1977 and the early 1980s, which anticipate subsequent wage and price movements. This suggests there is merit in investigating the underlying trend movement in inflation and the underlying drivers of inflation expectations.

Chart 1.6: Broad money growth and inflation

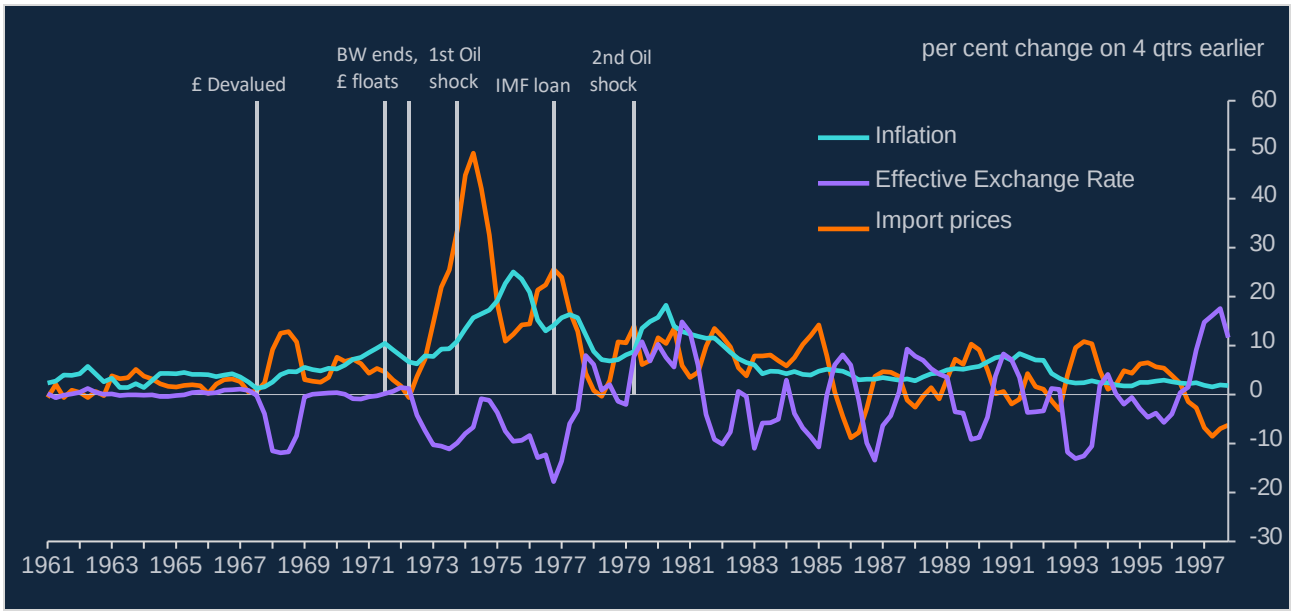


Source: ONS, Bank of England.

Chart 1.6 shows fluctuations in money growth and inflation. Like wage inflation, money growth in late 1960s and 1970s appeared to precede the peaks in inflation with lags similar to those predicted by the empirical work of Friedman and Schwartz (1963) and other monetarist economists. This led to growing interest in monetary targets during the 1970s and their formal introduction in 1976. However, in the 1980s the link between broad money and inflation became weaker. Broad money growth, both on the contemporary measure £M3 (later renamed M3) and the current headline measure M4, was in the double digits – well above the targets set by the government and despite a rapid fall in inflation. That quickly led to the abandonment of monetary targeting. Although some correlation between money growth and inflation is evident in certain periods after the mid-1980s, the same leading correlation seen in the late 1960s and 1970s would not be observed as clearly until the inflation that occurred after the 2020/2021 pandemic.

Chart 1.7 shows the open economy aspects of UK inflation, focusing on fluctuations in UK import price inflation alongside changes in the effective nominal exchange rate. In the post-war period up to 1971 sterling was part of the Bretton Woods system – a fixed-but-adjustable exchange rate regime – but was also still a reserve currency for the sterling area. The disciplines of Bretton Woods proved too much of a straitjacket for the British economy which struggled behind peer economies in terms of economic performance. After a large devaluation in 1949, there was a period of successive balance of payments crises in the 1950s and 1960s until a further 14% devaluation against the $ in 1967 which translated into an almost equivalent fall in the effective exchange rate. This prompted a rise in import price inflation which may have influenced the pickup in CPI inflation in the late 1960s. The collapse in the Bretton Woods system in 1971 led to the floatation of sterling in June 1972 and much great exchange rate volatility. At the same time, world commodity prices began to pick up culminating in the two large oil price shocks of 1973 and 1979. Following the first oil price shock UK import price inflation reached an unprecedented 50% on an annual basis driven in part by the sterling depreciation over the previous year. Sterling depreciated further over the course of 1975 and 1976 culminating in the IMF visit in December of that year. That presaged a further rise in import price inflation ahead of the peak in CPI inflation in mid-1977.

Chart 1.7: Import price and exchange rate fluctuations – 1961-1997



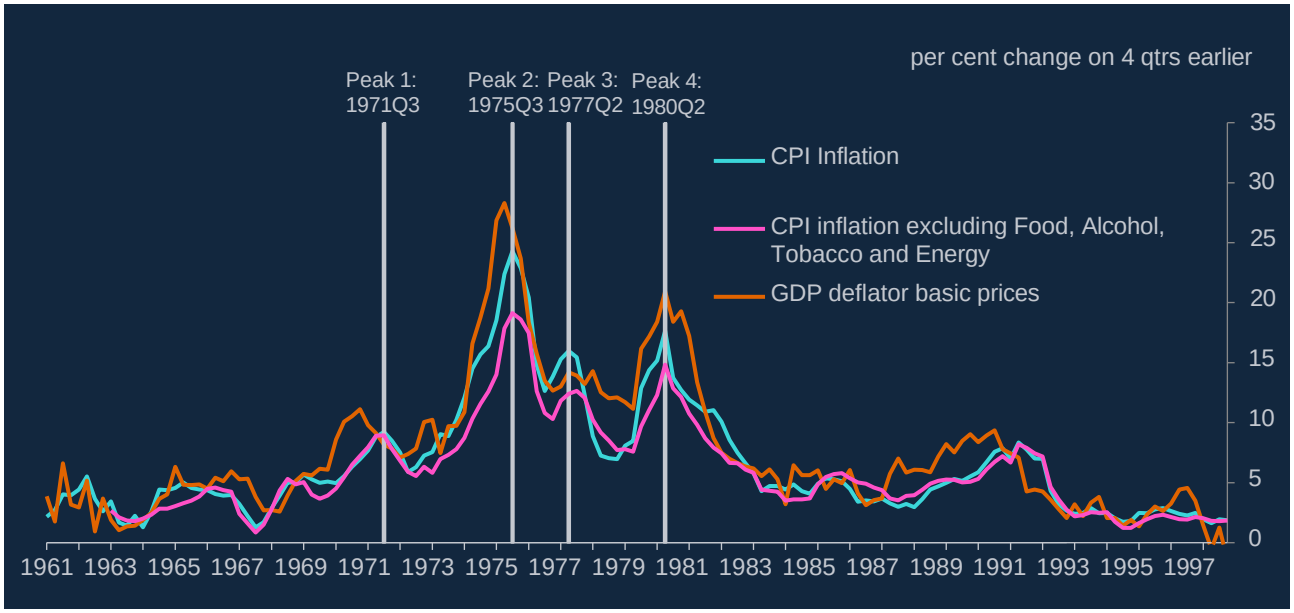
Sources: ONS, Bank of England, BIS.

The late 1970s would prove a turning point in sterling's fortunes. As North Sea oil came on stream, sterling underwent a transformation from an ailing reserve currency to an emerging petrocurrency. The 1979 oil price shock would this time be followed by an appreciation of sterling, but also a collapse in manufacturing competitiveness. The year 1979 also saw the abandonment of exchange controls which made sterling more vulnerable to shifts in financial market sentiment. Sterling was then subject to a period of turbulence with major depreciations in 1982, 1985 and 1987. It was this that turned the UK authorities back towards the exchange rate as the nominal anchor, with its participation in the Plaza and Louvre Accords culminating in membership of the European Exchange Rate Mechanism (ERM) in 1990. This proved an unhappy experience, and the UK was ejected from the ERM leading to a further depreciation of just under 15% in 1992 and the hurried adoption of inflation targeting. Sterling had only recovered fully by 1997 by which time the Bank of England had been given operational independence with a statutory objective for price stability.

Finally, **Chart 1.8** shows different measures of underlying or "core" inflationary pressure, that attempt to strip out certain relative price movements from the calculated rate of inflation. The first estimate is a historic estimate of CPI inflation excluding the effects of food, energy, alcohol and tobacco, typically the most volatile and components of inflation and the most linked to international commodity prices (the construction is discussed in Appendix 2[2]). The chart shows that those specific factors were important direct contributors to the index at the largest inflationary peaks and will have had additional indirect effects on other prices through the supply chain. Second, the chart shows the GDP deflator measured at basic prices, excluding the effect of indirect taxes such as VAT. This, perhaps surprisingly, shows much stronger inflation at the peaks. As we show later, this reveals the impact of another relative price movement, that of the government consumption deflator relative to inflation in the market sector of the economy. That reflects strong public sector wage inflation in the 1970s, given how the government deflator is measured in the historic national accounts. While movements in the government consumption deflator might not have direct relevance for inflation in the market sector (see Hills et al (2005)), this relative price effect had implications for the government's finances and may have indirectly affected inflation through fiscal linkages.

[2] This can be found at https://www.bankofengland.co.uk/working-paper/2025/muddling-through-or-tunnelling-through-uk-monetary-and-fiscal-exceptionalism-and-the-great-inflation

Chart 1.8: Core inflation measures – 1961-1997



Sources: ONS, Appendix 2

These nominal trends and fluctuations have provoked a number of different explanations and interpretations in the literature. Our hypothesis will be that fiscal policy is an important underlying factor that can explain a substantial part of the struggle the UK had in achieving monetary stability over three decades. While fiscal problems were recognised by contemporaries, their role has often been under-emphasised in much of the retrospective literature.

II Narratives in the existing literature – bad luck versus bad policy

Bordo and Orphanides (2013) provide a summary of the US literature on the causes of the Great Inflation in the US. The UK literature is smaller, with academics investigating a subset of the hypotheses put forward for the US. Explanations for bad outcomes are typically grouped into two camps: bad luck and bad policy. The "bad luck" camp attributes high inflation to unusually adverse commodity price and other supply shocks that would have been tough for any policymaker to deal with. The "bad policy" camp argues that had modern-day optimal policy prescriptions been followed then outcomes could have been better, and inflation could have been brought down efficiently in terms of minimising output lost. The burgeoning fiscal and current account deficits that emerged from the 1970s, coupled with double-digit money growth and a de-anchoring of inflation expectations, are suggestive of significant macroeconomic policy failures, at least from the modern-day perspective of how monetary and fiscal policies should operate (**Table 1.1**). However, the real outcomes during the 1970s do not stand out as markedly worse than other peacetime decades in the C20th. Naturally any assessment of optimal policy has to take into account what was feasible to achieve given supply-side constraints and outcomes in the world economy. It also depends on what choices policymakers made when facing either perceived or actual trade-offs between inflation and real economy outcomes.

Table 1.1 Key indicator by decade

	Inflation %	GDP growth %	Unemployment Rate %	Current account balance % of NGDP	Public Sector Surplus % of NGDP
1920s	-2.13	0.92	7.55	2.92	-0.51
1930s	-0.30	2.09	10.97	-1.06	-1.80
1950s	4.24	3.18	1.91	0.91	-0.39
1960s	3.37	3.44	2.74	-0.02	-1.87
1970s	11.53	2.66	4.59	-0.43	-3.36
1980s	6.47	2.60	9.93	-0.60	-2.04
1990s	3.30	2.14	8.17	-0.96	-3.10
2000s	1.85	1.72	5.44	-2.55	-3.35
2010s	2.23	1.97	6.07	-3.89	-5.09

Source: Thomas and Dimsdale (2017), ONS.

(i) Bad luck – adverse cost-push and aggregate supply shocks

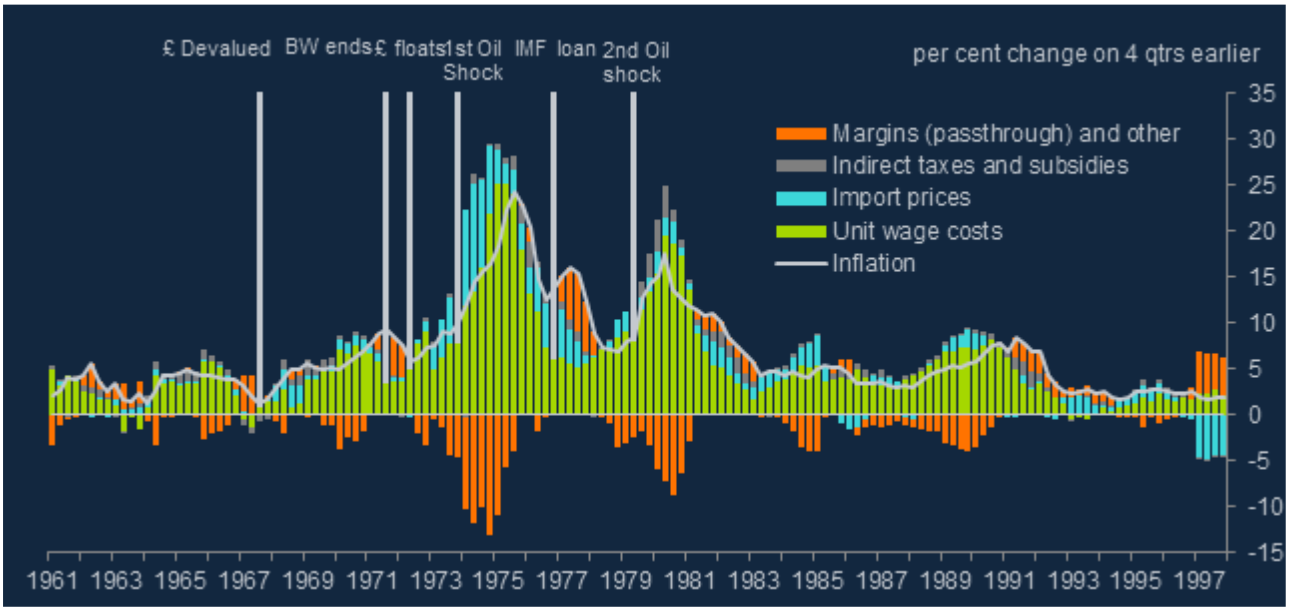
Given the coincidence of both high inflation and low output growth over the 1970s ('stagflation'), it certainly seems intuitive that supply side and cost-push shocks played a role, and this is a major theme in the UK literature. Rowlatt (1988) and Hendry (2001) both attribute the greater part of the rise in inflation in the 1970s to movements in oil and other commodity prices. However, their results are open to interpretation given the reduced-form nature of the models employed. Using structural vector autoregressions (SVARs), Benati (2008) and Barnett et al. (2010) find smaller, although still significant, contributions from commodity prices. Supply-side shocks might have been amplified by frictions in the labour market. Grubb et al. (1982) present theory and evidence that the burst in import inflation (largely driven by commodity price inflation) and the slowdown in productivity growth raised the rate of unemployment consistent with stable inflation (the NAIRU). This was pursued further by Layard and Nickell (1986) and Layard, Nickell and Jackman (1992) who investigate a number of factors that may have raised the NAIRU. These included increased unionisation and bargaining power for workers, real wage resistance to both import prices and indirect taxes and also non-linear and dynamic effects arising from the emergence of long-term unemployment in the 1980s.

From a retrospective analysis of these results it is quite clear that the authorities in the 1960s and 1970s faced considerable difficulties on the supply-side of the domestic economy and had to weather unprecedentedly large global commodity price shocks. **Chart 1.8** provided some evidence for this. **Chart 2.1** supplements that with a simple decomposition of CPI inflation into cost-weighted contributions from unit labour costs, import prices and indirect taxes (based on crude cost shares derived from the national accounts) with the residual reflecting company profit margins, which implicitly include the lagged passthrough of costs due to nominal pricing rigidities. This gives a good starting point to understand the proximate drivers of inflation even if it is largely an accounting exercise and cannot say much about the underlying shocks.

From this proximate accounting viewpoint, the late 1960s pick up in price inflation seems largely attributable to wage costs. Despite the devaluation in 1967 sterling import prices only appear to contribute a little to the 8pp increase in inflation. Import prices were much more significant in the first half of 1970s and coupled with the explosion of wage inflation to 35% account for the peak in inflation of 25% in 1975. As the chart shows, firms absorbed a large part of those costs in the mid-1970s in part due to price controls which we discuss later. This would lead to a corporate cashflow crisis in 1974 reflected in a halving of stock market

prices over the course of the year. Eventually, firms were able to pass on the massive increase in costs and this would appear to explain much of the rebound of inflation in 1977 coupled with an extra boost from import prices from sterling's travails in 1976. For much of the 1980s wage costs are the dominant proximate force underlying inflation, though the depreciation of £ in 1984 appears to have squeezed company margins in the mid-1980s.

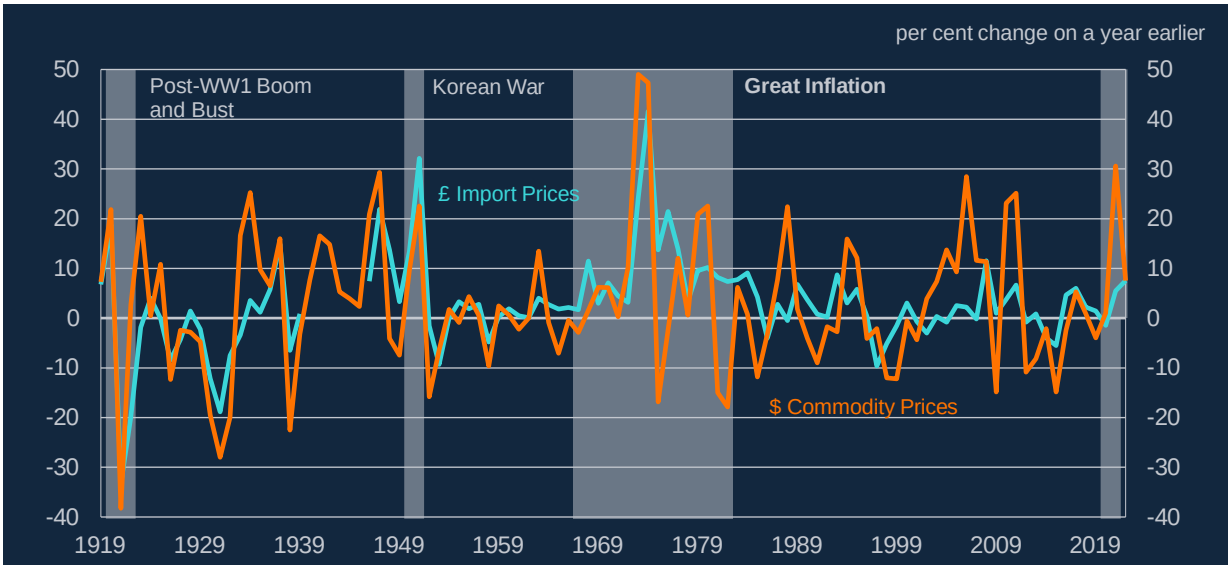
Chart 2.1: CPI inflation and contributions from unit wage costs, indirect taxes and import prices



Source: ONS and authors' calculations.

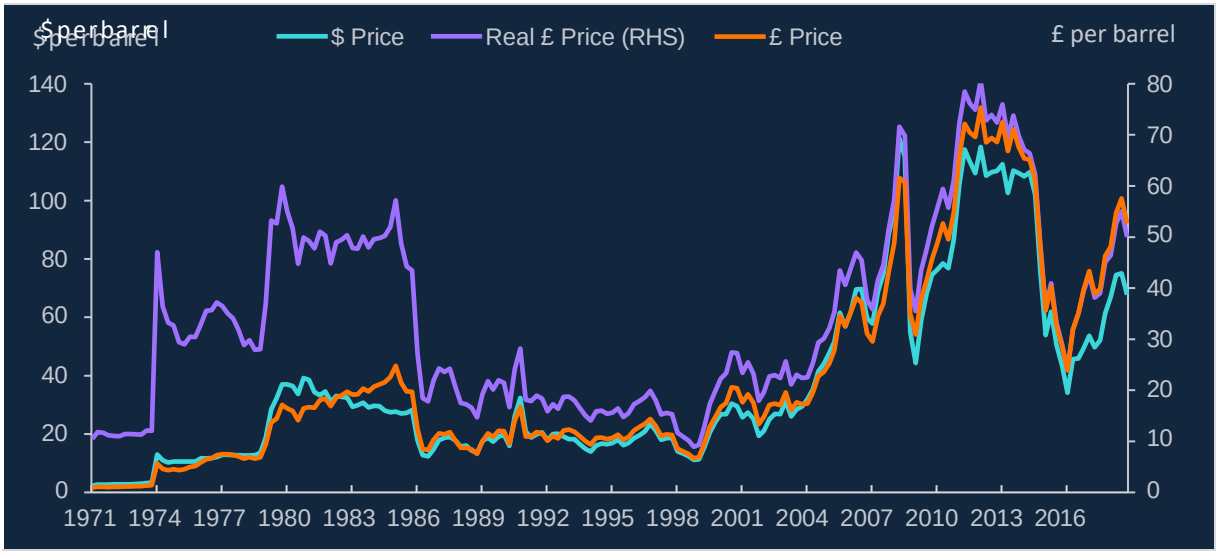
Much of the fluctuation in import prices came from raw commodity prices and undoubtedly these were large relative to historical experience (**Chart 2.2**), though commodity prices were equally an important cost-push factor in the double-digit inflation episodes in 1919 and the early 1950s.

Chart 2.2: Commodity prices 1919 - 2023



Source: Thomas and Dimsdale (2017), Grilli and Yang (1988) indices extended using method of Pfaffenzeller et al. (2007).

Chart 2.3: Oil prices: 1971-present

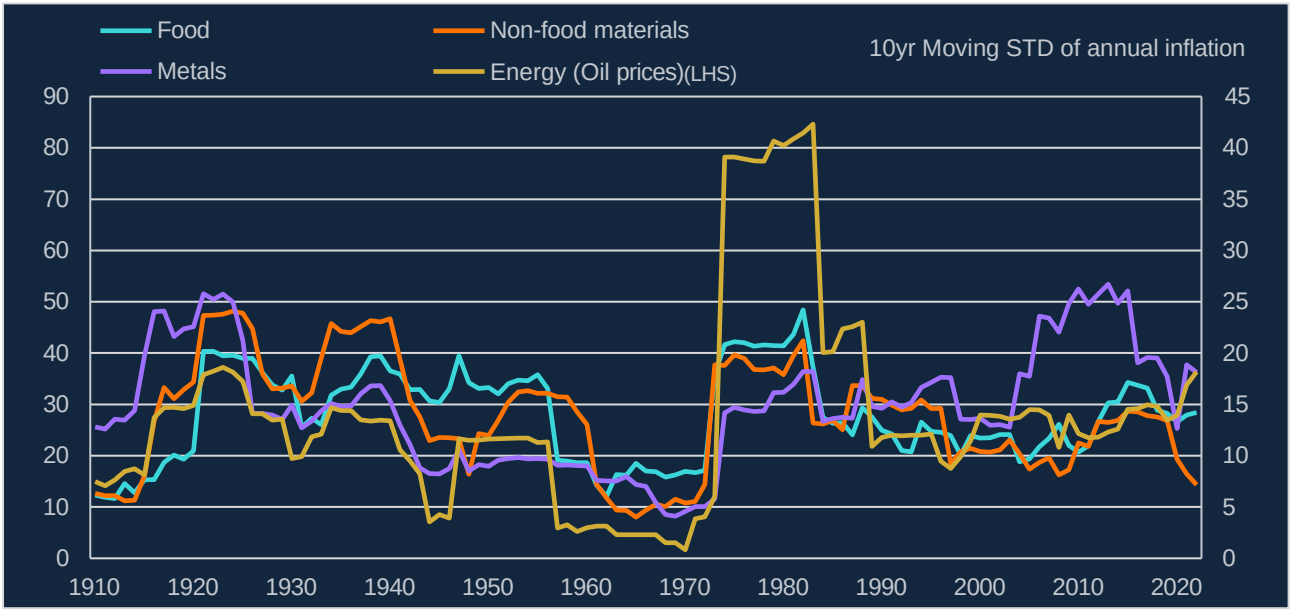


Source: FRED, US Energy Information Authority. West Texas Intermediate spot prices to 1987, Brent spot prices subsequently.

Those energy price fluctuations did not only reflect a quadrupling of oil prices (**Chart 2.3**), they also reflected a broader set of raw commodities such as food and metals. In part, that reflected global demand for raw materials, for example high government spending by the US during the Vietnam War, but also supply shortages. In 1972 there were poor agricultural yields for the major producers such as United States, Australia, Canada, and the Soviet Union.[2] This led to a broad-based rise in commodity price volatility in the 1970s (**Chart 2.4**).

[2] The failure of the Peruvian anchovy catch in 1972 led to a significant decline in the availability of high-protein feedstocks and increased demand for soybean meal whose prices soared in 1973 and 1974.

Chart 2.4: Commodity price volatility since 1900



Source: Grilli and Yang (1988) indices extended using method of Pfaffenzeller et al. (2007). See Appendix 3. BP/EI Statistical Review of World Energy.

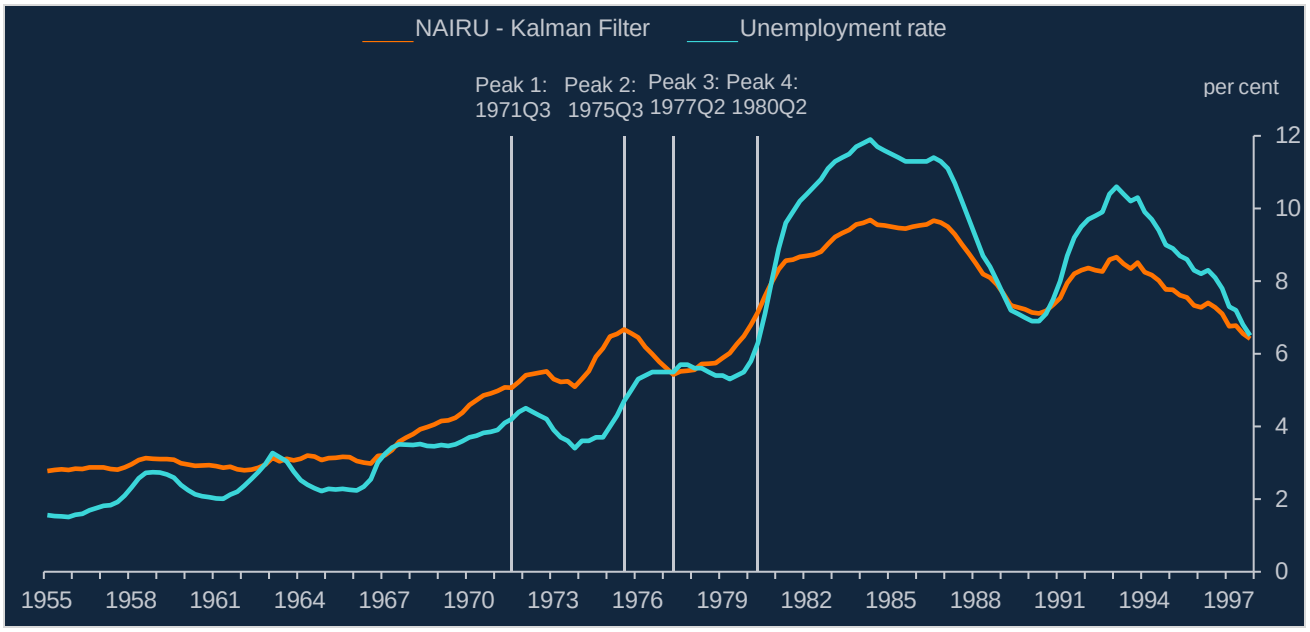
It is also evident, in retrospect, that the economy was suffering from supply-side weakness reflected in the explosive wage inflation experienced in the economy and weaker productivity growth – both of which contributed to increases in unit wage costs for firms.

It does seem plausible that there was a significant rise in the NAIRU throughout the 1960s, 70s and 80s. An approach often adopted in the literature is to treat the NAIRU as an unobserved component and back out an estimate from what would be required to explain earnings growth in a wage Phillips curve. This is the approach of Gordon (1997) who uses a Kalman-filter approach and which we replicate for the UK below from 1955 for the wage Phillips curve in **Chart 2.5**.[3] The estimates suggest that for most of the period from the mid-1950s unemployment was below the estimated natural rate. The "go-stop" policy cycle of the 1950s and early 1960s (discussed later) is clear in the unemployment rate when the natural rate was estimated to be fairly low at less than 3%, but still above what contemporaries would have thought of as full employment. It is from the late 1960s that estimates of the NAIRU tend to increase markedly and the efforts of the Heath government in the early 1970s to bring unemployment back to 1950s and 1960s levels are quite apparent from this chart. This is consistent with the pickup in wage inflation in the late 1960s and 1970s. Without it, as Schulze and Woodward (1996) argue, it is not clear why the wage explosion happened when it did.

A further rise in the implied NAIRU occurs following the commodity price shocks of the mid-1970s. That may have reflected persistent real wage resistance in response to higher import prices (Bruno and Sachs (1985)). It is only by 1977 that the unemployment gap is closed, and inflation subsequently falls back. The 1980s then saw a prolonged period when unemployment was well above the natural rate which paved the way for the fall in wage and price inflation over that period, only for the gap to be closed ahead of the pickup in inflation in 1990.

[3] Based on Greenslade et al (2003).

Chart 2.5 Kalman filter estimates of the NAIRU and Inflation peaks



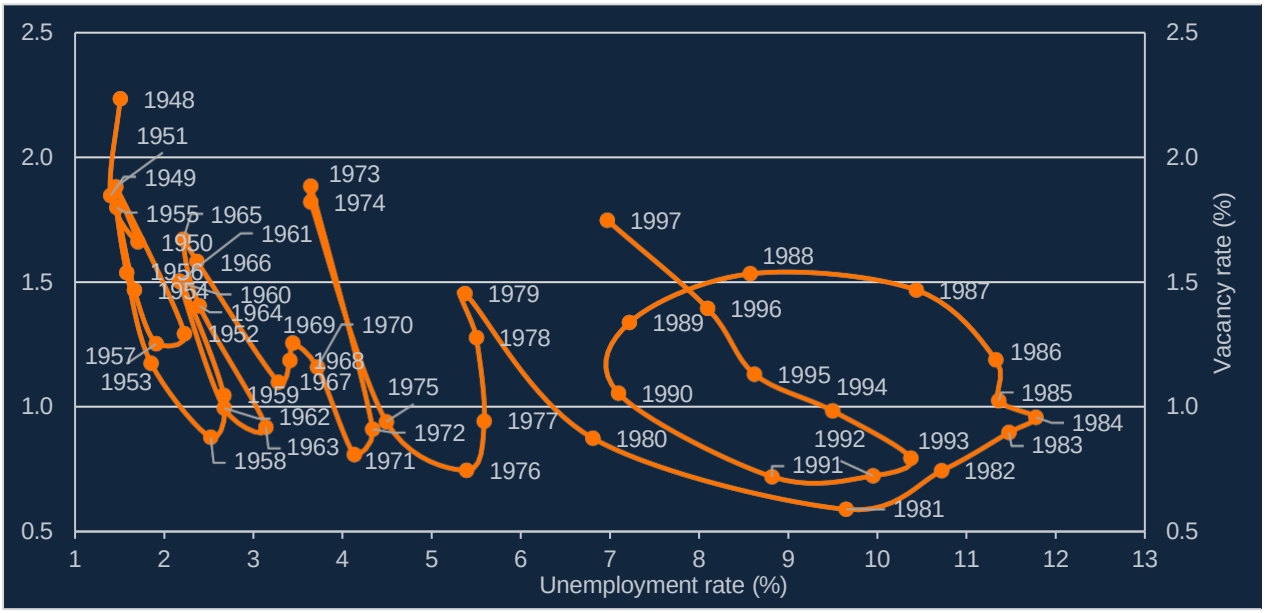
Sources: Thomas and Dimsdale (2017), ONS, authors' calculations

Unobserved component estimates of the NAIRU are effectively a derived statistic from the wage inflation data. To validate this further there needs to be a convincing set of underlying factors that can explain a rise in the NAIRU and increased wage pressure. An oft-used statistic is the strength of union bargaining power. Union membership reached its peak in the mid-1970s and the timing of the first pick up matches a breakdown of the Labour Government's pay policy of the 1960s following which the government shifted its focus towards agreeing to more general reforms with the Trade Unions. The set of proposals put forward in 1969 named "In Place of Strife" were unacceptable to the unions and key members of the Labour government and the policies were watered down. This may have strengthened the belief of unions to push for higher pay rises and remedy the distortions created under the incomes policy. This, many argue, was a key factor behind the wage pressure of the 1970s.

In fact, the picture is much more nuanced than that. Many of the union leaders recognised the dangers of high inflation and the wage explosion of the early-to-mid 1970s. At the end of a Trade Union conference in this period, one of the key union leaders expressed his view to the others that "we can't go on like this".[4] However, what was clear was that there were weaknesses in the UK's bargaining framework. Private sector collective bargaining was de-centralised at the local/plant level and there were often multiple unions within a plant. This meant union leaders could not easily control the local shop stewards who would negotiate pay and working practices and multiple unions would compete with each other for higher pay. But overall, it was not clear that strike activity was comparatively worse than in other G7 countries. Internationally, there was also growing industrial unrest, with the May 1968 riots in France being the most well known, and a pickup in wage inflation was experienced in many economies. It was more a problem of resistance to the introduction of new work practices and the impact on productivity that was more important in pushing up unit wage costs (see for example Prais (1981), Metcalf (1988) and Crafts (1991)).

[4] See Sandbrook (2012).

Chart 2.6: The Beveridge curve 1948-1997

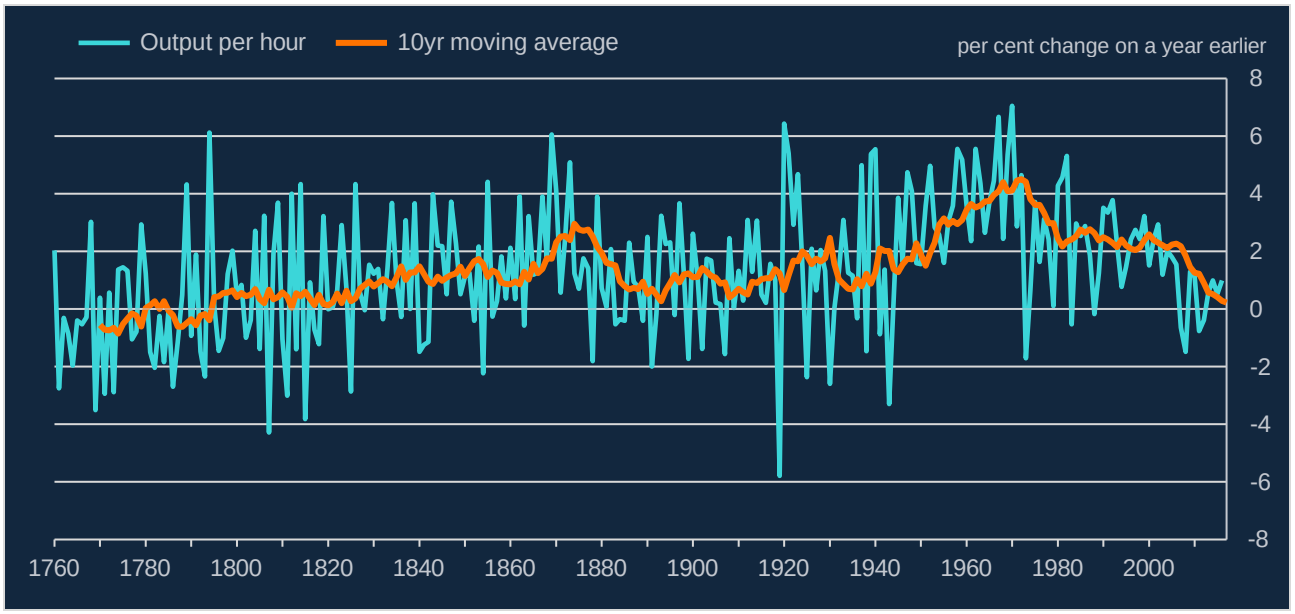


Sources: Thomas and Dimsdale (2017), ONS, authors' calculations

Further evidence on the NAIRU comes from the Beveridge Curve which plots the ratio of vacancies to unemployment for each year. This appears to shift outwards in from 1967 to 1971 and again in the 1980s (**Chart 2.6**) suggesting a decrease in matching efficiency. Jackman, Layard and Nickell (1992) also argue there are important non-linearities and hysteresis effects arising from the dynamics of unemployment. In particular, they point to the rise in long-term unemployment in the mid-1980s which placed less downward pressure on earnings than short or medium-term durations.

More generally, these labour market influences occurred at the same time as a seeming dip in underlying productivity growth starting in the early 1970s. Indeed, the UK experienced the fastest rates of productivity growth in its history, with the growth in output per hour peaking at around 4% in the late 1960s (**Chart 2.7**). Yet at the same time, the UK's productivity growth lagged behind many of its competitors (**Table 2.1**) and the UK economy was increasingly perceived as being in decline and by the 1970s had become known as "the sick man of Europe". The dip in productivity growth in the 1970s came at the worst possible time given the pickup in wage inflation over this period. The effect of poor industrial relations on productivity has been noted but weak management, ineffective research and development spending and vocational training are also part of the story (see Crafts (1991) for a survey).

Chart 2.7: Labour productivity growth (output per hour)



Source: Thomas and Dimsdale (2017)

Table 2.1 Growth in GDP per hour worked, 1950-1973 (% per year)

Canada	3.89
France	5.47
Germany	5.83
Italy	5.94
Japan	7.40
UK	3.87
US	2.68

Source: Conference Board, Total Economy Database

(ii) Bad policy – ignorance of the "Taylor principle" and misapprehension of the output inflation trade-off

Even if there were adverse commodity and other supply shocks, it was not inevitable that there would be a large and persistent rise in inflation. Modern theory suggests that this would depend primarily on the policy response. Wage and other cost-push pressures in themselves could not be the ultimate cause of persistent inflation. They had to be accommodated by monetary and fiscal policy or, in the first instance, by the passive response of the banking system to a higher demand for credit to pay higher production costs in advance of revenue. Unless the authorities engineered a rise in nominal spending, high import price and wage inflation would simply lead to higher unemployment and ultimately a reversal of inflationary pressure.

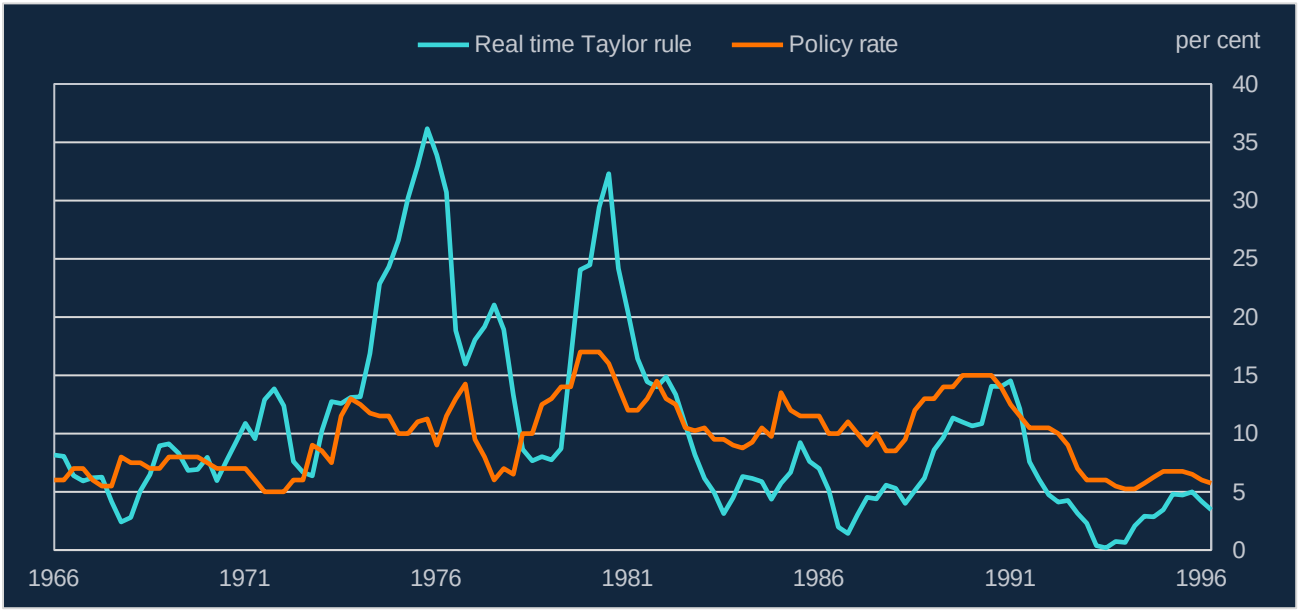
The modern theory of optimal policy suggests that import price changes should be accommodated by policy if it is less costly to allow the required adjustment in real consumption wages to be achieved through higher goods prices (with the risk it de-anchors inflation expectations) rather than forcing down nominal wages through higher unemployment. Similarly, temporary cost-push shocks or transient real wage rigidity that drive a wedge between the current level of potential output and the efficient level of output might also

allow some degree of accommodation of inflationary pressure (Blanchard and Gali (2009)). However, beyond that, any entrenched inflation is the consequence of the monetary policy rule, a misapprehension of the policy trade-offs involved or a failure to understand the inflation expectations process.

Several authors present evidence that monetary policy behaved differently in the 1970s than it did in later years (particularly during the inflation targeting era post-1992) and in a way that led to poorer outcomes for both output and inflation than could have been achieved. Much of the evidence around bad policy in the literature is largely about whether the Taylor principle is satisfied – which argues that to stabilise inflation, interest rates should move by more than one-for-one in response to a given percentage point deviation of inflation from target. Examples for the UK are Nelson and Nikolov (2003) and Nelson (2003) who find a very low response of the policy rate to inflation during the Great Inflation (which remained the case until inflation targeting began in 1992). **Chart 2.8** below shows interest rates compared to a simple Taylor Rule based on their real-time measures of output and inflation. The path of policy in the mid-1970s and early 1980s was way below what a Taylor-rule prescription would have suggested given the inflation and GDP data at the time. **Chart 2.9** reinforces this idea showing clearly that real interest rates moved sharply into negative territory in the 1970s despite unprecedently high nominal interest rates that reached well into double figures.

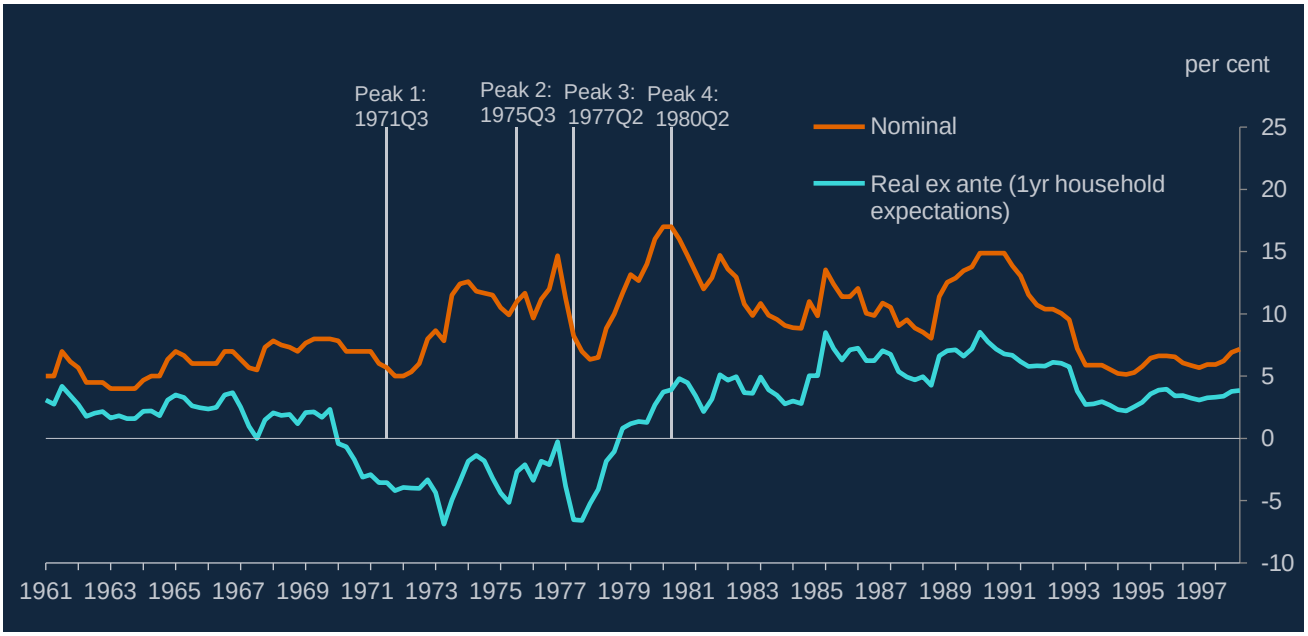
However, Benati (2008) concludes from a structural VAR analysis that even if monetary policy had reacted to inflation in the 1970s as it did after the Bank of England gained full monetary policy instrument independence in 1997, inflation would not have been much lower in the 1970s. In contrast, using an estimated theoretical model, Nelson and Nikolov (2004) conclude that had monetary policy in the 1970s been conducted as it was from 1992 to 1997, inflation in the 1970s would have been barely any higher than in the 1960s. Naturally, such exercises are potentially subject to the Lucas Critique. One cannot take a policy rule from one era and apply it to a different one and assume all the other key structural parameters are unchanged. The inferences also depend ultimately on the response of inflation to monetary policy shocks which can differ between models and approaches (e.g. Benati's estimates appears to be considerably smaller than in Cloyne and Hurtgen (2016)). These empirical issues aside, the contention is that inflation could have been lowered by more aggressive monetary policies which, if they had been anticipated and built into expectations, would have worked to nip any spiralling of wage and prices in the bud.

Chart 2.8 : Taylor rule adapted from Nelson and Nikolov (2001)



Source: Nelson and Nikolov (2003), Thomas and Dimsdale (2017), Bank of England

Chart 2.9 Nominal and real *ex ante* short-term rates: 1961-1997



Source: Batchelor and Orr (1988), Thomas and Dimsdale (2017), Bank of England

Monetary policy errors might be reflected in inflation expectations in other ways. A monetary policy rule that did not respond sufficiently to inflation may have left the economy vulnerable to self-fulfilling changes in inflation expectations. Barnett et al. (2010) investigate this possibility using professional forecasters' inflation expectations and conclude that shocks to inflation expectations do not appear to be a major driver of inflation in the 1970s.

If the argument is that monetary policy was too loose and did not respond sufficiently to inflation in the 1970s, what might explain this? One possibility is that policymakers misunderstood the state of the economy – in particular, the amount of slack, as argued by Orphanides and van Norden (2002) for the US.

Nelson and Nikolov (2003) use data revisions and documentary evidence to show that this was indeed the case for the UK. Data on output have been revised up significantly for some periods of the 1970s and the slowdown in productivity growth meant policymakers overestimated potential output growth by some margin. All in all, Nelson and Nikolov conclude that policymakers thought that the output gap was on average 7% weaker over the course of the 1970s than it really was. In separate work, the authors estimate that it explains about a quarter of the pickup in inflation from the 1960s to the 1970s (Nelson and Nikolov, 2004)).

The authorities may also have misunderstood the process generating inflation. DeLong (1997) argues that American policymakers believed that they could exploit the inverse relationship between unemployment and inflation to hold unemployment down for a sustained period. As Friedman had articulated in his famous presidential address, under adaptive expectations this could generate a wage-price spiral with adaptive inflation expectations shifting up the short-run Phillips curve. Sargent (2002) builds on this insight, arguing that as inflation rose, policymakers began to understand that it was impossible to reduce unemployment at the cost of higher inflation except in the very short run. In the UK, much of the literature refers to the well-known speech Prime Minister Jim Callaghan gave at the 1976 Labour Party Conference where he explicitly acknowledged this.[5] Milton Friedman later stated he thought this was one of the most important speeches made by any government minister on economic policy.[6]

Another popular explanation of the Great Inflation in the theoretical literature is that central banks face a time inconsistency problem. Kydland and Prescott (1977) show that if a central bank cannot commit not to exploit the short-run Phillips curve to reduce unemployment – if for example if it is known to want an unemployment rate inconsistent with the NAIRU or natural rate – the private sector rationally expects higher inflation which the central bank will deliver. The outcome is inefficiently high inflation – the so called "inflation bias". Barro and Gordon (1983) argue along similar lines. These models make the prediction that inflation varies with the natural rate of unemployment, assuming the authorities were targeting a given low rate of unemployment. Parkin (1993) and Ireland (1999) argue that the rise and fall in the natural rate of unemployment were responsible for the Great Inflation and its end. Goodhart (1989) makes a similar point in his discussion of inflation in the UK.

However, a crucial feature of these explanations is that they rest on the behaviour of inflation expectations**.** It appears from the household expectations data in **Chart 1.5** (which have not featured prominently in the UK literature), that they rose in the late 1960s and early 1970s but remained stable at around 10% during the mid-1970s. They were not de-anchored further by the large increases in wage and price inflation observed following the oil price shock. They do not appear particularly adaptive or suffer a regime shift around the time that the Taylor principle was explicitly violated during the mid-1970s. Therefore, despite "over-accommodative" polices, the burst in inflation to a peak of 25% was not persistent or, at least, not overtly de-stabilising. That might imply any wage-price spiral in the 1970s was subject to limits and inflation would revert towards underlying expectations of around 10% once energy price and other import price effects had worked their way through and margins were restored. Those expectations then fall further in the early 1980s. As Bordo and Orphanides point out for the US, the time consistency explanation that the fall in inflation was due to a falling NAIRU does not appear consistent with the fall in inflation in the 1980s,

[5] "We used to think you could spend your way out of a recession and increase employment by cutting taxes and boosting government spending. I tell you in all candour, that option no longer exists. And in so far as it ever did exist, it only worked on each occasion… by injecting a bigger dose of inflation into the economy, followed by a higher level of unemployment as the next step".
[6] "To Jimmy from James," *Newsweek*, December 6, 1976, p. 45.

which was not accompanied by a fall in the natural rate of unemployment in the US nor, from the evidence of **Chart 2.5,** the UK where both unemployment and the NAIRU pick up in the early 1980s.

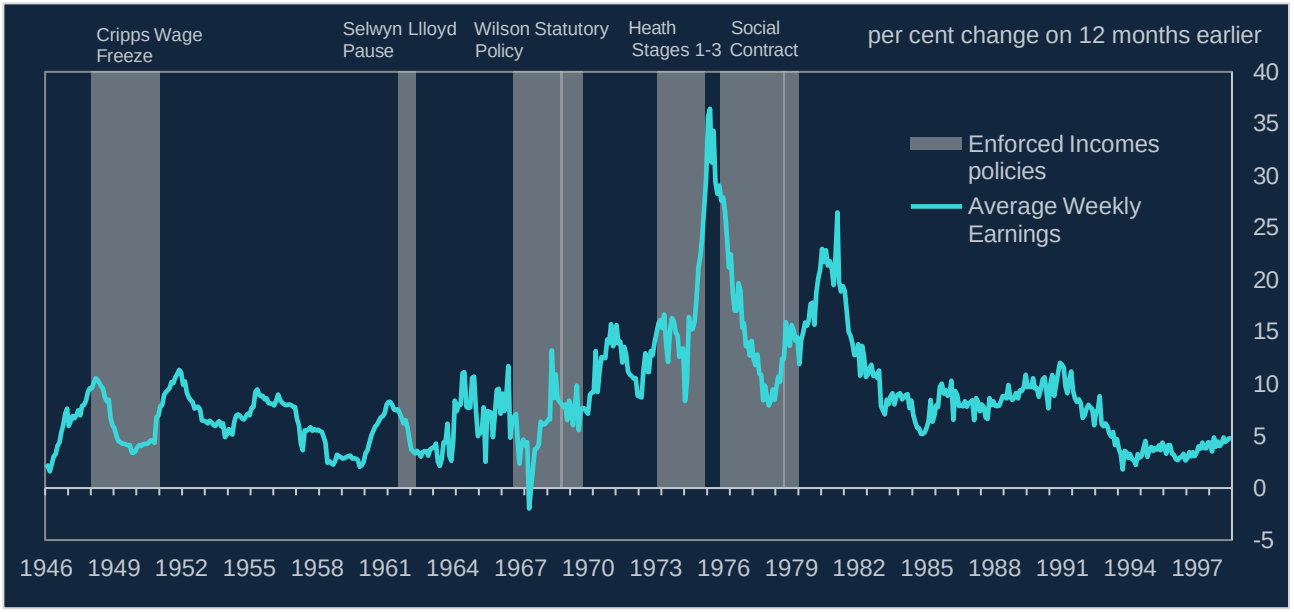
(iii) Bad policy – monetary policy neglect and the misuse of prices and incomes policies

According to Nelson (2002) many of these explanations, based on a modern perspective on monetary policy and the inflation-output trade off, do not fit with the historical narrative in the UK. In this and other work (Nelson and Nikolov (2004)) he proposes a more general "Monetary Policy Neglect" hypothesis. He argues contemporaries did not believe they could bring inflation down by reducing output below potential, but rather they believed in a cost-push view of inflation. He provides a range of narrative evidence that the British authorities did not acknowledge until the late 1970s that there was any short-run trade-off between unemployment and inflation. This implies that inflation could not have risen because policymakers were trying to keep unemployment low at the cost of higher inflation. Instead, Nelson argues that the main reason why monetary policy was too loose was that the authorities had a non-monetary view of inflation. A key belief among many Keynesian economists and policymakers after WW2 was that inflation was largely a "cost-push" phenomenon, a key element of which were pressures arising from wage costs. Wages were viewed as essentially exogenous and the outcome of centralised bargaining between trade unions and employers. They did not believe demand was particularly sensitive to short-term interest rates. Nor did they believe that inflation would respond to economic slack. Effectively up until the point of full employment the short-run Phillips curve was flat and could shift upwards via exogenous increases in wage and other cost pressures. This viewpoint had its roots in what is commonly known as the post-war consensus that emerged after the end of WW2.

A key plank of that post-war consensus had been to avoid the deprivation and high unemployment of the 1930s. But the aim was not only to maintain full employment but also to ensure adequate real living standards for the bulk of the population, supported by the safety net of the new welfare state. This idea had several strands, which were accepted by both the Conservatives and Labour parties. The first was to ensure a fair share of labour, which meant co-operation and agreement with trade unions whose interests were to push for higher wages and for redistribution from capital to labour. The second was a fear of social unrest should living standards decline, as was perceived to have been the case in the interwar period. Thus, there was a post-war consensus, supported by both parties for full employment and for sustainable real growth in labour incomes but, at the same time, the need to keep wage and price inflation low because of the exchange rate peg under the Bretton Woods system.

As a result of these objectives, the government would turn to prices and incomes policies, sometimes in the form of voluntary agreement with unions and employers, or statutory if agreement could not be reached. These would impose some combination of temporary controls on prices or set and agreed wage "norms" to be respected, sometimes with fines and penalties for transgressions. **Table 2.2** adapted from Brittan (1979) summarises some of the key pay policies over this period and **Table 2.3** covers associated price policies.

Chart 2.10 Average weekly earnings and incomes policies



Sources: Thomas and Dimsdale (2017), ONS, authors' calculations.

Table 2.2 U.K. pay policies 1961-1974

July 1961-March 1962	**SELWYN LLOYD PAY PAUSE** Enforced in public sector until breached by Electricity Council in November 1961. Initial voluntary compliance elsewhere.
March 1962-July 1966	Conservative "guiding light", succeeded by Labour Statement of Intent in December 1964. Neither policy enforced.
July 1966-Autumn 1969	**WILSON GOVERNMENT STATUTORY POLICIES** (a) July—December 1966. Freeze. (b) January 1967—June 1967. "Severe" restraint gradually becoming less intense. (c) June 1967—April 1968. 3.5% plus productivity agreements. (d) April 1968—mid-1969. Policy intensified by Jenkins.
1969-November 1972	No real pay policies. Labour policies fade away in 1969 as emphasis shifts to abortive attempt at union reform ("In Place of Strife"). Conservative government elected in June 1970 initially opposed to incomes policy, but tries to fight public sector wage claims.
November 1972-March 1974	**HEATH STATUTORY POLICIES** (a) November 1972—January 1973. Stage One. Freeze. (b) February—October 1973. Stage Two. "£1 per week" plus 4%. (c) October 1973—February 1974. Stage Three. 7% plus "thresholds."
March 1974-July 1975	Pay policy collapses with defeat of Conservative government. Ineffective initial "Social Contract" under Labour. Threshold payments honoured.
August 1975 to end of 1978	**WILSON-CALLAGHAN "SOCIAL CONTRACT" CONTROLS** (Not statutory, but regarded as compulsory and enforced in Stages One and Two by TUC. Government sanctions against noncompliance in private sector.) (a) August 1975—July 1976. Stage One. Maximum £6 per week increase. (b) August 1976—July 1977. Stage Two. £2.50 to £4 per week limit. (c) August 1977—July 1978. Stage Three. 10% limit to earnings increase. (d) August 1978—end of year. Stage Four. 5% Policy breaks down with Ford strike.

Source: Brittan (1979)

Table 2.3 U.K. price control policies and initiatives 1965-1977

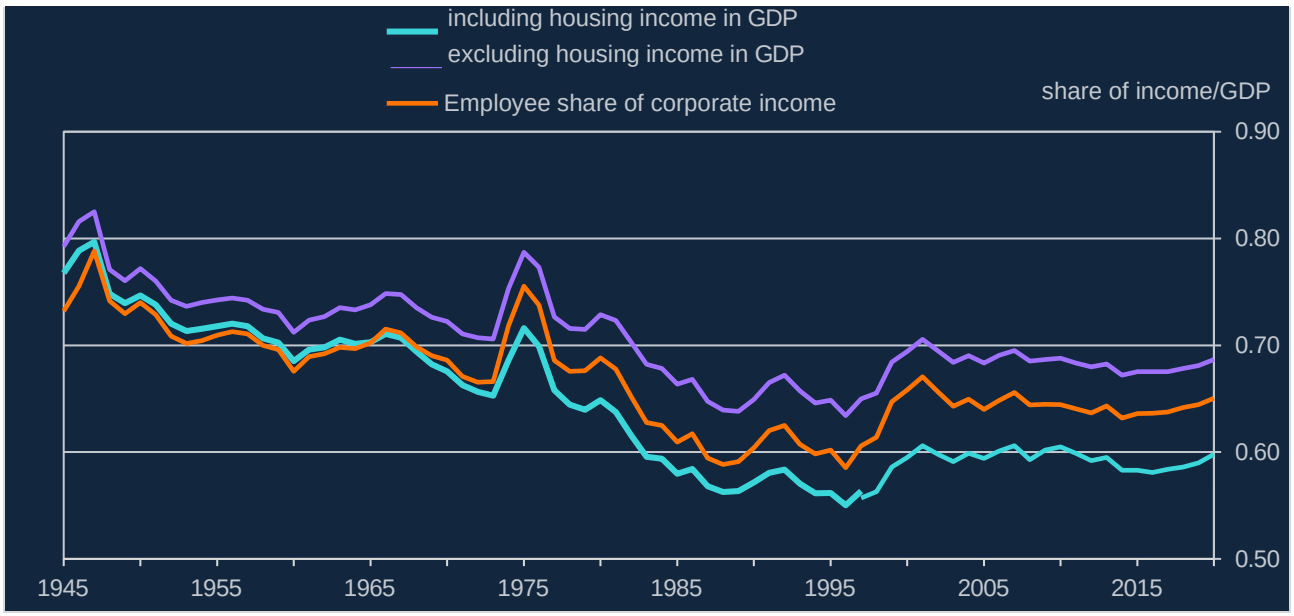
April 1965-June 1966	**National Board for Prices and Incomes – voluntary scheme.** Companies asked to justify price increases based on whether it was impossible to offset cost increases by its own efforts. NBPI was required to state whether price increase was in national interest, but recommendations carried no force of law.
July 1966-July 1967	**NBPI stricter control on price increases**, more strict in the first six months.
July 1967-1970	**Essentially voluntary** (a) July 1967—March 1968, period of moderation. Any pre-notified price could be delayed for a maximum period of 7 months. (b) March 1968 – 1970. The Government's powers extended so that it could delay increases for eight months after an investigation, or even reduce prices, if the NBPI so recommended.
July 1971-November 1972	**CBI voluntary initiative** Voluntary undertaking by 90% of largest 200 companies and over 700 other member companies to avoid increases for a period of 12 months or limit increases to 5%.
1973-1977	**The Price Code under the Counter-Inflation Act 1973** Price Commission was set up in place of NBPI. First, it controlled prices by the imposition of an overall gross margin limit for distributors and by requiring that price increases from manufacturing and service firms conformed with the allowable cost rules. For most of the period that the Code applied, a proportion of increased labour costs were non-allowable (initially 50 per cent and subsequently reduced to 20 per cent in November 1974 and abolished July 1976). Second, the Code limited the net profit margin that all companies could achieve to a specified historic reference level and if that net margin was exceeded then price reductions were enforced or proposed price increases were held back.
August 1977-1979	**Price Commission Act 1977** Commission became able to investigate prices in specific industries in addition to pre-notified prices by larger companies, profit margin no longer the sole criteria. Penalties applied in terms of duration-specific price freezes and potentially reductions in the case of a specific industry inquiry. Abolished by incoming Thatcher Government.

The problem with prices and incomes policies is that although they often had temporary success, they created distortions that meant once the policy had been lifted there would be a burst of wage demands and price increases to restore relativities. **Chart 2.10** illustrates this for wages and incomes policies in the post-war period. Part of the problem, identified by Brittan (1979), is that money illusion after WW2 by unions had led to a trend decline in the labour share (**Chart 2.15**) and the pressure to restore that share could not be held in check permanently by incomes policies in the mid-1970s.

The incomes policies themselves were also badly designed and in the mid-1970s disastrously so. In October 1973, the Government launched "Stage 3" of its pay policy initially introduced in 1972. The policy was designed to limit wage increases to £2.25 a head or 7% (whichever was greater) but it also contained provisions for extra "threshold payments" which would be triggered once the Retail Price Index (RPI) rose 7% above the level at the start of the policy. This was in effect a gamble that inflationary pressures were on the wane given the tightening of policy and an easing of commodity price inflation. Heath announced this policy on 3rd October. Literally, a fortnight later Arab oil producers would cut oil production by 5% following the start of the Yom Kippur war, prompting a quadrupling in oil prices which ensured the thresholds would be triggered. This was on top of increases in other commodity prices. As noted earlier overall import price inflation would peak at 50% during 1974 contributing around 10% to inflation if passed through.

The near simultaneity of these two events would ensure the gamble backfired almost immediately. Not only would this ensure that real consumption wages would not be able to make their required adjustment in the near term to higher energy prices, which would imply weaker profits for firms and, implicitly, a higher short-run natural rate of unemployment. But it would also reduce any lag between prices changes and wage changes (Miller (1976)). This is a matter of some significance because it means real wage resistance during this period had been baked in by policy and was not necessarily endemic in union or worker behaviour as response to higher import prices. The striking feature **Chart 2.11** is the temporary nature of the rise in the labour share in 1974 and 1975 (the period when the threshold agreements were in place) before the restoration of the downward trend, which was only arrested in 1997. Over the course of the period as a whole, labour's share of income declined. Furthermore, the price controls in place only allowed a portion of increased costs to be passed through and so some of the second-round impact of higher wages and import prices on final goods prices was then delayed until 1975 giving the appearance of endemic persistence when in fact it was a result of prices and incomes policies.

Chart 2.11: The labour share under different measures



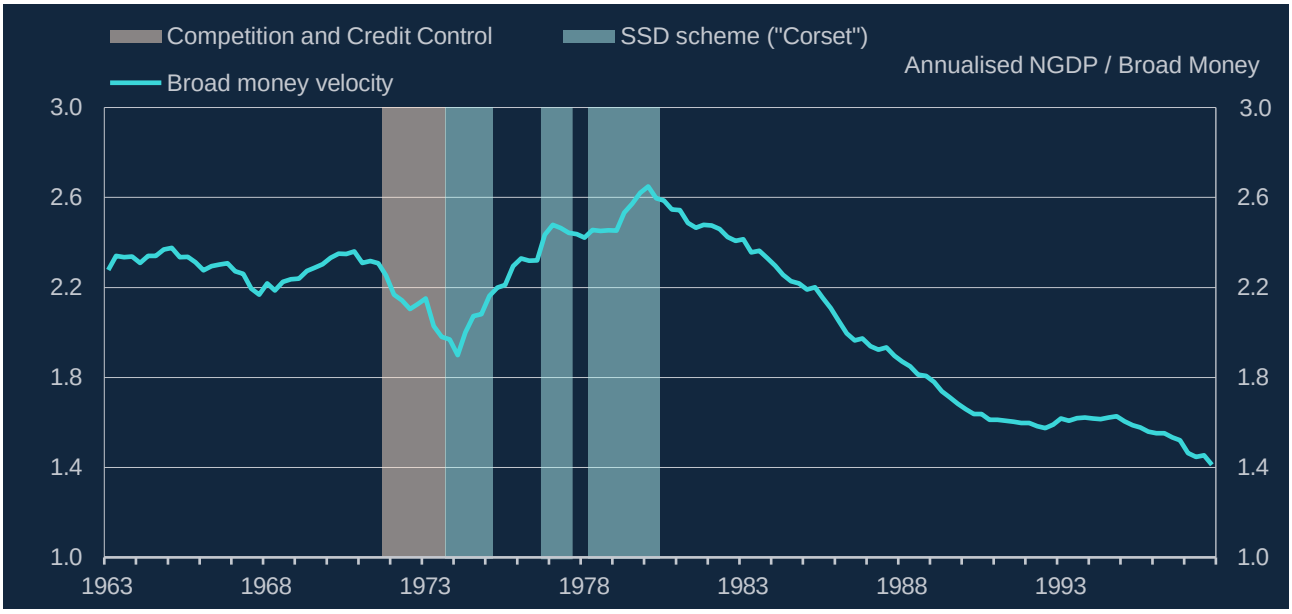
Source: ONS

(iv) Bad policy – failure to control money and credit

A variant on the monetary policy neglect hypothesis, associated chiefly with the monetarist school of thought, is that the authorities fundamentally lost control of the money supply at various points over this period. In particular, the failure to control money growth after the introduction of Competition and Credit Control in 1971 and in the late 1980s following earlier financial liberalisation were a primary cause of at least two of the inflation bursts that followed in the mid-1970s and in the early 1980s. It was the inability to control the money supply that ultimately lay at the heart of the UK's inflationary problems.

As noted earlier, the pick up in broad money growth between the end of 1971 and mid-1973 almost exactly mirrors the pick up in inflation from end of 1973 to mid-1975 (**Chart 1.6**). In terms of money velocity there is a noticeable "V-shape" in this period reflecting the lags between money growth and spending (**Chart 2.12**). As Allen (1983) notes, this is in fact a unique period where the Friedman-Schwartz prediction of long and variable lags is most stark. For this reason the 1970s are often viewed by British monetarists as the supreme example of why inflation, with a long and variable lag, is fundamentally the result of prior money growth. In part, the lack of previous examples is likely to reflect the fixed exchange rate regime for most of the period back to 1821, where domestic money growth might be expected to lag world prices, driven by balance of payments flows, as in the classic price-specie-flow mechanism. The sudden switch to a floating exchange rate regime coupled with a regime shift in the form of Competition and Credit Control is therefore argued to be one of the few quasi-natural experiments we have on the monetarist hypothesis. The implication is that had money growth been controlled in the early 1970s the energy price and other cost pressures on inflation would have been offset by declines in the inflation rate of other prices (non-energy intensive goods), with the overall inflation rate relatively stable. However, a closer analysis of the period suggests a number of challenges to this hypothesis.

Chart 2.12: Velocity of broad money



Source: Bank of England, ONS

A key driver of money growth was Competition and Credit Control (CCC) introduced in 1971. As discussed in the narrative history in **Appendix 1**, during the 1950s and 1960s, the UK financial system was highly compartmentalised and cartel agreements operated among the clearing banks, who largely provided working capital for companies, and among the building societies who dominated the provision of mortgage lending. However financial innovation began to undermine the controls, especially the creation of the Eurodollar market (Schenk (1998)). Foreign-owned and other fringe and merchant banks outside the main clearers began to become more important. The clearers themselves also began developing their overseas subsidiaries. This led to growing pressure to dismantle compartmentalised domestic financial system and make it more competitive. This was one of the key reasons for the introduction of CCC.

The main impact of CCC was increased competition for borrowers and re-intermediation of the traditional banking system, which led primarily to changes in relative rates of return rather than nominal spending. As

Goodhart (2015) shows, when banks expanded their lending they bid up wholesale deposit rates, so it was the rate of return on money that moved initially to equate money demand with supply, not lower yields on other assets or higher nominal spending. Indeed relative rates moved in a perverse way where wholesale deposit rates rose above some corporate borrowing rates allowing some customers to borrow and re-deposit with the banking system at a profit ("round tripping"). On this argument there were arguably no "excess" money holdings in the immediate aftermath of the introduction of CCC that required an adjustment in nominal incomes. It initially just induced a rise in both the supply and demand for money and so its impact on demand inflation may have been small. However, strong money and credit growth could additionally have reflected loose monetary policy and so it was this element that may have been correlated with inflation. As shown above, *ex ante* real interest rates were negative for most of the period. Property and asset price inflation both picked up rapidly in 1972 and 1973. So this may just be a symptom of the "bad policy" associated with the violation of the Taylor principle.

Similar arguments might be made for the impact of financial liberalisation in the late 1980s on the 1990 peak in inflation. After Competition and Credit Control, the authorities resorted once again to controls in the form of the Supplementary Special Deposit Scheme or "Corset". Monetary targets were then officially introduced in 1976 and in 1980 were made the centrepiece of the Medium-term Financial Strategy (MTFS). However, the relationship between money and nominal spending appeared to break down in the early 1980s and money growth on the official £M3 measure greatly exceeded its target ranges despite a recession and a fall in inflation. As the narrative history in Appendix 1 discusses, the Government switched back to the exchange rate as an informal nominal anchor. To monetarists, this led the Government taking their eye off the ball and led to a rapid pick up in money and credit growth in 1987 and 1988. These were precursors to the boom in demand and inflation that followed (Congdon (1992)).

It is not clear how the money supply neglect view fits with the work of Goodhart (1989) and Needham (2014) who claim that the Bank of England had already moved towards thinking about monetary policy in terms of monetary aggregates in the early 1970s (a claim which Capie (2010) disputes). Needham argues Competition and Credit Control (CCC) started Britain's first "money supply experiment". He cites work by Goodhart and others estimating money demand functions and investigating the direction of causality. More compellingly, he finds archival evidence that officials discussed setting a money supply target in the 1971 Budget. In the event, the Chancellor (Barber) only made a passing reference to growth in the money supply, but the Daily Telegraph interpreted this as a target. In response, Barber disputed the details of the story, but did say that he had set ''short-term guidelines for the increase in bank lending and in money supply". And after CCC was proposed, the Governor explained that the Bank of England was shifting its focus towards monetary aggregates. Indeed, internal money targets were set on a continuous basis from 1971. If policymakers were focussing on money, this begs the question of why monetary policy was not tightened more aggressively. Needham and Capie find several examples of Prime Minister Heath blocking increases in interest rates. So in essence, they argue that it was essentially the failure to implement the policy rule envisaged by CCC which placed greater emphasis on interest rates as the means of controlling credit. Needham also shows that the Bank of England's money demand equations on which internal money targets were based were problematic. The Treasury lost faith with the equations, and this may have set back the move towards taking money targets seriously. Nevertheless, targets continued to be set and officials continued to be worried by very high M3 growth outturns. A recent paper by Oliver (2024) reviews the arguments. He supports the idea that the authorities began to consider a monetary approach from the early 1970s, but the fact that a monetary boom was allowed to go unchecked, and that price and wage controls were still pursued, suggests it did not become serious until later in the decade.

Batini and Nelson (2009) also have an explanation to reconcile the presence of monetary targets with their view that the authorities had a nonmonetary approach to inflation control: monetary targets were used to justify the use of nonmonetary policy instruments. The UK authorities analysed developments in the money supply through the lens of the credit counterparts. The key credit counterparts to the change in broad money are the change in bank lending to the private sector and the budget deficit less the change in non-bank private sectors holdings of government bonds. This identity seemed to rationalise the use of direct controls (in the form of the Corset), which would reduce bank lending, and fiscal policy, to reduce the budget deficit, both of which would, in turn, reduce broad money. It was a way of reconciling monetary targets with the conventional non-monetary tools of credit controls and fiscal policy.

III The factors causing high inflation – a re-assessment

The literature discussed above has identified various causes for the increase in inflation and used various empirical approaches to analyse the causes of the Great Inflation. To our knowledge none have attempted a joint assessment of these different hypothesis for the UK in a multivariate setting nor made use of the inflation expectations data to understand the underlying movements in UK inflation. This is what we attempt in this section using a number of empirical approaches.

We first use a structural cointegrated SVAR model based on McLeay and Thomas (2016) to provide a complete shock decomposition of inflation over this period, taking into account both shocks to the trend or permanent component of inflation as well the transitory and cyclical components. In particular, the Mcleay and Thomas (2016) SVAR includes different shocks to the banking system that in principle would capture the impact of Competition and Credit Control and other shocks to the financial system in the 1980s which to our knowledge have not been examined within a VAR framework before. Second, we look at the evidence on the interaction between available inflation expectations measures and wage and price inflation to shed light on the expectations formation process. Third, we use this evidence to develop a semi-structural model of the wage-price system following the approaches of Castle, Hendry and Martinez (2023) and Bernanke and Blanchard (2023). This seeks a complementary but more direct attempt at a decomposition of inflation to the SVAR. Here we examine explicitly the role of inflation expectations, commodity prices and the role of prices and incomes policies in price and wage setting.

(i) Using an SVAR to distinguish between temporary and permanent shocks to inflation

The structural cointegrated VAR approach we undertake here builds on that adopted by McCleay and Thomas (2016) when looking at the Long Expansion period in the 1990s and early 2000s. This framework not only considers the impact of standard macroeconomic and policy shocks such as aggregate demand, aggregate supply and monetary policy but also shocks to the banking system (to capture the effects of Competition and Credit Control) and shifts in core or trend inflation. That allows a joint investigation of the impact of all the potential factors affecting inflation during the 1960s, 70s and 80s. The SVAR is estimated over the period 1966Q1-2015Q3 so we can compare the Great Inflation with later periods when expectations were more anchored around an explicit inflation target. A long sample covering various economic cycles also helps identify long-run cointegrating relationships in the data which allows us to distinguish between permanent and temporary shocks as first outlined by King, Plosser, Stock and Watson (1991). But we have avoided including the Brexit referendum (announced in 2015Q4) and Covid pandemic

which are likely to affect the estimation of co-integrating vectors given both represent major structural changes occurring right at the end of our sample.

The cointegrated VAR or Vector Error-Correction Model is given by:

$$\Delta x_t = d + B\Delta x_{t-1} + \Pi x_{t-1} + e_t$$

With a moving-average representation given by

$$x_t = x_0 + \mu_t + C(1)\sum_{i=0}^{t-1} e_{t-i} + C*(L)e_t$$

Unlike the standard non-cointegrated VAR, *C* (1) = *F* is a reduced rank matrix (rank = *n – r)*, where n is the number of variables in the system and r is equal to the number of long-run or cointegrating relationships between them. Engle and Granger (1987) and Engle and Yoo (1991) show the C(1) matrix can be written as the product of two matrices which are *n* x *n-r* matrices related (non-uniquely) to the parameters of the cointegrating vectors. The model can then be written as a trend-cycle decomposition of x_t:

$$x_t = x_0 + \mu t + \gamma\tau_t + C*(L)e_t$$

where there are *n-r* common stochastic trends (CSTs) given by:

$$\tau_t = \theta' \sum_{i=0}^{t-1} e_{t-i}$$

which are based on the cumulated sum of the permanent shocks.

The distinction between permanent shocks and temporary shocks is useful especially for the Great Inflation. For instance, this allows us to distinguish between permanent regime shifts in monetary policy – what today we typically call a core inflation or inflation expectations shock – from a temporary shock to the policy rule which is often what is identified in many structural VAR analyses of monetary policy. The cost of a long sample is that we are estimating over a number of policy regimes and there may be periods of structural change both in terms of the trend behaviour of the economy and in terms of the cyclical relationships between variables. So, the impulse response functions for interest rates will provide an estimate of how policy has responded *on average* to shocks hitting the economy. This means shocks to the implied monetary policy rule in the model will reflect deviations from the average reaction function, rather than the reaction that might be estimated in a sub-sample. But that might be useful if we want to identify whether the accommodation of shocks was more or less than under the later regime of inflation targeting.

We estimate a system that includes the standard macroeconomic variables typically used to identify these shocks namely inflation, real GDP and short-term interest rates. We augment these with measures of money, credit, the rate of return on loans and deposits, plus a number of financial market variables such as long-term bond yields, equity prices and the real exchange rate. That allows us to investigate the role of money and credit and their effect on various asset markets as well as on GDP and inflation. In all we use 10 series to identify the different shocks we would like to uncover. The data we use are as follows:

- Quarterly CPI inflation (π)[7]
- Real GDP (y)
- Short-term policy rate (is) i.e. Bank Rate/Minimum lending rate
- Long-term interest rate (il) we use a zero-coupon UK 10-year government bond yield
- Broad money (M4ex)
- Bank and building society credit (m4lx)
- The own rate on M4 (id) as a measure of deposit rates
- The corporate bond yield (ib) to proxy the interest rate on borrowing
- Real equity prices (pk) we use the FTSE-all share index deflated by the GDP deflator
- Effective Real effective exchange rate €

In the cointegation analysis we re-estimate the 5 cointegrating vectors identified by McCleay and Thomas (2016) found in their 10 variable system suggesting there are 5 stochastic trends driving the system. The estimates are shown in **Table 3.1.**

Table 3.1 Identified Long-run identified relationships

Money demand equation:	$m4ex - p = 0.5*y + pk + 8*(id - is) + k_1$
Term structure relationship:	$is = il + k_2$
Fisher relationship:	$is = \pi + k_3$
Dividend growth model relationship:	$pk = y + k_4$
Corporate bond spread:	$ib = il + k_5$

The k terms are estimated constants that pin down equilibrium means of each variable in the long run. In summary, there is a long-run demand for real money balances that depends on the spread between deposit rates and risk-free rates and also on output and asset prices (as a proxy for wealth). The short-long rate spread and the real interest rate are stationary around their sample means as is the asset price to GDP ratio suggesting equity prices are proportional to dividends for a given profit share. Corporate bond yields are cointegrated with long-rates suggesting a stationary lending spread over the sample period.

The challenge here is then to identify both the 5 permanent shocks or stochastic trends driving the system and the 5 temporary shocks that merely have a cyclical effect on each of the variables. The technicalities of identification are discussed in more detail in McLeay and Thomas (2016). Here we concentrate on outlining the economics of our identification procedure, based on the shocks we wish to identify for this period.

In analysing the Great Inflation, we want to distinguish between the standard macroeconomic shocks that are typically analysed in SVAR analysis, but given the prevalence of shocks to the banking system in both the early 1970s and 1980s we are also interested in identifying these as well. But we need to allocate these across the both the permanent and temporary shocks. We deal with the standard macroeconomic shocks first.

[7] Mcleay and Thomas (2016), use the ONS long-run consumer price indicator (CDKO) prior to 1988 which was before the modelled estimates of CPI by ONS were available. That indicator was based on RPI and so shows a stronger peak in 1980 and 1990 **Chart 1.3**

For the standard macroeconomic shocks – aggregate supply, aggregate demand and monetary policy shocks – we can think of splitting each type into permanent and temporary shocks. For example, we might think of aggregate supply shocks being split into those that permanently affect the level of output such as TFP shocks or the natural rate of unemployment from those that are typically viewed to have a transitory effect such as cost push or mark-up shocks. Similarly for monetary policy we might think of the permanent component as the implied inflation target or perceived nominal anchor that pins down inflation expectations in the economy – more generally what might be called "trend inflation". We distinguish that from temporary shocks to policy that represent the deviation from some average policy rule designed to meet that nominal target. Finally for aggregate demand shocks, we can think of shocks that (in a small open economy) will shift the equilibrium exchange rate (which is non-stationary) such as shocks to world demand or preferences for UK exports, as opposed to shocks to domestic demand which would not affect the structural trade balance and should only have a temporary effect on output and other real variables. That gives us six shocks we can try and identify shown in **Table 3.2**.

Table 3.2: Standard macroeconomic shocks

Type of shock	Permanent shocks	Temporary shocks
Aggregate supply	Technology/TFP	Cost push/mark up
Aggregate demand	World demand/preferences	Domestic demand/confidence
Monetary policy	Core/trend inflation	Deviations from rule

Then we identify three shocks that affect the banking sector using the Monte-Klein model of banking to help distinguish these (see Freixas and Rochet (1997) for an exposition). These shocks are listed in Table 4.2 and aim to capture some of the features of Competition and Credit Control and the subsequent use of the Corset to control the growth of the money supply, as well as financial liberalisation in the 1980s. Two of these shocks are likely to be candidates as permanent shocks. The first of these is a shock to competition that should move loan and deposit rates in opposite directions i.e. it should lower the cost of intermediation. The switch to Competition and Credit Control in 1971 is likely to have led to a permanent impact on competition in the banking system. The second is a shock to the cost and availability of wholesale funding which was the second feature of Competition and Credit Control and the financial liberalisation of the 1980s. Banks and later building societies were increasingly able to access and compete for wholesale funding. This would bid up the cost of wholesale funding and would then lead banks to price up their deposit rates, under cost-minimisation across funding sources in the Monte-Klein model. So this shock would move loan rates and deposit rates *in the same* direction relative to the policy rate. The final shock is one to bank risk taking and should only directly affect the spread of loan rates over risk free rates under Monte-Klein, which we noted was stationary. So this would suggest it mainly has a cyclical effect and so we treat this as a temporary shock.

Table 3.3: Shocks arising in the banking system

Type of shock	Permanent and temporary
Cost of intermediation	Permanent effect
Cost and availability of wholesale funding	Permanent effect
Bank risk taking	Temporary effect

The remaining shock we try and identify as a shock to risk premia that originates in the non-bank financial sector. So it affects financial markets such as bond, equity and FX markets but does not initially lead to an expansion of money and credit.

Given these theoretical priors about the permanency of the candidate shocks we set about trying to identify these shocks through a set of restrictions. We decompose the reduced-form residuals of the VECM into a linear combination of structural shocks as shown below:

$$e_t = \Gamma_0 \eta_t \quad \text{and}$$

$$C(L) = \Gamma(L)\Gamma_0^{-1} \quad C(1) = \Gamma(1)\Gamma_0^{-1} \quad \Omega = \Gamma_0^{-1} \Sigma \Gamma_0$$

We need enough restrictions on the shocks to identify the mapping matrix. This is a 10x10 matrix so we need 100 restrictions to identify this matrix. We already have placed 25 restrictions on this matrix by uniquely identifying 5 cointegrating vectors. In the presence of cointegrating relationships, King et al. (1991) and Warne (1991) show that Γ_0 can be partitioned into two matrices = [*H J*] so that $\Gamma(1)\Gamma_0^{-1}$ = [F 0] which just says that 5 of our shocks will have no long-run effect on the variables in our system. Importantly, the cointegrating vectors have placed some restrictions on the long-run impact matrix. For example, our permanent shocks will affect short and long-rates by the same amount in the long run given they are cointegrated in a one-for-one relationship. We also impose n*(n+1)/2 restrictions from assuming the structural shocks are mutually uncorrelated so that Ω is a diagonal matrix. That provides 55 restrictions. That means we need twenty additional restrictions, 10 on the permanent shocks and 10 on the temporary shocks. These can come from imposing restrictions on either the timing, sign or long-run impact of each shock.

For the permanent shocks it seems natural to use long-run identifying restrictions in the spirit of Blanchard and Quah (1989) and King et al (1991). The long-run restrictions applied are as follows:

(i) Only the core/target/expected inflation shock is allowed to affect inflation in the long run. So only monetary policy determines the inflation rate in the long run. This implies four zero restrictions on the long-run impact of the other shocks

(ii) The aggregate demand shock does not have a permanent effect on output even though it has a permanent effect on the real exchange rate.

(iii) Aggregate supply and demand shocks are assumed to be neutral for finance. They do not have an impact on the cost of intermediation or the ratio of M4 lending to GDP in the economy. That

implies that the aggregate demand shock has no long-run impact on the stock of real lending in the economy given it has no impact on GDP. That delivers 5 restrictions.

(iv) Finally, the funding cost shock is also assumed not to affect the cost of intermediation in the long run as it should push down on both loan and deposit rates relative to safe rates. But unlike the aggregate demand and supply shocks it is allowed to permanently affect the ratio of lending to GDP in the economy.

For the temporary shocks we can either use timing or sign restrictions on the shocks. Sign restrictions have the advantage of avoiding arbitrary timing assumptions. But as found in Canova and de Nicolo (2002) and Barnett and Thomas (2013) they can produce implausibly large contemporaneous effects of demand and monetary policy shocks on GDP and inflation. Here we proceed in two steps. We first apply standard timing restrictions. We then gauge the plausibility of the restrictions by assessing whether the sign and size of the unconstrained responses look plausible given what theory would suggest. The short-run restrictions applied are as follows:

(i) We assume prices are sticky in response to demand and financial shocks so that only mark-up or cost-push shocks such as VAT have an immediate impact on prices. That provides four restrictions

(ii) Only aggregate demand and mark-up shocks can have an immediate effect on output (i.e. within the quarter). That provides three restrictions. Financial market, banking sector and monetary policy shocks only affect output with a lag.

(iii) Monetary policy shocks have an immediate effect on Bank Rate. But the financial and banking sector shocks are assumed to just affect risk premia and credit spreads in the short run and not affect risk-free rates immediately. This is based on a Taylor-rule assumption that monetary policy only responds immediately to output and inflation and these shocks only affect inflation and output with a lag.

(iv) The financial market risk premium shock is assumed to have no immediate effect on money as it originates outside the money creating sector.

Our identifying restrictions on both the permanent and temporary shocks are summarised below.

Permanent shocks: Long-run restrictions

$$\begin{bmatrix} \pi \\ y \\ is \\ il \\ id-is \\ ib-id \\ m4x \\ m4lx \\ pk \\ e \end{bmatrix} = \begin{bmatrix} 0 & 0 & * & 0 & 0 \\ = & 0 & * & * & * \\ * & * & * & * & * \\ * & * & * & * & * \\ * & * & * & * & * \\ 0 & 0 & * & * & 0 \\ * & * & * & * & * \\ = & 0 & * & * & * \\ * & * & * & * & * \\ * & * & * & * & * \end{bmatrix} \begin{bmatrix} \eta_{TFP} \\ \eta_{for} \\ \eta_{nom} \\ \eta_{coi} \\ \eta_{fun} \end{bmatrix}$$

Temporary shocks: Impact restrictions

$$\begin{bmatrix} \pi \\ y \\ is \\ il \\ id-is \\ ib-id \\ m4x \\ m4lx \\ pk \\ e \end{bmatrix} = \begin{bmatrix} 0 & 0 & 0 & 0 & * \\ * & 0 & 0 & 0 & * \\ * & * & 0 & 0 & * \\ * & * & * & * & * \\ * & * & * & * & * \\ * & * & * & * & * \\ * & * & * & 0 & * \\ * & * & * & * & * \\ * & * & * & * & * \\ * & * & * & * & * \end{bmatrix} \begin{bmatrix} \eta_{AD} \\ \eta_{Pol} \\ \eta_{brisk} \\ \eta_{Prem} \\ \eta_{mu} \end{bmatrix}$$

Permanent shocks:

η_{TFP} = neutral aggregate supply shock

η_{for} = overseas demand / preference shock

η_{nom}= core/target inflation shock

η_{coi} = cost of intermediation shock

η_{fun} = wholesale funding shock

Temporary shocks:

η_{AD}= aggregate demand shock

η_{Pol} = monetary policy shock

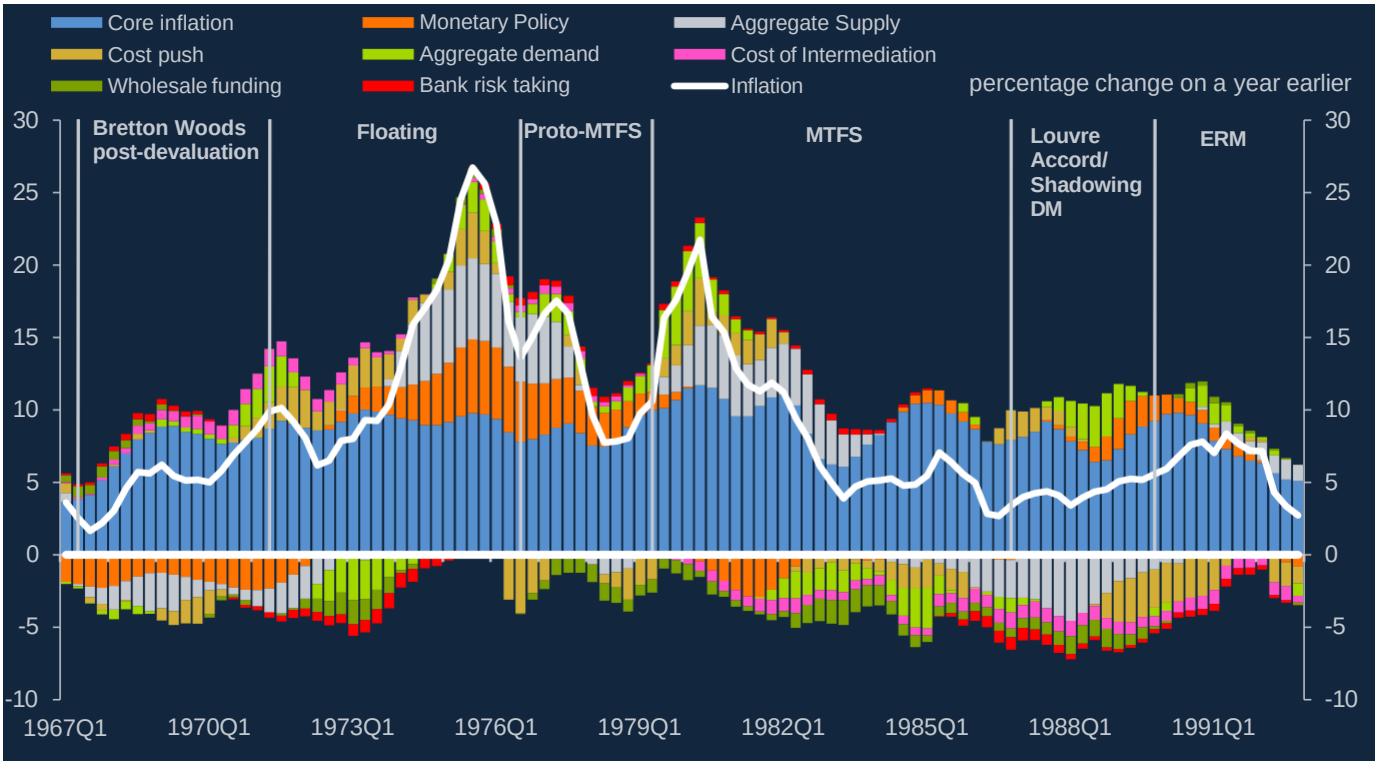
η_{brisk} = bank risk taking shock

η_{prem} = risk premia shock

η_{mu} = mark-up/cost push

We then use the identified model to provide a historical decomposition[8] of inflation to analyse the importance of different shocks over the long expansion period and to see what light it sheds on the candidate explanations outlined in the earlier section. The advantage of having a long sample back to the 1960s is that we can also compare the Great Inflation period with later episodes. The full decomposition is shown in **Chart 3.1**. To get an overview we group together the aggregate demand and supply/cost-push shocks together.

Chart 3.1: SVAR historical decomposition of the Great Inflation period



[8] A historical decomposition involves running a sequence of dynamic forecasts starting at a particular point in time. The first forecast is a base projection that takes the value of each variable at the start of the decomposition (reflecting the impact of shocks that have occurred before the start point) and maps out how each variable would return to its trend path in the absence of further shocks. Given this base projection, the path of each structural shock is then sequentially fed into to the SVAR until the resulting forecast is equivalent to the observed data. The marginal impact of each shock is then recorded to produce the historical decomposition.

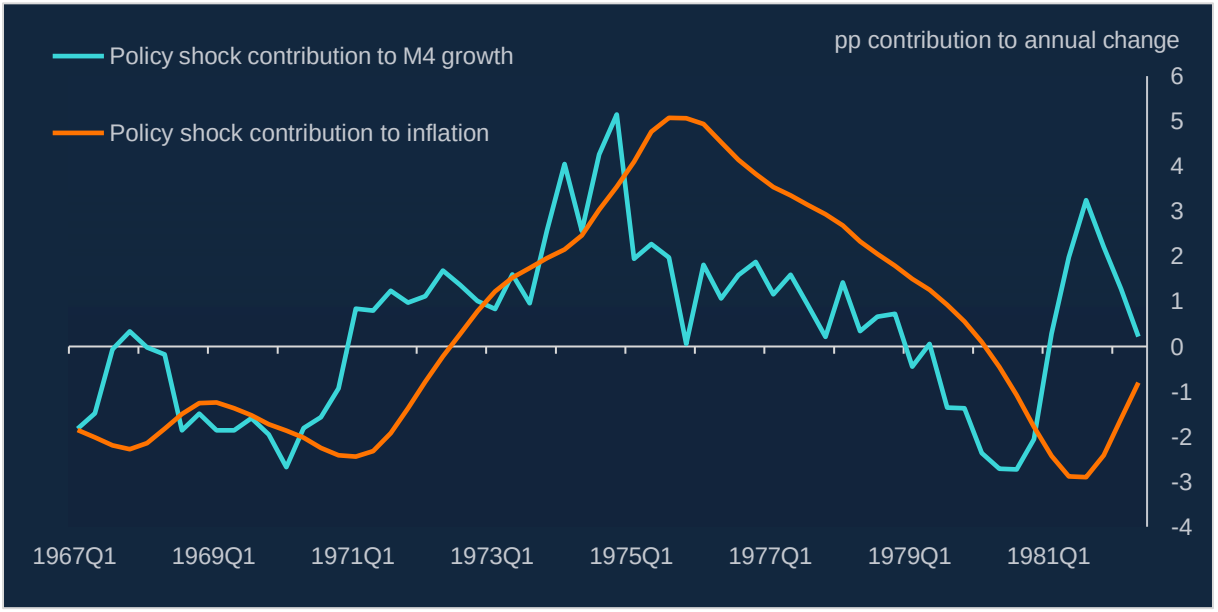
The decomposition suggests that the first peak in inflation in 1971Q3 was largely the result of a rise in "core" inflation following the devaluation of 1967. This mirrors the household inflation expectations data despite not using that data in the SVAR. Indeed the contribution of the core inflation shock stays relatively stable until 1977 again mirroring what we saw with the expectations data, in that they do not appear to have moved very much during peaks 2 and 3 in the mid-1970s. There is little evidence, at least under this identification scheme, of spiralling or unstable inflation expectations. The core inflation contribution also falls in the early 1980s. So the SVAR results would very much corroborate what we saw with the household inflation expectations data. Core inflation does not appear to increase very much at the peaks of inflation and would appear to shift more discretely at times of major regime change.

The next two peaks are largely explained by a combination of cost-push shocks, permanent aggregate supply shocks and temporary monetary policy shocks. This combination would appear to support the "over accommodation" hypothesis. Shocks to commodity prices and wage pressure would have contributed to the pickup in inflation under the average policy response. That in essence might be thought of as the "bad luck" component. The average policymaker would have accommodated around 1/3 of the 25% inflation in 1975. But the response at the time appears to have led to considerably higher inflation either because of the implicit rule in place or misjudging the movements in demand relative to potential supply at the time. In the absence of temporary policy shocks inflation would have been 3-5pps lower during the mid-1970s. Notably in 1980 there is less evidence of over-accommodation suggesting the response of monetary policy of the Thatcher government was at least in line with the average of the sample.

The SVAR, as identified here, would suggest at best a delayed impact of demand shocks. These would include fiscal shocks on inflation but we do not explicitly identify them separately here. They added froth of around 2-3pps to an inflationary situation in 1975 and, if reflective of known fiscal expansions, with a considerable lag of two years. These contributions are based on the average response of monetary policy across regimes. The lack of this average monetary policy response to shocks appears to have contributed to part of the inflationary problem and so this reinforces the idea of over-accommodation.

Shocks to the banking system do have some contribution to make but do not appear as key drivers of inflation over this period and so would not support a monetarist argument that the second peak of inflation in 1975 was the *direct* result of Competition and Credit Control. Indeed the impulse responses suggest that wholesale funding shocks actually have supply-side benefits that push down on inflation as suggested in **Chart 3.1**. A more plausible monetary hypothesis is that money growth was in part a reflection of loose monetary and fiscal policy and it was this element that was correlated with inflation. As discussed, ex-ante real interest rates were negative for most of the period suggesting a highly passive monetary regime. We can use the SVAR historical decomposition to shed light on this. **Chart 3.2** below shows the contribution of the monetary policy shock identified in the SVAR to both M4 growth and inflation. This shows that the policy shock, which we interpreted as "over accommodation" contributed to an 8pp turnaround in broad money growth from 1970 to late 1974 and the same contribution to inflation about a year later. On this basis the lag from policy-driven money growth to inflation was a lot shorter. So money growth was reflective of over-accommodation. This is consistent with a lead of money growth over inflation and consistent with a monetarist interpretation of the transmission mechanism with money growth reflecting the negative real interest rates of the time.

Chart 3.2 Impact of policy shock on money growth and inflation



(ii) Inflation expectations and the wage-price system

While the SVAR, as specified, can give an overview of the generic types of shock that may have led to the movements in inflation, it is less well suited to pinning down the drivers of wage and price dynamics and their interaction with commodity prices and inflation expectations which some of the hypotheses in the literature talk directly to. For example, the cost-push and aggregate supply shocks identified in the SVAR will capture the direct and indirect effects of cost push pressures but do not provide insight into the relative importance of labour costs, oil prices and other imported commodities nor do they reveal the impact of pricing and incomes policies which were important during the period. The SVAR, as implemented, also assumes the non-stationary variables are integrated process so that their trends are stochastic with constant drift terms, rather than allowing for structural breaks or "one-off" shifts in the trend level of each variable or temporary impulse factors and non-linearities, for example during the operation of incomes policies or strikes and other supply disruptions. So we supplement the SVAR with an attempt to develop a semi-structural model of the wage price system drawing heavily on the recent work of Castle, Hendry and Martinez (2023) who use indicator saturation techniques to identify breaks, impulses and non-linearities in the determination of wages and prices over the last 150 years in the UK and also Bernanke and Blanchard (2023) who focus on the role of import prices, supply disruptions and inflation expectations in the most recent pandemic.

First, we examine the reduced-form relationship between wages, prices and inflation expectations. Bernanke and Blanchard's system assumes these are the endogenous variables in their system. We start with a simple three equation cointegrated VAR in price inflation, unit wage cost inflation (earnings growth adjusted for productivity) and the household inflation expectations data. Unlike the Bernanke and Blanchard (2023) sample, initial tests suggested these were non-stationary integrated processes, so we investigate the co-integrating properties first. We then test whether there are feedbacks between the three variables taking into account any cointegrating relationships between the data.

The system is estimated from 1961Q1 to 1997Q4 and CPI inflation and unit wage cost growth are expressed in 4-quarter inflation rates to be consistent with the inflation expectations data, which is based on 1-year

ahead expectations of annual CPI inflation. We assume 4 lags of each variable. The tests of Johansen (1988) suggest that there are two cointegrating relationships[9] which can be identified as wage and price inflation each cointegrating with inflation expectations with a unit coefficient. So the deviation of wage and price inflation from their long-run relationship with inflation expectations are just "surprises" in inflation. When we estimate the resulting cointegrated VAR or Vector Error Correction Mechanism (VECM) we find that lags of price inflation and unit wage cost inflation are significant in the equations for both variables, suggesting some wage-price interactions and feedbacks. We also find that the surprise terms (deviations of lagged wage cost growth and inflation from inflation expectations) also affect the price and unit wage cost inflation. However, none of these lagged terms feed back into inflation expectations. In other words, if there are movements in wages or prices *these do not positively increase inflation expectations in a future period*. Both wages and prices revert over time to household inflation expectations. So there is no Granger causality of any kind confirmed by a Likelihood ratio-test based on the exclusion of the lagged variables (**Table 3.3**). As a result, household inflation expectations appear both weakly and strongly exogenous for unit wage costs and inflation as defined by Banerjee et al (1993). This suggests that household expectations are not prima facie adaptive, a conclusion which appears to chime with the SVAR results.

Table 3.3 Testing the strong exogeneity of inflation expectations

VECM system sample: 1961Q1 to 1997Q4

Equation:	$\Delta\pi^{UWC}_t$		$\Delta\pi^{CPI}_t$		$\Delta\pi^{E}_t$	
	Coefficient	**Std. Error**	**Coefficient**	**Std. Error**	**Coefficient**	**Std. Error**
$\Delta\pi^{UWC}_{t-1}$	0.385	0.0937	-0.089	0.0549	**-0.051**	0.040
$\Delta\pi^{UWC}_{t-2}$	0.0267	0.166	0.387	0.098	**0.055**	0.070
$\Delta\pi^{UWC}_{t-3}$	0.082	0.266	-0.037	0.156	**0.194**	0.112
$\Delta\pi^{CPI}_{t-1}$	0.185	0.103	0.035	0.061	**-0.020**	0.044
$\Delta\pi^{CPI}_{t-2}$	0.041	0.166	0.048	0.097	**-0.037**	0.070
$\Delta\pi^{CPI}_{t-3}$	0.234	0.265	0.136	0.155	**0.075**	0.112
$\Delta\pi^{E}_{t-1}$	0.219	0.101	-0.008	0.059	-0.018	0.043
$\Delta\pi^{E}_{t-2}$	0.454	0.158	-0.035	0.092	0.019	0.0667
$\Delta\pi^{E}_{t-3}$	-0.772	0.258	0.051	0.151	-0.145	0.109
$\pi^{UWC}_{t-1} - \pi^{E}_{t-1}$	-0.256	0.068	0.135	0.040	**0.044**	0.029
$\pi^{CPI}_{t-1} - \pi^{E}_{t-1}$	-0.321	0.097	-0.246	0.057	**-0.073**	0.041
Constant	0.168	0.178	0.165	0.104	0.048	0.075

LR test of over-identifying restrictions (on exclusion of shaded terms): $\chi^2(8) = 7.1904$ [0.5162]

[9] We do not include a trend and the constant is assumed to be unrestricted.

(iii) Inflation expectations – regime shifts and co-breaking

If inflation expectations were not responding systematically to actual wage and inflation outturns, then what were they responding to? One idea mooted earlier is that household expectations are based on simple heuristics that change discretely when there are perceived regime shifts in the inflationary environment. To identify the candidate periods of these shifts this we use two approaches. First, a very simple Markov Switching Regression on the inflation expectations series based on Hamilton (1989)'s original approach, assuming three states for the constant term which are interpreted as three different regimes for inflation (a high, a low and a medium regime). Second, we use the step indicator saturation (SIS) tests (see Castle et al. (2015) for a discussion) which use block search techniques to test among all possible step-dummies to find multiple regime shifts at unknown dates. The results of these exercises are displayed in **Table 3.4.**

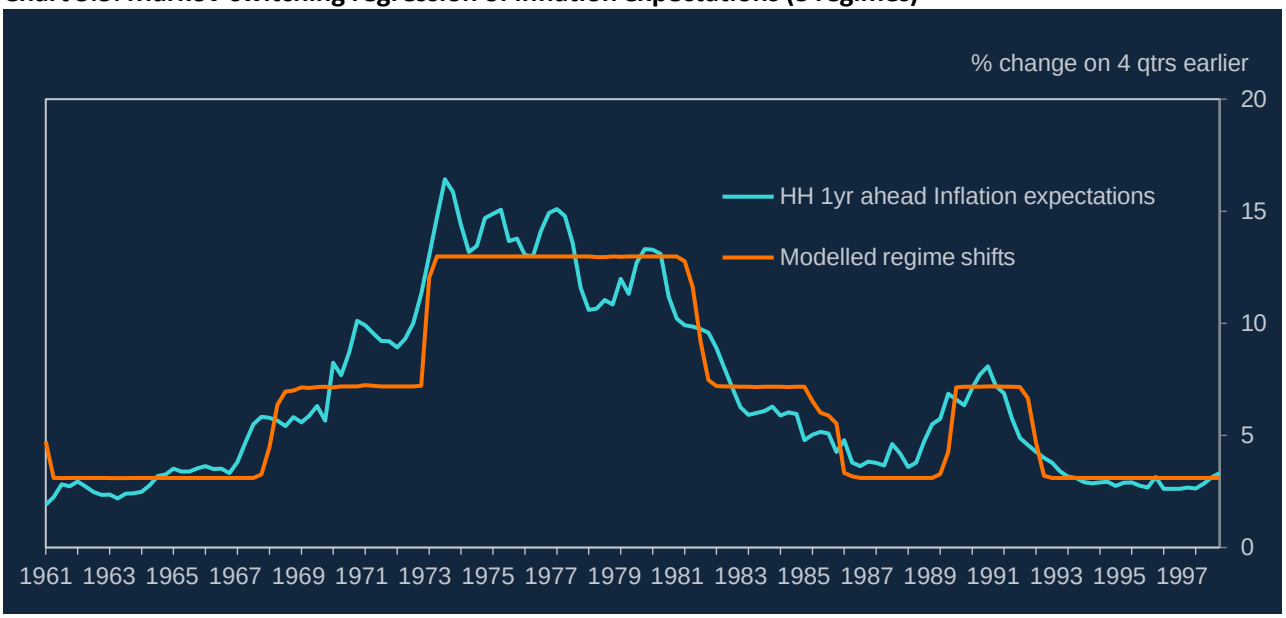
Table 3.4 – Estimated Regime shifts

Markov-switching model (3 regimes)	Step-indicator saturation
1967Q2	1967Q2
	1970Q1
1972Q4	1973Q1
	1976Q1
1981Q1	1982Q3
1984Q4	
1988Q4	
1991Q3	1991Q3

The Markov switching results based on three regimes suggest mean inflation rates of around 3%, 7% and 13%. The estimated shifts appear correlated with shifts in the institutional framework discussed in more detail in the narrative history in Appendix 1 of the paper, such as the devaluation of sterling in 1967 and the floatation of sterling in 1972. The year 1972 also arguably was marked by a change in the fiscal regime with the Barber budget's expansionist dash for growth. The SIS indicators suggest similar shifts, but also an additional shift in 1970Q1 which comes immediately after the failure of the In Place of Strife initiative to improve industrial relations and place restrictions on Trade Union power. The data suggest there were then two structural shifts down in household inflation expectations in the late 1970s and subsequently in the early 1980s. As we discuss later, the major shifts down in expectations again appear correlated with major changes in the fiscal policy framework with the introduction of cash limits, the start of significant North Sea oil revenues, together with the abandonment of fiscal stabilisation policy and its subordination to monetary policy in the early 1980s with the Howe budget of 1981. The Markov-switching results suggest a shift up in expectations in 1988 following the Lawson tax cutting budgets. Both models suggest a shift down in mid-1991 ahead of the switch to inflation targeting a year later. This shift followed Lamont's budget which raised VAT in the teeth of the 1990/1 downturn in order to limit the impact of the recession on the deficit and would presage further fiscal consolidation in the early-to-mid 1990s. So these shifts appear consistent with Sargent's view that moderate inflations are typically brought to an end as much by changes in fiscal policy regime.

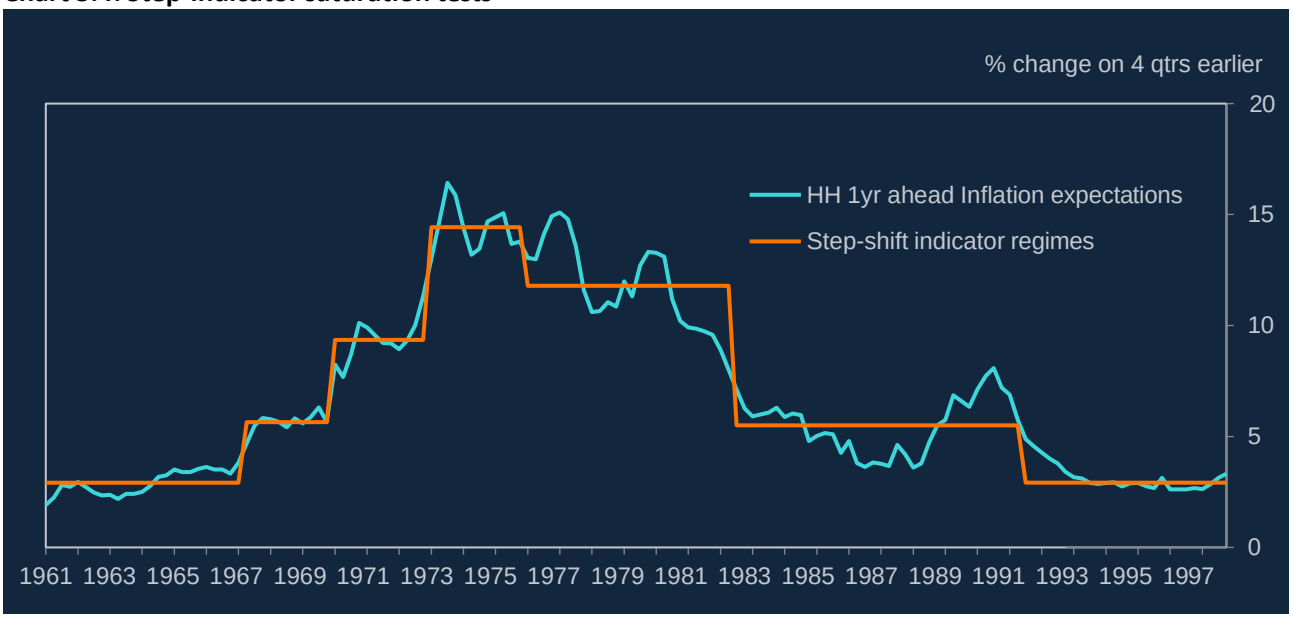
After conditioning on the dummies, the residual of the SIS regression is tested for stationarity using an Augmented Dickey-Fuller test. The results are shown in **Chart 3.3** and **Chart 3.4.** Additional diagnostics are shown in the **Online Appendix 3**.

Chart 3.3: Markov-switching regression of inflation expectations (3 regimes)



Sources: Batchelor and Orr (1988) and authors' estimates.

Chart 3.4: Step-indicator saturation tests



Sources: Batchelor and Orr (1988) and authors' estimates.

As a further test, we add the shift dummies from **Table 3.4** to the 3-equation cointegrated VAR and restrict them to the long-run relationships. Re-applying the cointegration test we now find there are three cointegrating relationships suggesting that, with the step dummies applied, long-run inflation expectations are stationary. We also find that the shift dummies do not enter the unit wage cost or inflation relationships. This suggests that inflation expectations are actually "super exogenous" for wage and price inflation (Hendry and Massman (2007)) and that all three variables "co-break" with the regime shifts in inflation expectations. To confirm this we apply the same restrictions to the cointegrating vectors as earlier with zero restrictions on the dummies in the unit wage cost and CPI inflation relationships. We also apply zero restrictions on the unit wage cost and inflation error-correction terms in the inflation expectations

equation. These cannot be rejected so they appear to confirm the co-breaking property. Clearly these are simple reduced-form tests but they are suggestive of a heuristic basis for household expectations which are influenced by a sequence of perceived regime shifts which then shift unit wage costs and CPI inflation in proportion.

The expectations used are household inflation expectations measures, derived in part from qualitative surveys. So we validate this further by running a cointegration analysis of household inflation expectations with two rough proxies for short and long-run expectations: professional forecasts of inflation produced by the National Institute of Economic and Social Research (NIESR) and 10-year forward rates derived from the yield curve both with and without an adjustment for the real interest rate component. We find that both professional forecasters and the measures based on 10-year forward rates cointegrate with our measure of household expectations. In addition, when we include the step impulse shift dummies from section (iii) and restrict them to the long-run relationship for household inflation expectations we cannot reject co-breaking. In other words the long-run component of all three measures shift in line with the step indicator dummies. This gives us some confidence that the shift-dummies identified for household 1-year ahead expectations may pick up shifts in long-run expectations. The results are in Online Appendix 3. We will argue in the next section of the paper, the timing of these shifts coincide with major changes in the fiscal policy regime. However, we proceed to develop a more structural representation of the wage-price system having been guided by these reduced-form long-run relationships.

(iv) A semi-structural model of the wage-price system

We now proceed to investigate the dynamic interaction of wages and prices in a more structural empirical model following the examples of Castle et al. (2023) and Bernanke and Blanchard (2023). These and other similar models have proved a highly popular way of examining the role of energy prices, inflation expectations and supply-side shocks on inflation across countries during the recent pandemic and over time. Here, we switch to a system based on quarterly changes in wage and CPI price inflation and allow for separate productivity terms in the wage dynamics rather than estimate a more restricted system based on unit wage cost dynamics. We also add in additional disequilibria terms such as the output gap and deviation of the labour share from trend (to proxy the marginal cost gap) as in Castle et al. (2023).

Although the tests above suggested inflation expectations were super exogenous for wage and price inflation, we keep household inflation expectations as an endogenous part of the system to see if they are influenced by the richer dynamics. Bernanke and Blanchard (2023) estimate a system of four equations, a wage equation, a price equation, and a short and long-run inflation expectations equation based on the measures that are available for the US. We adapt this for the UK and, relying heavily on our sample evidence on inflation expectations above, model a three-equation system involving household 1-year expectations with the long-run expectations pinned down by the regime shifts identified. The data on wage inflation reflect regular pay rather than total earnings including bonuses. We again use CPI as the measure of inflation.

The price and wage inflation equations are both estimated as a function of lags of each other and of household inflation expectations. These can be written in error-correction form with catch up terms in the gap between price and wage inflation and inflation expectations as in the simple model of section (ii). In addition, the equations also include import price inflation and an estimate of relevant “gap” measures as in Castle et al. (2023). These include a filtered output gap measure using an unobserved components model

where the cycle is estimates as an AR(2) process. We also use a de-trended labour income measure based on the corporate measure from **Chart 2.15** using the same filtering process. This proxies the real marginal cost gap for firms but also acts as an additional catch-up measure for wages and prices. We also experiment with vacancies to unemployment ratio. In addition, Bernanke and Blanchard attempt to capture supply disruptions. Here, we use a measure based on working days lost to strikes which were a key disruptive element in this period. The most prominent were the miners' strikes which led to the imposition of a three-day week in 1972 and 1974 due to the disruption of energy supply, as well as dock strikes affecting the availability of imported goods into the production chain in 1972. The inflation expectations equation is allowed to be affected by all these variables in addition to the long-run inflation expectations component given by the shift dummies estimated earlier.

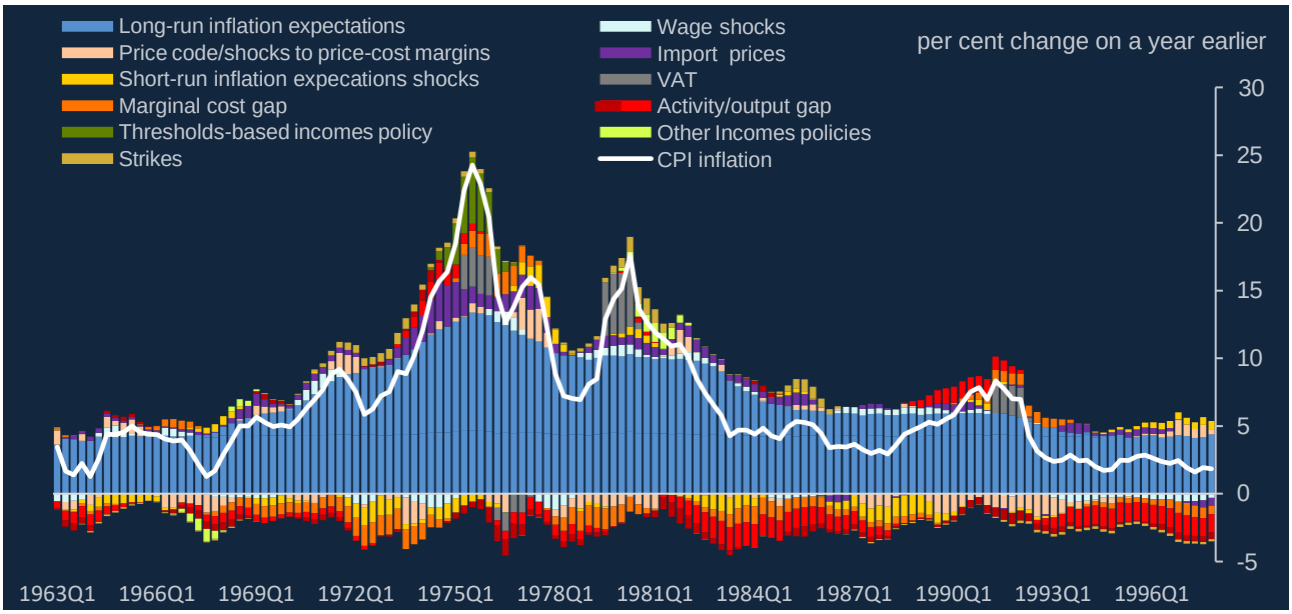
Estimation of the equations revealed many outliers and we attempted an impulse indicator saturation method to work out the most significant ones. This suggested many potential outliers in the periods when prices and incomes policies were in operation. So we attempted to create a number of indicator dummies covering the key prices and incomes policy periods. In addition, Castle et al. (2023) find evidence of a non-linearity in the response of wages to prices. In this period we hypothesise this is largely due to the threshold policy of 1973/4 which introduced increased wage indexation to prices just ahead of the first oil price increase. So we introduce an interactive dummy on price inflation covering the period 1974Q1 to 1975Q1. In the price equation many of the outliers reflected VAT and other indirect taxes and we create indicator dummies for these periods as well.

The three equations are estimated over the period 1961 to 1997 as an unrestricted VECM model with four lags with no simultaneity between the three endogenous variables. We simplify this by excluding insignificant lag terms. We then formulate a simultaneous equation model where we identify the price and wage equations using both exclusions on the dummy terms (the incomes policy terms are restricted to the wage equation and price dummies to the price equation) together with conditioning both equations on inflation expectations while restricting the long-run inflation expectations (based on the regime shift dummies) to only enter the inflation expectations equation, consistent with the results earlier. We also place a number of restrictions on coefficients, although we do not impose full dynamic homogeneity in the wage and price inflation terms in part because of the complication of the non-linear threshold agreement effect. We estimate the resulting model by full information maximum likelihood and test the restricted simultaneous model against the unrestricted VAR. Our preferred model is shown in **Table 3.5.** The final restricted model is relatively parsimonious and cannot be rejected against the unrestricted reduced form based on the LR test of over-identifying restrictions. Despite extensive use of dummies the model still contains some outliers and the autoregressive tests suggest there is still serial correlation in the inflation equation suggesting some remaining misspecification that is not captured by the usual terms.

The model shows little intrinsic persistence in price inflation once conditioned on inflation expectations, and the dynamic terms in wage costs and import costs are not as large as might be expected. Although the short-run inflation expectations are not adaptive, as in the simple reduced-form test earlier, we do find some evidence that activity can explain some of the movements in inflation expectations with dynamic effects from short-run productivity and the output gap. The wage equation shows somewhat more persistence and we find that the output gap and supply disruption (in the form of strikes) both have the expected impact. We attempted to use the V/U ratio but it was not significant. We find that incomes policies do appear to play an important role with the interactive term on inflation, reflecting the threshold payments in 1973/1974, highly significant suggesting it played an important amplifying role over this period.

Chart 3.5 shows a historical decomposition of price inflation based on the underlying drivers identified in the model. The importance of the shifts in long-run inflation expectations can be seen working both through wages and prices. They lead to a gradual pick up in CPI inflation in the late 1960s and, taken together with the drift term in the inflation equation, they peak at around 12% in 1975. The output and marginal cost gaps contribute to the pickup in inflation in 1973 and 1974 as (unsurprisingly) do import prices. Perhaps what stands out at the peaks are the significant contributions from VAT changes and how powerful the amplifying effect from the indexation under Heath's Stage 3 threshold policy was in 1974 and 1975. In **Chart 3.6** the threshold effect is shown as a separate bar to highlight this, though properly it should be allocated to the other contributions pushing up in this period. A margins unwind also seems to be part of the story for the 1977 peak in inflation, in part related to the abandonment of the price code, though this is difficult to separate from lagged passthrough of other costs.

Chart 3.5: A semi-structural model breakdown of inflation 1963-1997



Source: See Text.

Table 3.5 Wage-price system FIML estimates: 1961Q3 to 1997Q4
(standard errors in parentheses, P-values in square brackets)

Price equation

Δp_t = + 0.1100 *Δp_{t-1} + 0.428032*$infe_t$/400
(.05752) (0.08097)

+ 0.06872*(Δw_t - Δ(y-l)$_t$) + 0.0605459*(Δw_{t-1} - Δ(y-l)$_{t-1}$) + 0.153006*Δw_{t-2}
(0.0342) (0.03179) (0.03432)

+ 0.03327*(Δpm_{t-1} + Δpm_{t-2}) + 0.09231*(ls - ls*)$_{t-1}$
(0.009695) (0.02311)

+ 0.02329*DVAT75Q2 + 0.0372698*DVAT79Q3 + 0.018932*DVAT91Q2
(0.003767) (0.004276) (0.004152)

Standard error of the equation = 0.00410295: AR 1-5 test: F(5,120) = 2.6404 [0.0266]

Wage equation

Δw_t = 0.00491 + 0.339832*Δw_{t-1} + 0.3932*$infe_t$/400 + 0.142*Δ(y-l)$_t$
(0.00131) (0.0594) (0.0611) (0.05883)

+ 0.009051*$DINCCLEGG_t$ + 0.692043*$THRESH74_t$* Δp_t - 0.00965*$DINC66_t$
(0.00395) (0.08898) (0.00296)

+ 0.07821*(y-y*)$_{t-1}$ + 0.07136*$Strikes_{t-1}$
(0.02731) (0.02207)

Standard error of the equation = 0.00677152: AR 1-5 test: F(5,128) = 1.7310 [0.1321]

Short-run inflation expectations

$\Delta infe_t$/400 = 0.0430469*Δ(y-l)$_{t-1}$ + 0.0207861*Δ(y-l)$_{t-2}$
(0.01149) (0.01175)

+ 0.0203178*(y-y*)$_{t-1}$ - 0.17* ($infe_{t-2}$/400 - infe*$_t$/400)
(0.005794) (0.03253)

Standard error of the equation = 0.00136143: AR 1-5 test: F(5,134) = 5.2274 [0.0002]

Long-run inflation expectations (NB in annual percentage terms)

infe*$_t$ = 2.5 + 2.99*Shift 67Q2 + 4.79*Shift 70Q1 + 4.38* Shift 73Q1
(1.0081) (1.1256) (1.1660)

- 4.37*Shift 76Q1 - 5.51* Shift 82Q3 - 2.36* Shift 91Q3
(1.1172) (0.71361) (0.69834)

LR test of over-identifying restrictions: χ^2(39) = 49.457 [0.1218]

The semi-structural model decomposition puts more flesh on the bones to the underlying shock decomposition of the SVAR. The importance of VAT and import prices as cost-push shocks at the two peaks of inflation stands out and prices and incomes policies play an important role in the rollercoaster pattern of inflation, fuelled in an underlying sense by an accommodative monetary policy that did not attempt to offset these effects on inflation. This means drawing inference about wage-price spirals and inflation persistence from the 1970s is hazardous and care needs to be taken when making comparisons to the recent inflation period. When one takes account of the bespoke features of the 1970s, there seems to be considerably less intrinsic persistence in wage and price inflation and less adaptivity in expectations formation than one might have expected given the conventional view of this period. The importance of understanding the drivers of inflation expectations comes through and this, as we will argue in the next section, depends as much on the consideration of fiscal policy during this period as it does on the monetary policy regime that is typically the emphasis in the current literature.

IV Fiscal policy – the missing link?

The previous section discussed our attempt to explain the fluctuations in inflation over the Great Inflation period using a retrospective analysis of the typical factors considered in the literature. The behaviour of real interest rates suggests there was considerable overaccommodation of shocks by monetary policy. The implication is that tighter monetary policy would have succeeded in delivering a lower inflation rate over this period. However, the monetary authorities did attempt to tighten monetary policy, albeit with some delay, but were not willing to countenance nominal rates at levels approaching 20%. That suggests they doubted the further efficacy of monetary policy when nominal rates reached a certain threshold. We have also seen the importance of inflation expectations as a potential driver of the persistent or trend component inflation, but those expectations do not appear to be either adaptive or perfectly rational and were perhaps more driven by heuristics responding to perceptions of major regime shifts. In this section, we argue that fiscal policy may provide the missing link to explain these different features of the UK's experience.

In the literature, there are various "fiscal theories of inflation" that have been developed (see for example Sargent and Wallace (1981), Leeper (1991), Cochrane (2001) and more recently Leeper and Leith (2016), Bianchi and Melosi (2022) and Bianchi et al. (2023)). The common link between them is that they depend on how the private sector expects the government to behave when large fiscal imbalances emerge. The fiscal financing regime can be defined as the set of fiscal arrangements and institutions in place accompanied by a set of expectations which determined how fiscal shocks are financed.[10] This is usually formalised in models by specifying the government's intertemporal budget constraint and the fiscal rule or reaction function in place. "Fiscal-led"[11] inflation generally occurs in regimes where the authorities are not expected to respond to large fiscal imbalances with spending or tax changes that will ultimately stabilise the government's debt. Stabilising the debt in the face of a fiscal shock usually means committing to a sequence of future primary surpluses to meet the government's intertemporal budget constraint. If the private sector doubts this commitment – if it expects "unfunded" deficits in the language of Bianchi and Melosi (2022) – then inflation is likely to be the result.

[10] This is an adaptation of the definition of 'fiscal regime' in Bordo and Jonung (2001). The focus in that paper was on monetary financing. Revaluations in the real value of debt were probably much more quantitatively significant for the British Exchequer than revaluations in the real value of money, so we (and Bush, 2024) use a broader definition. The focus on 'shocks' is important because revaluations in the real value of debt are driven by *unexpected*, not expected, inflation.
[11] Here we use the terminology of Bianchi et al. (2023) and Smets and Wouters (2024).

The exact mechanism of how this works differs across theories but all involve some form of fiscal dominance over monetary policy. Some theories would suggest inflation through current and expected monetisation of the debt when, for example, there is some perceived limit to the overall amount of borrowing or stock of debt the government can incur (Sargent and Wallace (1981)). The Fiscal Theory of the Price level (FTPL) suggests that prices move directly to ensure the present value of future surpluses equals the real market value of the debt and that movement can be drawn out when the maturity of the debt is long. Bianchi et al. (2023), and Smets and Wouters (2024) assume more generally that monetary policy acts passively to accommodate unfunded deficits in a way that satisfies the intertemporal budget constraint. Distinguishing empirically between the different fiscal theories is made difficult given we only observe equilibrium outcomes. We do not know what off-equilibrium behaviour underpins those outcomes.

In any case, contemporaries would not have viewed fiscal policy through any of these perspectives. But they did have their own fiscal-led theories of inflation which might imply similar outcomes to the predictions of modern theories. In particular, UK monetarists of the time used the credit counterparts approach to make a link between fiscal policy and inflation via the effect on broad measures of the money supply. As monetarist thinking developed in the 1960s, the link between deficits and the money supply was developed as a derivative of the flow of funds approach to analysing financial transactions that had developed on both sides of the Atlantic after WW2 (Bjork and Offer (2013), Goodhart and Needham (2017)). Essentially the credit counterparts were an identity derived from the consolidated balance sheet of the banking system, including that of the central bank. It essentially made the accounting link between the increase in broad money, defined as the sum of notes and coin held outside the banking/MFI system plus deposits with the banking/MFI system, and the other flows of assets and liabilities on its balance sheet. In its simplified form this was given by:

Δ Broad money = Δ MFI £ Lending to the private sector + **PSBR - sales of government debt to non-banks** + Δ Net FC lending + Δ net £ lending to overseas residents - Δ net non-deposit liabilities

While this seemed to provide a direct link between the government deficit and the money supply, it made clear that only deficits funded by the banking system had monetary implications. This typically occurred in periods when it was difficult to sell government bonds to traditional non-bank investors such as pension funds, insurance companies and other asset managers. So, rather than debt limits, the contemporary fiscal theory of inflation depended largely on limits to financing the *flow* of government borrowing from the market which forced it to monetise the deficit. In addition, that monetisation occurred not through printing bank notes or central bank money creation, but by creating additional bank deposits through borrowing from the banking system. This led to a different characterisation of fiscal financing regimes: those with "underfunded" deficits and increased money creation and those with "fully funded" or, as in the early 1980s, "over-funded" deficits which implied stable or low money growth.

Whatever the fiscal theory, the presence of a fiscal financing regime that was not geared to stabilising the debt would have profound implications for the narrative of the Great Inflation. First, it might imply that tightening monetary policy would ultimately have been counterproductive. For example, higher interest rates only have a definitive deflationary effect in the canonical New Keynesian model if it is supported (in expectation) by an increase in future primary fiscal surpluses to cover the higher debt service costs and ensure the government's present value budget constraint is satisfied. Active monetary policy must have "passive" fiscal support in the language of Leeper (1991). If fiscal policy ignores stabilisation of the debt, then higher interest rates may well have perverse "Neo-Fisherian" effects and increase inflation either

immediately or at least in the longer term, which Sims (2011) refers to as 'stepping on a rake'.[12] Indeed, as Leeper and Leith (2016) show, if fiscal policy does not act to stabilise the debt, the more active monetary policy becomes in terms of its response to inflation the worse the inflationary outcome gets. If such a regime was in place, then higher interest rates in the mid-1970s may have just made the inflationary problem worse. Given the reluctance to raise rates as far as 20%, perhaps the prospect of something like "a stepping on a rake" outcome did affect the thinking of the authorities during the 1970s and 1980s. With nominal interest rates at record levels, they may not have felt confident to tighten monetary policy further for fear of making things worse, even though real interest rates were low or negative.

A second implication is that moving between fiscal financing regimes would be likely to have an impact on inflation expectations and the behaviour of core or trend inflation, as suggested by the analysis of unfunded fiscal shocks by Bianchi and Melosi (2022) and Bianchi et al. (2023). The reason why these regime shifts could lead to shifts in inflation expectations is subtle. When the government has long term debt outstanding, shocks propagate slowly to inflation. A regime shift which occurs when shocks are already propagating can also change how the shock propagates after the shift (Bianchi and Ilut (2017)). Smets and Wouters (2024) characterise unfunded deficits as a temporary shift in the inflation target. However, events that change the view or probability of being in a particular fiscal regime should in principle lead to some detectable shifts in inflation expectations or movements in trend inflation. Given that is what our empirical results suggest, an investigation of the fiscal financing regime across the period as a whole is warranted.

In the rest of the paper, we consider what empirical and narrative evidence can be brought to bear on whether the Great Inflation period in the UK involved a shifting "fiscal financing regime", with implications for both the efficacy of monetary policy in isolation and inflation expectations. Although we cannot test between different fiscal theories of inflation, we at least know some of the characteristics of a fiscal dominance regime compared to a regime where fiscal policy is passive and monetary policy dominant.

(i) Fiscal facts

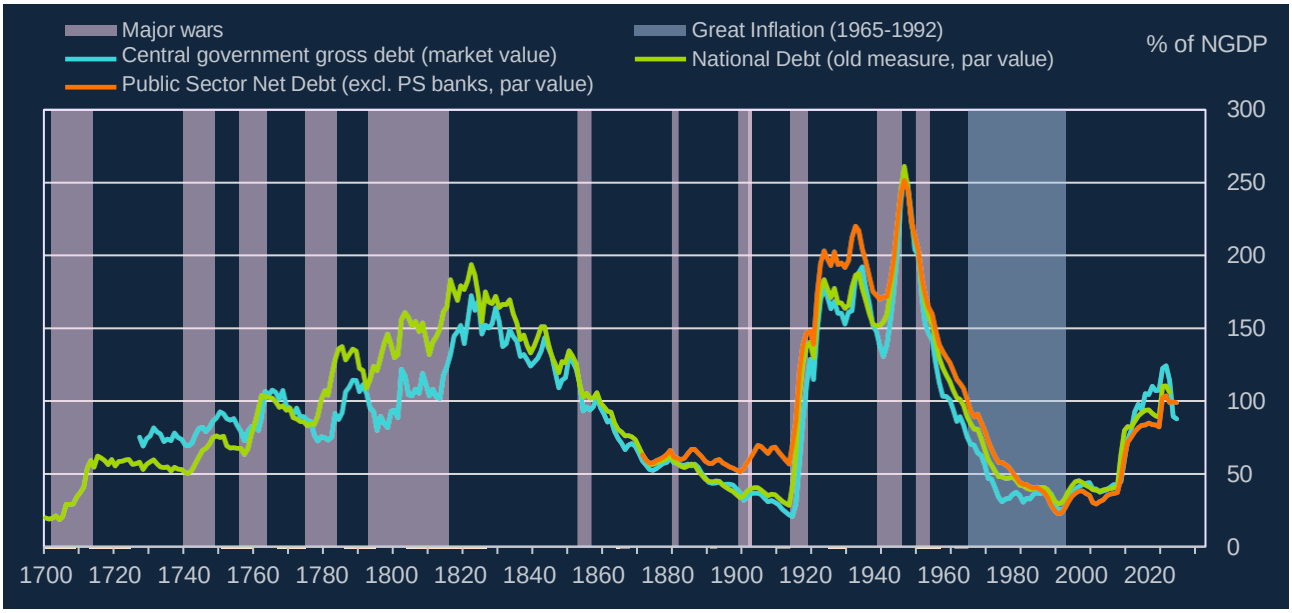
It is useful first to take a high-level look at the UK fiscal data and how the fiscal policy problems that emerged in the 1960s and 1970s, compared to those in earlier and later periods.

The history of the UK national debt has been well documented (see Slater (2018)). **Chart 4.1** shows three measures of government indebtedness since 1700, including a new measure of public sector net debt from 1870 constructed for our paper. A succession of major wars from the late C18th to the start of the C19th had seen an inexorable rise in the public sector debt to just under 200% of GDP. There was then a long period up to around 1870 where the debt-to-income ratio fell to under 60% of GDP. Although the burden fell further on a central government basis, the decline flattened off on a public sector basis from the 1870s given the expansion of local authority borrowing during the golden age of the local government. Both World Wars then led to a massive increase in the debt to around 250% of GDP in 1946, although there was a period of consolidation in the 1930s. By the late 1960s however, it had come down to well below 100%. So the fiscal problem in the 1960s and 1970s was not one of a high existing public debt burden, at least by earlier standards. On this basis, it is unlikely the UK government prospectively faced some upper limit to the overall debt stock going into the 1960s and 1970, along the lines of the Sargent and Wallace anticipated

[12] In the hyper-inflation literature Loyo (1999) argues a Neo-Fisherian effect very much happened in the case of Brazil where fiscal policy did not act to stabilise the debt and higher interest rates in response to inflationary pressures simply led to more interest income to bond holders and wealth effects on spending that made the inflationary problem worse.

monetisation story. However, as **Table 4.1** shows, the manner in which the fall in public sector debt was achieved in different periods is very revealing if we look at a decomposition of peacetime debt dynamics since 1946. In this table we use our constructed total public sector net debt measure, where debt is measured on a nominal value basis to do the decomposition.

Chart 4.1 Public sector debt-income ratio: Alternative measures since 1700



Sources: See Online Appendix 2

Table 4.1: Public sector net debt decomposition, 1870-1997
pps of NGDP

Period	Interest	Inflation	Growth	Primary Surplus	Residual*	Change in Public Sector Debt
1870-1913	93	2	-48	-64	6	-11
1920-1938	130	71	-62	-114	10	34
1946-1950	14	-45	-18	-27	28	-48
1950-1960	29	-61	-52	-17	20	-82
1960-1971	38	-48	-32	-23	11	-54
1971-1980	30	-63	-10	8	10	-24
1980-1990	32	-24	-10	-15	-4	-20
1990-1997	16	-6	-5	15	-4	16

Sources: See Online Appendix 2 for source of the estimates. The residual reflects a number of accounting factors including the acquisition/sale of illiquid financial assets and loans which are part of the identity linking public sector net borrowing to public sector net debt (which only nets off liquid assets held by the public sector). It also reflects the fact bonds might be issued at a different price from par, so the money raised from borrowing is not the same as the increase in the nominal or redemption value of the debt.

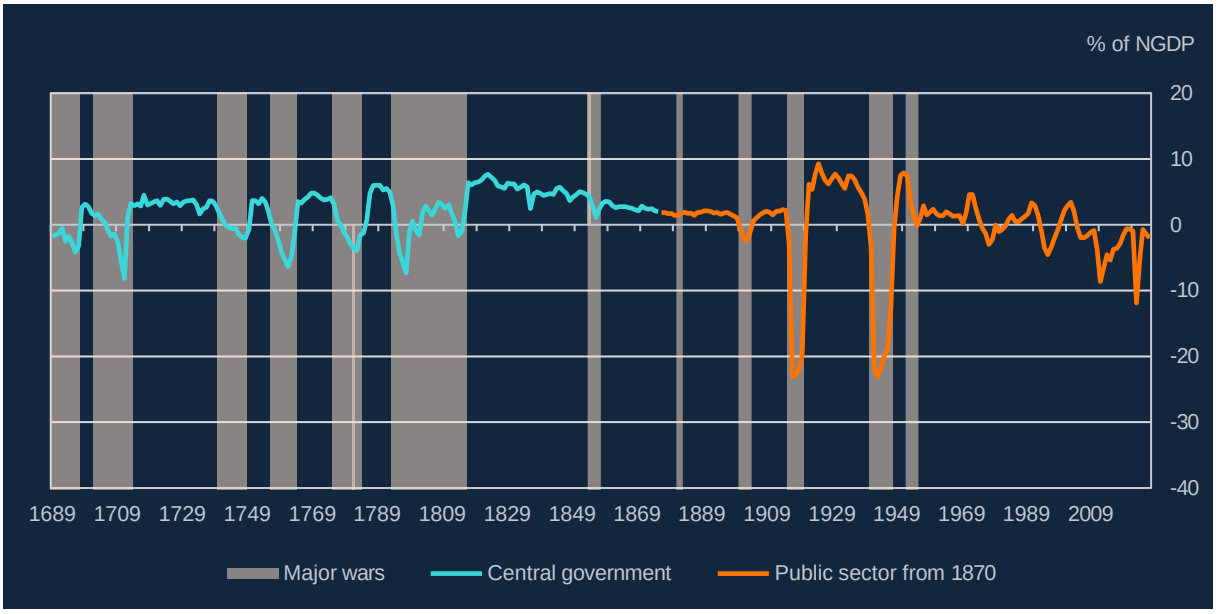
During the pre-WW1 and inter war periods the fall in public sector net debt was entirely due to running primary surpluses helped by economic growth. In the immediate aftermath of WW2 a combination of inflation and a primary surplus were the most important factors in reducing the debt by 50pps in only five years. Importantly only moderate inflation averaging 6% was required given the high debt-income ratio. In the 1950s growth became more important although the UK continued to run primary surpluses. Inflation also contributed but over half was due to inflation during the Korean War. In the 1960s a similar mix occurred with slightly lower contributions from growth and inflation. After 1971 what stands out is the

switch in fiscal policy to running primary deficits coupled with an increased contribution from inflation and a reduced impact from growth.

What also stands out is that the inflation rate required to reduce the debt-income ratio by an equivalent amount was much higher in the 1970s than in the 1950s, given the relatively low level of debt that could be inflated away. This reflects a point made by some in the fiscal theory literature. If there are fiscal shocks to the deficit that ultimately are not expected to be met by future surpluses, then inflation has to move more to meet the present value budget constraint when the existing debt-income ratio is low because there is less legacy debt to inflate away (see Barro and Bianchi (2023) for example). So, the existence of a low starting level of public debt in the 1960s and 1970s is not necessarily evidence against a prospective fiscal interpretation.

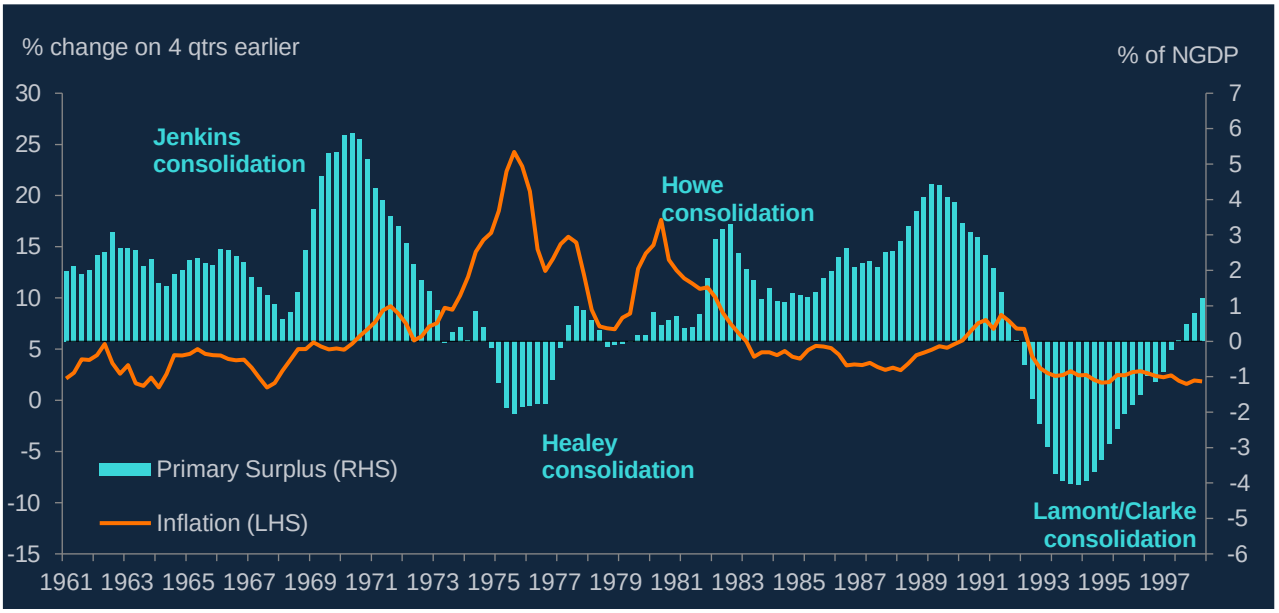
The primary fiscal deficits of the mid-1970s were unprecedented in the context of previous experience in the UK leading up to that point. **Chart 4.2** show it was the first time in 300 years the public sector had run a significant primary deficit in peacetime in the UK. Over centuries, the British fiscal and monetary orthodoxy had been to run significant primary surpluses in peacetime, a commitment mechanism that allowed it to fund extremely large deficits during the many periods of conflict in which the UK was involved. This reached its apotheosis in the interwar period when Treasury orthodoxy looked to balance the overall budget and run high primary surpluses.

Chart 4.2: Public sector primary surplus since 1689



Sources: Thomas and Dimsdale (2017) and Online Appendix 2

Chart 4.3: Fiscal consolidations and Inflation



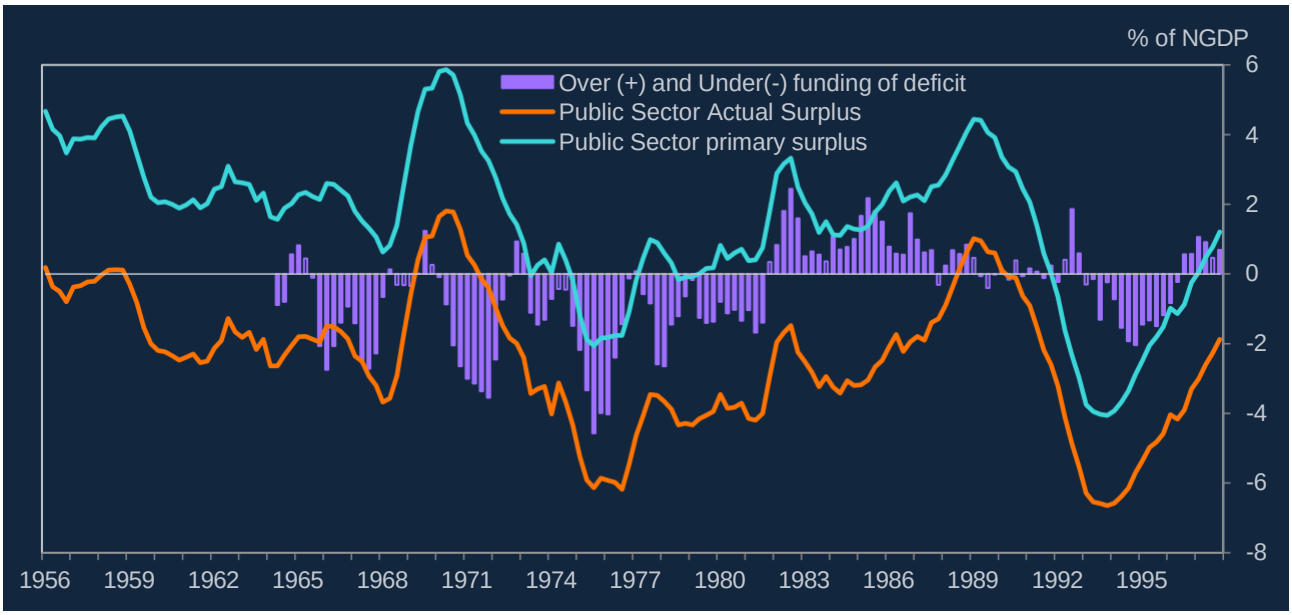
Sources: ONS

The precipitous fall in the primary surplus in the 1970s is shown more clearly in **Chart 4.3** . Initially there had been a tightening of fiscal policy in the immediate aftermath of the devaluation by the Chancellor Roy Jenkins to try and secure an improvement in the balance of payments by making space for exports. However, following budgets by Barber and Healey in the first five years of the 70s the primary surplus fell precipitously and troughed at the inflation peak of 1975. Indeed the projections at the time were for the deficit to be even worse than this. There was then a consolidation in 1976 and 1977, in part related to the IMF visit in December of that year, but in fact, as the narrative history in Appendix 1 discusses, Healey had already begun to put in place consolidation measures earlier than this. That consolidation proved short lived and a pre-election budget removed the primary surplus. it was not until the early 1980s that persistent primary surpluses would be run at significantly positive levels, following the budget of Howe in 1981. Indeed, an overall net debt repayment was made in 1989 and helped facilitate another large fall in the primary surplus in the early 1990s recession. This increase in the deficit was in part cyclical but quite extraordinary in peacetime up to that point. We come back to why this was possible later. This was followed by another major consolidation in the early to mid-1990s started by Norman Lamont and finished off by Kenneth Clarke which helped a return to primary surplus in 1997. So it appears that the behaviour of the primary surplus, a key point of focus in the fiscal sustainability and fiscal theory literatures, is likely to have played some role in the inflationary problems in the mid-1970s. And each of the subsequent consolidations, some of which were "back ended" and announced in advance, appear to have played a part in the fall in inflation (and inflation expectations) that occurred at around the same time.

Chart 4.4 focuses on the extent to which the deficits were monetised through borrowing from the banking system. We see that the increase in borrowing over the early 1970s involved issuing substantial amounts of debt to the banking system and again peaks around the same as the peak in inflation in 1975 and 1976. That financing ensured that money growth remained in double-digit territory despite the weakness in credit following the secondary banking system and the operation of the corset from 1973 onwards (**Chart 4.5**). The move to overfunding the deficit in the early 1980s (selling more gilts to the non-bank private sector than necessary to fund the deficit) around the same time as the Howe consolidation, was also important in

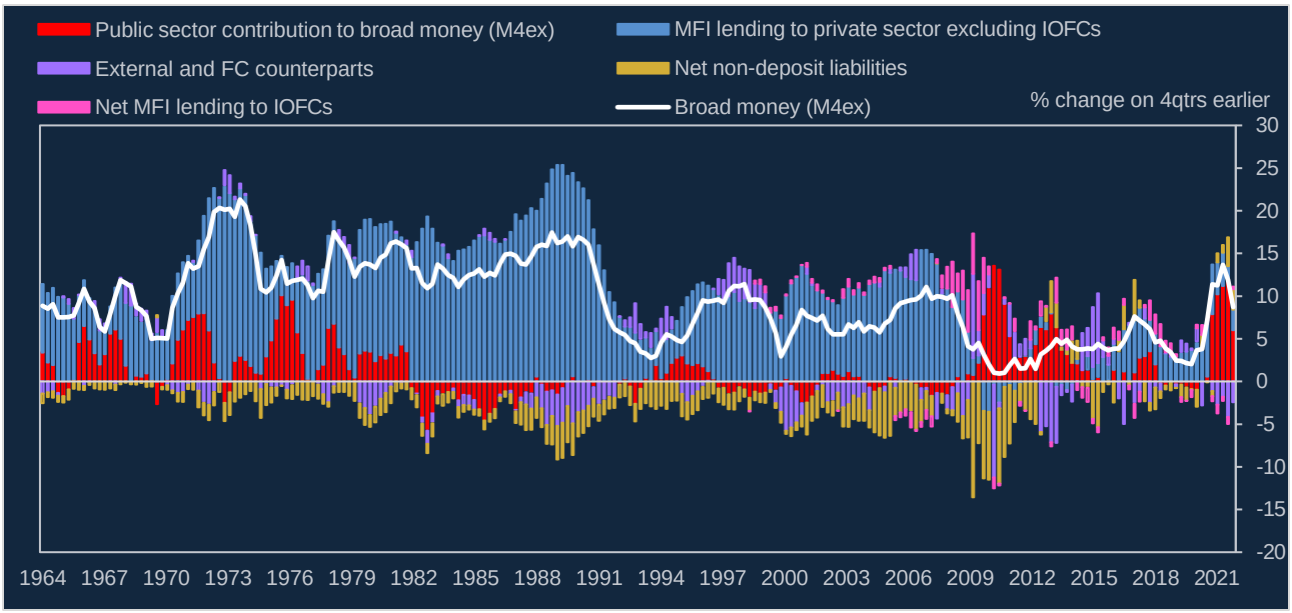
keeping money growth in check and may have played some role in the fall in inflation that occurred around that time.

Chart 4.4: Public sector primary surplus and funding from the banking sector



Sources: ONS and Bank of England

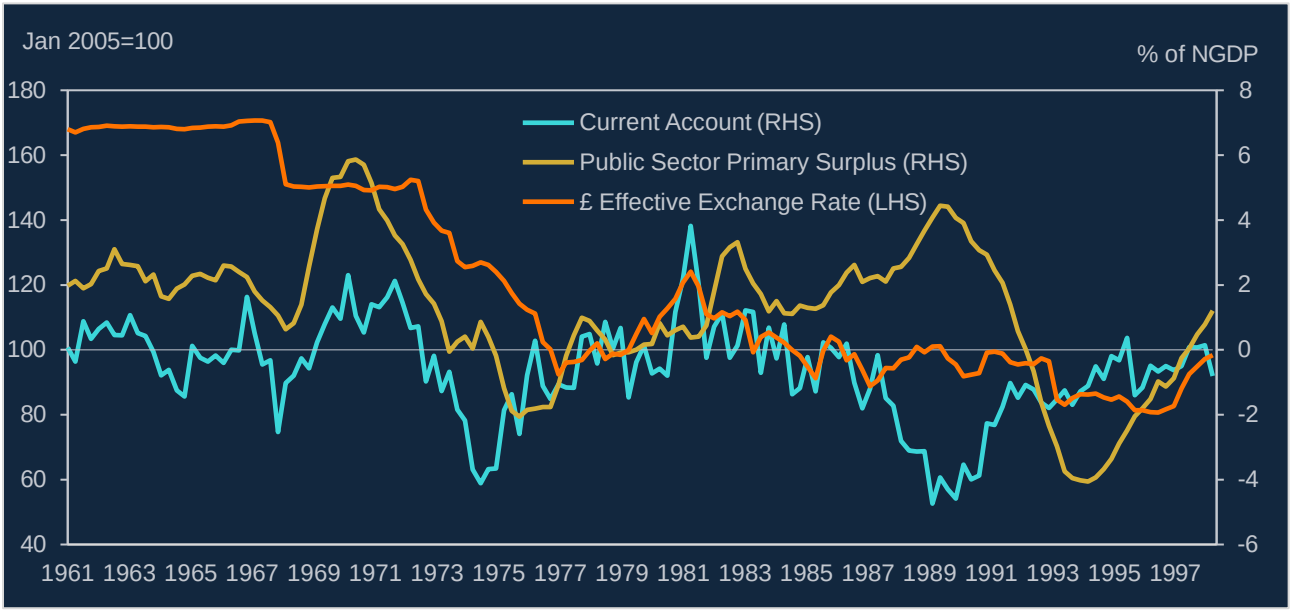
Chart 4.5: Counterparts to broad money growth since 1963



Sources: Bank of England

Chart 4.6 shows that the public sector deficit was also closely related to the balance of payments current account deficit in the late 1960s and the 1970s. The burgeoning current account deficit induced a large depreciation of sterling and added to import price inflation in the mid-1970s. Both appear, in a timing sense, to be a reflection of the large fall in the primary surplus. The fact that this deficit was financed through broad money creation is added support that the exchange rate depreciation might also be related to fiscal policy in this period.

Chart 4.6: Primary surplus, the current account and the exchange rate



Sources: ONS, BIS.

(ii) Narrative evidence on the "fiscal financing regime"

The fiscal financing regime in place during the Great Inflation was unusual in modern British history. As discussed earlier, and documented in **Bush (2024)**, what became known as the Treasury view was dominant from the eighteenth to halfway through the twentieth century. This held that the main objective of fiscal policy in peacetime was to stabilise the public finances. With this objective and the associated arrangements and expectations, surprise increases in public debt (almost exclusively driven by wars) were ultimately financed by subsequent primary surpluses.[13]

The evidence that follows, together with that in the narrative history in Appendix 1 and in **Bush (2024)**, shows that the Treasury view was largely forgotten for a few decades after WWII. It is of course well known that the primary objective of fiscal policy after WWII was demand management. But as the Wass quote at the start of our paper shows, very little thought was given to the sustainability of the public finances.

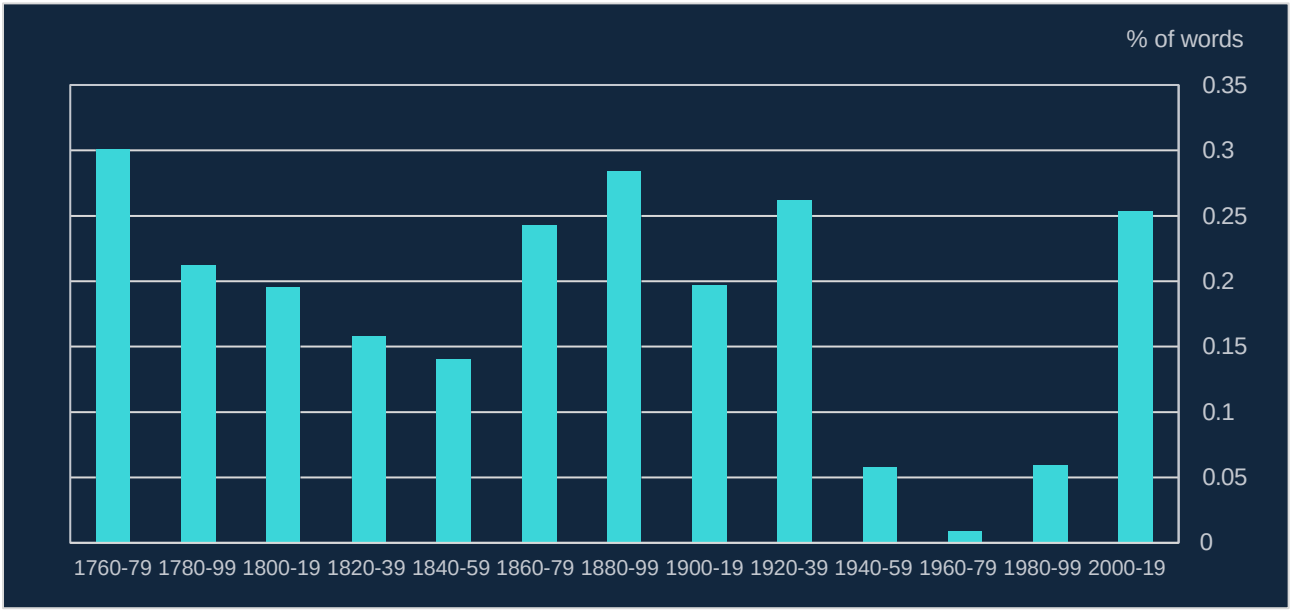
The contrast between the objective of fiscal policy in most of modern history and the Great Inflation period was highlighted by Chancellor Lawson in his 1988 Budget speech:

At one time, it was regarded as the hallmark of good government to maintain a balanced budget; to ensure that, in time of peace, Government spending was fully financed by revenues from taxation, with no need for Government borrowing. Over the years, this simple and beneficent rule was increasingly disregarded, culminating in the catastrophe of 1975–76, when the last Labour government had a budget deficit, or public sector borrowing requirement, equivalent in today's terms to some £40 billion.

This is corroborated by **Chart 4.7** which shows a simple proxy measure of the importance attached to debt sustainability over time. The post-WWII years are clear outliers.

[13] This was clearly true up to 1913. Such was the scale of the world wars that the government was unable fund them exclusively with primary surpluses.

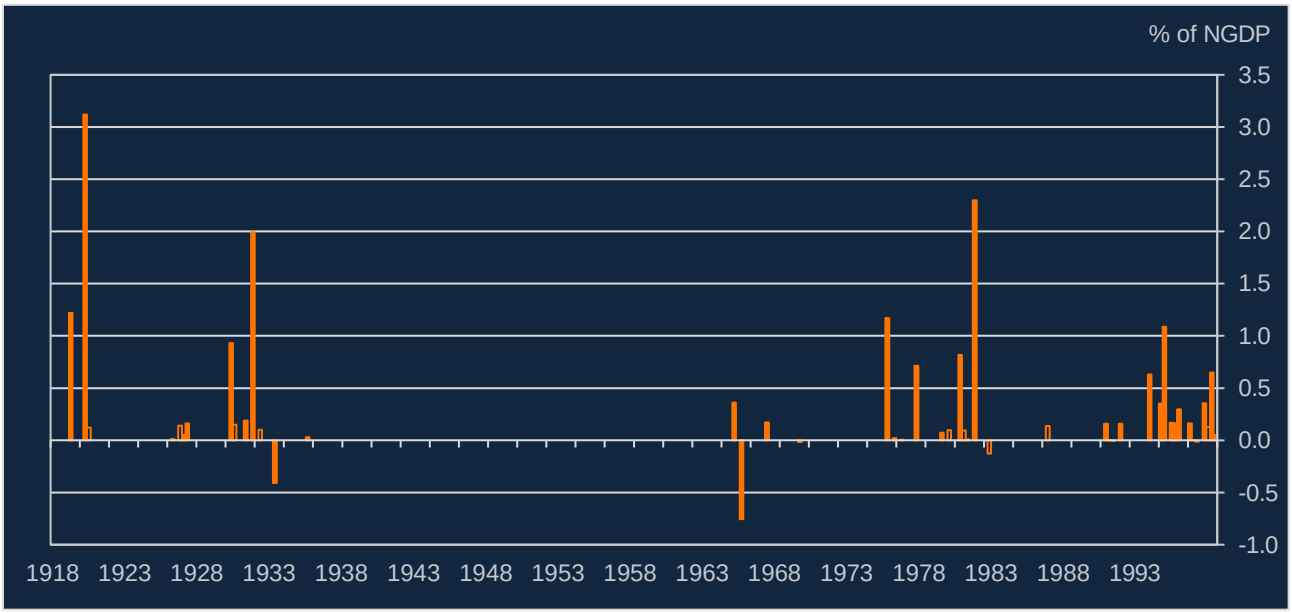
Chart 4.7: Importance of debt sustainability: mentions of "debt" in budget speeches



Sources: Bush (2024).

Neglect of the public finances is also apparent from the narrative analysis of tax changes by Cloyne (2013) and Cloyne et al. (2018). They classify tax changes according to different motives. **Chart 4.8** shows there is a noticeable dearth of tax changes associated with deficit reduction or consolidation in the period after WW2 up to 1975.

Chart 4.8: Deficit reduction-related tax changes 1918-1997

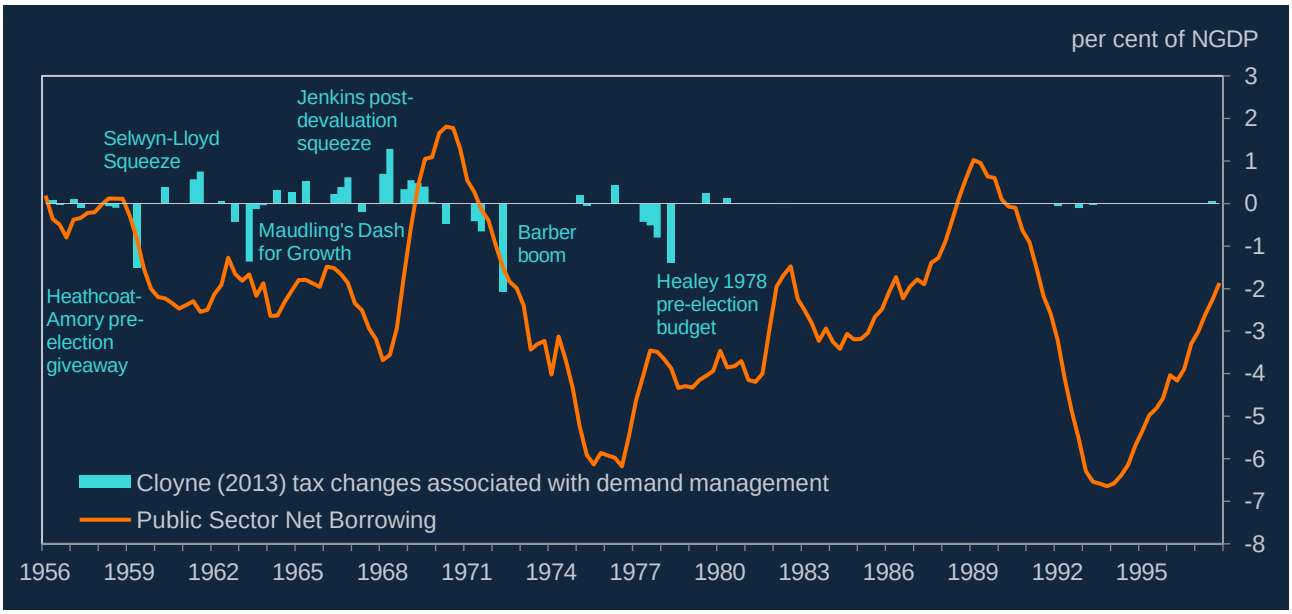


Sources: Cloyne (2013) and Cloyne et al. (2018)

Cloyne also classifies the Barber Boom and Healey's 1978 budget as a continuation of the destabilising "go-stop" episodes of the 1950s and 1960s highlighting that deficits were still used for basic demand management throughout the 1970s (**Chart 4.9**). Some might even apply this label to Nigel Lawson's tax cutting in the late 1980s, although Cloyne classifies these as long-term structural changes designed to

improve the supply side given the evidence from budget statements. The intermediate consolidations by Jenkins in 1968/69 and by Healey in 1975/6 would then be viewed as only ephemeral attempts to stabilise the fiscal finances but were not true regime shifts.

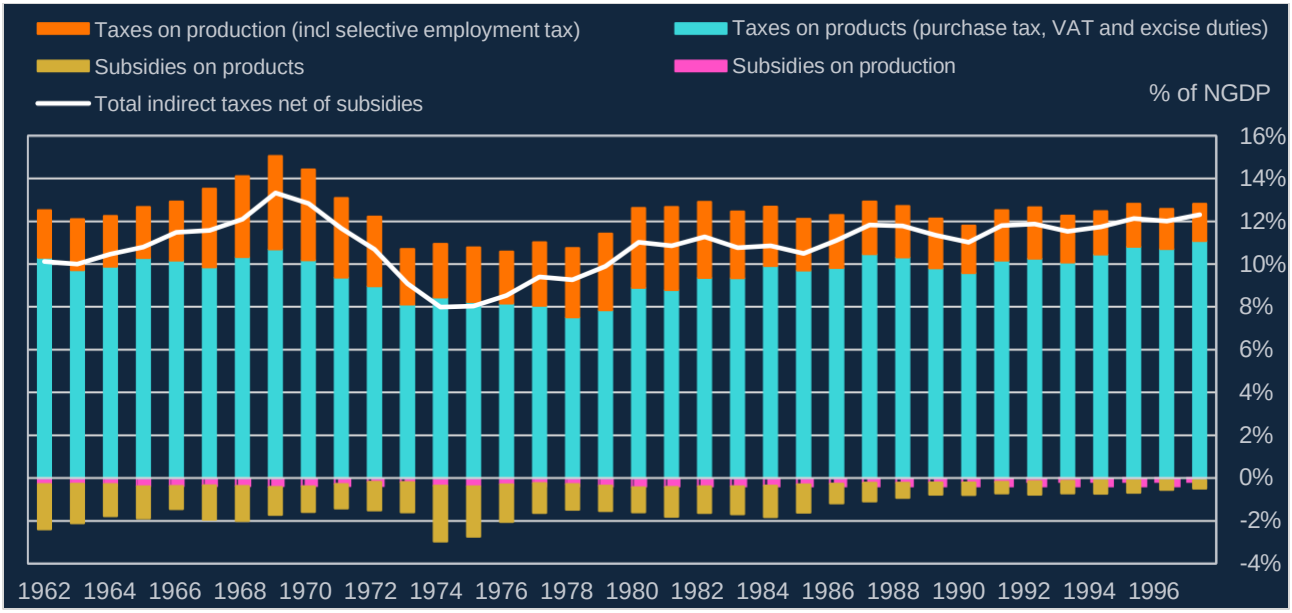
Chart 4.9: Tax changes associated with demand management, 1956-1997



Sources: ONS, Cloyne (2013).

There is additional evidence in the narrative history in Appendix 1 that also suggests that fiscal policy was not used to stabilise the public finances. Fiscal policy was used to absorb cost push pressures at the peak of the commodity price shocks in the 1970s. Subsidies on food, rent and mortgages were introduced to try and put a lid on wage and commodity price pressures especially those that fed directly into the RPI which had an automatic effect on earnings via the threshold agreements under the incomes policy introduced in late in 1973 (**Chart 4.10**). Later in the 1970s tax cuts in some budgets were directly linked to wage restraint under the "Social Contract" with unions. So this points to the use of fiscal deficits as a shock-absorber to try and bear down on some of the direct inflationary problems of the 1970s which would ultimately prove self-defeating.

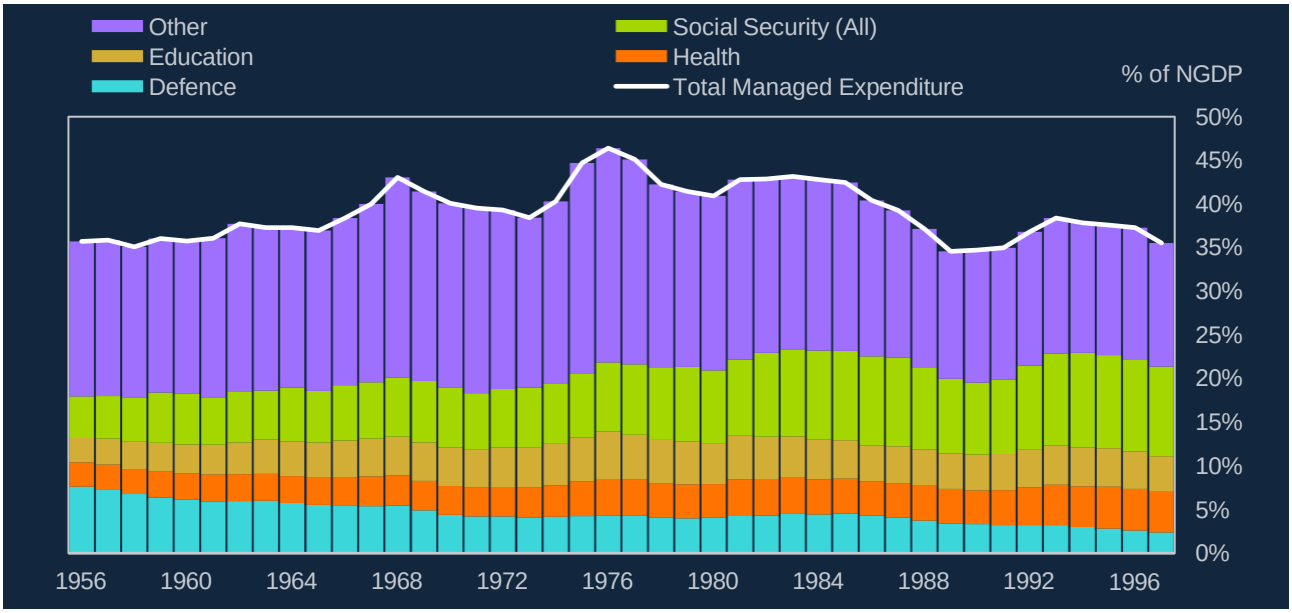
Chart 4.10: Indirect tax revenues net of subsidies 1962-1997



Sources: ONS

Subsidies were just part of a more general problem in the early 1970s that public spending was increasingly perceived to be out of control. Despite a peace dividend arising from a fall in defence spending from around 8-9% of GDP in the early 1950s during the Korean War, to around 4% of GDP in the mid-1970s, the share of overall spending increased from around 35% of GDP to 45%. Only half of the 15pp increase in non-defence spending was accounted for by education, health and social security. Other spending increased from 18% to around 25% of GDP (Chart 4.11)

Chart 4.11: Composition of Spending 1956-1997



Sources: IFS Data hub

The view that spending was out of control most overtly espoused by Wynne Godley, a former economist in charge of public expenditure at the Treasury who moved to become an academic at Cambridge. He argued

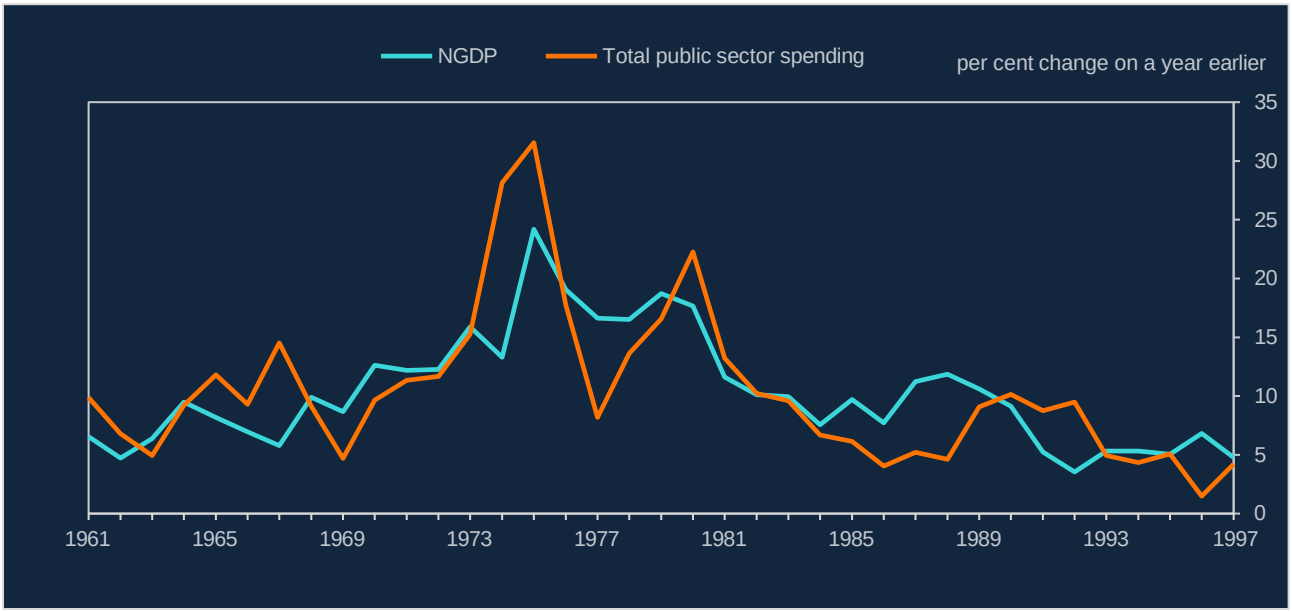
that half of the actual rise in public expenditure between 1970/1 and 1975/6 could not be accounted for by the announced policy changes in previous budgets. He identified the source of the problem as the public expenditure decision making system, known as PESC (after the Public Expenditure Survey Committee). Government spending plans were set in constant price or real "volume" terms and, following the Plowden Report of 1961, were set many years ahead. This meant that nominal government spending in cash terms would simply accommodate burgeoning public sector wage increases and other costs in order to meet a preset volume targets for real government spending (see Wright (1977), Bevan (1980) and Copeman (1981)). Godley pointed out that those costs also rose by more than in the private sector and so there was a "relative price effect" that meant government spending as a share of GDP and ratio to tax income would tend to rise over time. This was reflected in the measured government expenditure deflator which increased by more than the GDP deflator and peaked at an inflation rate of over 30% in 1975.

*I think that the planning system called PESC. which was very noble and imaginatively conceived, has in fact not produced any of the advantages that it was supposed to be going to produce . . . We have not got a proper planning system, and we have not got a proper control system. (*Wynne Godley, 1975).

*The Treasury's present methods of controlling public expenditure are inadequate in the sense that money can be spent on a scale which was not contemplated when the relevant policies were decided upon. (*Select Committee on Expenditure, 1975)

Chart 4.12 shows that overall nominal government spending in 1974 and 1975 rose by 28% and 32% respectively, which was both higher and in advance of the pickup in nominal GDP.

Chart 4.12: The Godley Critique, nominal public sector spending and GDP



Source: ONS

Table 4.2: Public expenditure forecasts and outturns, £bn

PES forecasts: Made in	for FY 1972-73	1973-74	1974-75
Nov 1971	27.2	30.5	37.0
Dec 1972	27.6	31.7	38.3
Dec 1973	27.8	32.8	39.8
Jan 1975	-	32.8	42.7
Outturn	27.4	32.6	43.3

Source: Wright (1977)

Contemporaries saw fiscal policy as problematic and believed there was a link between deficits and inflation. As discussed earlier, the government was forced to resort to financing the deficit from the banking system at various points throughout the 1970s and this was well known to financial markets and commentators and international bodies like the IMF who placed considerable weight on the credit counterparts framework for assessing monetary growth. Tim Congdon, then of the Times, and perhaps the most prominent of the British monetarists, wrote at the time that:[14]

In their approach to monetary policy most economists emphasize the dependence of the supply of money on the public sector's financial position ....The money supply must be restrained, in the opinion of most observers, because it otherwise fuels inflation. Tim Congdon, The Times, 9th October 1974.

[The balanced budget] orthodoxy now… seem[s] to have been forgotten. Taxation decisions are not taken with a view to keeping the budget deficit under control but only with a view to their supposed effects on demand, Tim Congdon, The Times, 20th February 1976.

Many of the leading British monetarists worked for stockbrokers, including Brian Griffiths at Pember & Boyle, Gordon Pepper at W. Greenwell & Co. and Alan Walters at Joseph Sebag & Co. In the gilt market, Gordon Pepper was a prominent and influential commentator for the stockbrokers W. Greenwell & Co.[15] He regularly pointed to high public sector borrowing as the cause for Britain's inflation and balance of payments problems in the 1970s.[16] The growing use of the credit counterparts framework by the domestic authorities to provide monetary and fiscal discipline cemented that financial focus. In essence, this viewpoint did have some similarity to the Sargent and Wallace Unpleasant Monetarist Arithmetic argument, but only superficially. As mentioned earlier, the perceived constraint here was not a debt limit, but rather the flow of new gilts the government could issue to the non-bank private sector in a given period. And it was the implications for expected broad money growth rather than base money or seigniorage that mattered for inflation. The looseness of fiscal policy in the mid-1970s and some of the doomsday predictions for expected borrowing clearly had an impact on financial market expectations and prices in gilt and foreign exchange rate markets, in part driven by this viewpoint of the link between public sector borrowing, broad money growth and inflation. In that sense the authorities simply had to address the fiscal issue from 1975 onwards to ensure orderly markets. Strikes in the gilt market and collapses in sterling, both anticipating expected future broad money growth, would simply add to inflation pressure. In this sense reducing the budget

[14] See also Congdon (1976).

[15] According to the Financial Times on 3rd May 1973, 'nobody can deny that Mr. Pepper's regular bulletins to clients are an important factor in the formation of City opinion on monetary trends; and to quote one Bank of England official not so long ago: "Things are quiet at the moment, Gordon Pepper has the 'flu"'.

[16] See for example Pepper, Thomas and Wood (1976) *Greenwell and Co.'s Monetary Bulletin*, No.57. We are grateful to Michael Oliver for making these available to us.

deficit had to be part of any plan to reduce inflation simply because of the weight financial markets and bodies like the IMF placed on it as a source of inflationary pressure. It would act as a co-ordination device to anchor expectations. The theory underlying the link between deficits and inflation was second order in that sense. So, the fiscal actions of 1975-1977 and later in the early 1980s, which were geared primarily to meeting a target for broad money growth, may have inadvertently delivered the appropriate fiscal and monetary response required under other fiscal theories.

So, there is plenty of statistical and narrative evidence that the mid-1970s regime had many of the hallmarks of a regime in which fiscal policy was not used to stabilise debt, with the primary deficit being allowed to widen to absorb shocks when arguably fiscal policy needed to tighten, at least in expectation, in response to commodity price shocks and, by this point, tighter monetary policy in the form of higher nominal interest rates.

Similarly, there is a lot of narrative evidence that fiscal policy played an important part in ending the Great Inflation and bringing down inflation expectations. It is notable that the timing of the deficit-reduction tax changes identified by Cloyne corroborate the regime shifts identified in household inflation expectations very closely. In particular, the regime shifts in 1976, 1981/2 and the early 1990s are consistent with key changes in the fiscal regime.

First, in the March 1976 budget Healey would announce cash limits on fiscal policy, which the government had already been begun planning for as far back as 1975. This limited the feedback loop of higher public sector costs into higher government spending from planning public spending plans in real or volume terms. Now plans would be set in cash terms based on the government's expected outlook for inflation. Alongside that increasing emphasis was placed on (initially unpublished) monetary targets for the broad measure of money £M3 as a disciplining device on policy which would increasingly bring the funding of deficits into sharper forecast. Later that year The Prime Minister Jim Callaghan[17] gave a well-known speech at the 1976 Labour Party Conference where he effectively announced the end of the post-war consensus with the now famous words, "We used to think you could spend your way out of a recession and increase employment by cutting taxes and boosting government spending. I tell you in all candour, that option no longer exists". Milton Friedman later stated he thought this was one of the most important speeches made by any government minister on economic policy.[18] As discussed earlier, the discipline was relaxed but some of the innovations, remained and formed part of the incoming Thatcher government's plans in 1979.

The second major consolidation occurred in 1981 when the Chancellor Geoffrey Howe tightened fiscal policy in the teeth of a recession. The Thatcher government had entered office in 1979 with a programme called the Medium-Term Financial Strategy or MTFS which was based on a set of declining targets for broad money growth. This included an explicit role for fiscal policy. In 1980 Howe explained why he was raising taxes by asserting that:

experience shows that it would be wrong to keep the actual PSBR at its current level as a percentage of national income. This could not be reconciled with the monetary target or with the counter-inflationary objectives of the medium-term strategy.

But due to the rapid introduction of financial liberalisation measures these monetary targets were missed prompting higher interest rates and a deep recession which then forced the government into a large deficit.

[17] Harold Wilson, the Prime Minister elected in 1974 had resigned earlier in March 1976.
[18] "To Jimmy from James," *Newsweek*, December 6, 1976, p. 45.

In order to bring the MTFS back on track, Howe tightened fiscal policy substantially in 1981. Indeed, as mentioned earlier, Howe resorted to overfunding the deficit by selling more gilts to non-bank investors than required to fund the deficit which had the effect of reducing broad money growth. Howe also introduced index-linked gilts which would reduce the incentives of the government to inflate away nominal debt.

Third was the fiscal consolidation in the early 1990s initiated by Norman Lamont and later Kenneth Clarke. As shown earlier, the early 1990s recession led to a large drop in the primary balance from surplus to large deficit. As noted by Clark and Dilnot (2004), this worsening of the public finances was on a par if not worse than that of the mid-1970s, albeit this was fully funded from the gilt market without resort to finance from banking system. It nevertheless required a fiscal response and a series of tax increases shown earlier in **Chart 4.7**. This started with Lamont's increase in VAT in 1991 which was required to pay for a reduction in the community charge or poll tax, and particularly in March 1993 when he made specific reference to bringing the deficit down, though note income tax had been cut in the 1992 budget. This was followed by Clarke in the November 1993 Budget when he stated "we must sort out the problem of public borrowing once and for all".

(iii) The source of fiscal problems – a legacy of the post-war settlement

While the evidence points to fiscal policy as both the source and part of the solution to the inflation problem in the UK it still begs the question of why this deterioration in the public finances happened. We argue this is related to the interaction of fiscal policy with four structural factors with roots stretching back to the end of WW2 and even earlier.

(a) From Go-stop to dashes for growth – the attempt to use fiscal policy to improve economic performance

Post-war macroeconomic policy during the 1950s and 1960s has often been characterised as one of Keynesian demand management with an overall goal of full employment. The conventional view is that there was a post-war consensus where governments, both Conservative and Labour, took a "corporatist" view and saw their role as planning and managing the economy together with trade unions and the bosses of key industries many of which were nationalised. There was a consensus that macroeconomic policy should aim to achieve full employment to avoid the experience of the interwar period which exhibited ruinously high unemployment levels. In return the unions would attempt to ensure pay settlements remained reasonable to ensure full employment could be achieved without it being fundamentally inflationary. This consensus became known as 'Butskellism' named after the Chancellor "Rab" Butler and Hugh Gaitskell who was shadow chancellor and, later, leader of the Labour party in the 1950s.

Throughout the 1950s and early 1960s there existed a persistent conflict between the objective of maintaining a high level of employment and correcting deficits in the balance of payments and emerging inflation pressure. This produced a succession of what were-called "stop-go" cycle or, as Dow (1998) recommends, "go-stop" cycles in which expansionist periods of 'go', to try and boost the economy and lower unemployment, would lead to balance of payments problems, following which there would be pressure on sterling, forcing the authorities to hit the brakes and introduce deflationary measures which checked economic growth. So the fixed exchange rate system acted as a natural brake on excessive pump-priming of the economy and monetary policy, either in the form of credit controls or interest rate changes, was forced to be active and fiscal policy forced to reduce the deficit.

During the 1960s however, the growing disillusion with go-stop led to less focus on demand management and more focus on improving underlying growth rates in the economy, in part through increased planning co-ordinated by central government. The Conservative government introduced the National Economic Development Council (NEDC) in 1962 and the Labour Government of 1964 introduced the Department of Economic Affairs to co-ordinate these efforts under the umbrella of the "National Plan" which aimed for growth rates of 4%. But how was this to be achieved? The US economics profession in this period was making enormous strides in writing down models of economic growth such as Solow (1957). In the UK policy was increasingly influenced by the development of growth theory by the British economists Roy Harrod and Nicky Kaldor, who were advisors to the Conservative and Labour governments during the 1960s. Harrod's theory of growth, published in 1939, predated Solow's and emphasised the need for high investment as the precursor for faster growth and this appeared to be borne out internationally as sharp increases in the post-WW2 investment- output ratio appeared to be delivering rapid productivity growth in economies such as Japan and Germany. So, improving the environment for investment growth (and, if necessary, that could include direct investment by the public sector) was the means to achieving faster growth. That led to the idea it may be necessary to run the domestic economy "hot" and lower taxation to generate an environment favourable for investment. Harrod argued the case in several articles he wrote in the Financial Times in the early 1960s,[19] arguing that import restrictions may be necessary should running the economy hot lead to balance of payments problems.

That in part was the reason for Chancellor Maudling's Dash for Growth in 1963/4, which was often seen as a simple extension of previous go-stop policies. As Maudling himself would admit and Cairncross (1996) confirms, this was a gamble, to try and break out of the straightjacket and achieve a virtuous circle of higher expected growth, increased investment and productivity which would then work to validate the expectation. This would necessarily require trying to ride out the balance of payments problems until the faster growth was delivered. In private he was even prepared to consider floatation, harking back to the ROBOT discussions of the 1950s (see online Appendix 1). But, once again the economy overheated though no further action was taken in the run up to the October 1964 election in which the Conservative government was defeated leaving a difficult legacy for the incoming government. It would be faced with a series of balance of payments crises until eventually devaluation was forced upon it in 1967.

Given the inability to force-feed the economy through pump-priming domestic demand, Kaldor, who was advisor to the incoming Labour Government, suggested the focus should be on export-led growth and shifting resources to the manufacturing sector. Underlying this was "Verdoorn's law" which was an empirical observation that faster output growth in manufacturing would produce faster productivity growth (see Kaldor (1966)). This was based on the idea that rapid output growth in the manufacturing sector would cause economies of scale in manufacturing and deliver improved productivity growth rather than high inflation. Fiscal policy incentives were one means of achieving this and this was the reasoning behind the selective employment tax (SET) of 1966, to encourage the shift of jobs towards manufacturing. But it also implied tighter public spending following the devaluation of 1967 to ensure resources shifted appropriately into the tradable sector. This was in fact delivered by Roy Jenkins, the Labour Chancellor, who managed to return the UK current account back into surplus by 1970 but at the expense of higher unemployment which would emerge over the subsequent two years.

[19] See for example "Still time for expansion", from the Financial Times Feb 24th, 1960.

In opposition, the Conservative Party under Edward Heath, who would become Prime Minister in 1970, was developing its own solution to Britain's problems, by, seemingly at least, committing to a hands-off, non-interventionist approach to industry, based on increasing competition (of which applying for EEC membership was part) and tax cuts to encourage investment. However, this policy lasted barely 18 months before an infamous "U-turn" because of a rise in unemployment, in part the result of Jenkin's post-devaluation tightening. As discussed in the narrative history in Appendix 1, this led to the famous Barber boom, an attempt to repeat what Maudling had done. Given the general disappointment with previous attempts at pump-priming the economy and the move towards more targeted measures, it may be surprising that this was tried again, but this occurred alongside another significant event of 1971, the breakdown of the Bretton Woods system.

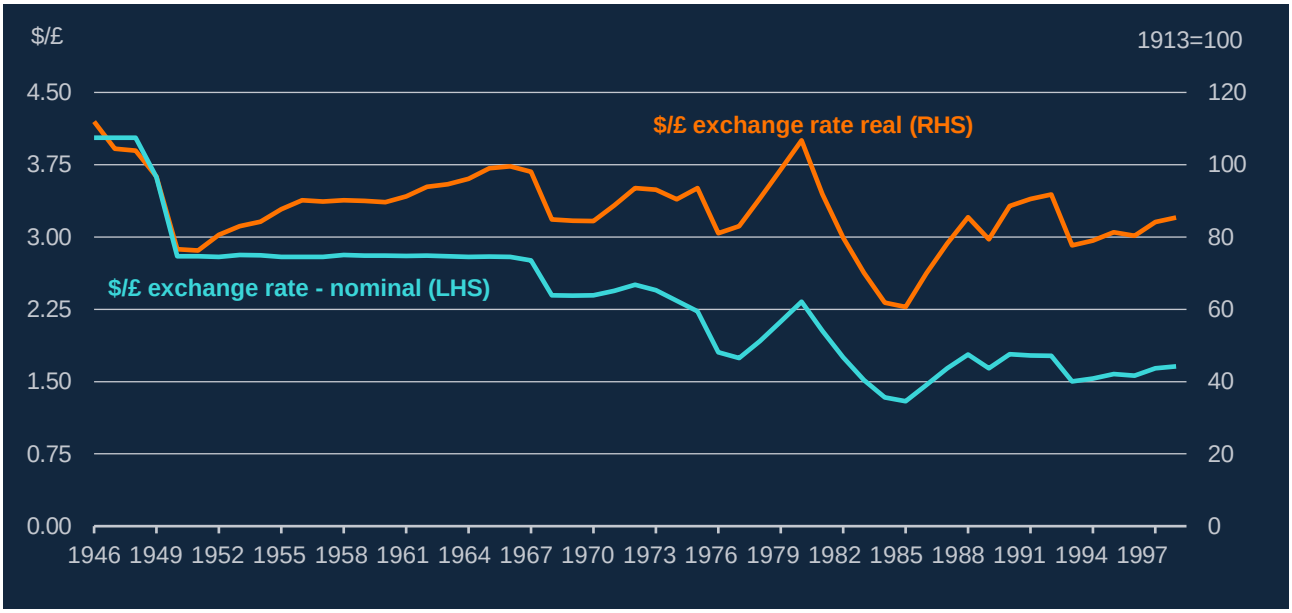
(b) Loosening the Fetters: the transition from reserve currency under Bretton Woods to floating petro-currency

As we have discussed, a key fundamental shaping the British economy in the post-war period was the exchange rate regime in place—the adjustable peg Bretton Woods System (BWS), discussed in detail in Bordo (1993). Although the UK was a charter member of the BWS when it was established just after WW2, it only declared current account convertibility in December 1958. Under the BWS, financial policy was constrained by the fixed exchange rate peg and the state of the balance of payments. In theory, the system was self-stabilising. Overly expansionary fiscal and monetary policies relative to those in countries overseas would lead to a rise in nominal income and a balance of payments (current account) deficit reflecting an increased demand for imports. That would be a prompt for the deficit country to tighten policy and, symmetrically, the corresponding surplus countries to relax policy. In terms of the fashionable open economy policy trilemma, independent fiscal and monetary policy under a pegged exchange rate required capital controls to be in place, which was indeed the case for the UK between 1939 and 1979.

In practice, surplus countries were often reluctant to lose their favourable balance of payments position putting the full burden of adjustment on countries with a deficit. If those deficit countries were reluctant to tighten policy because of the impact on their domestic economies, this would typically lead to a decline in foreign exchange reserves and ultimately a speculative attack and currency crisis. Such crises were then only resolved either by an adjustment in the peg or alternatively by a rescue by the IMF and other authorities that would force a policy of contractionary fiscal/monetary policy to remove the deficit and replenish international reserves.

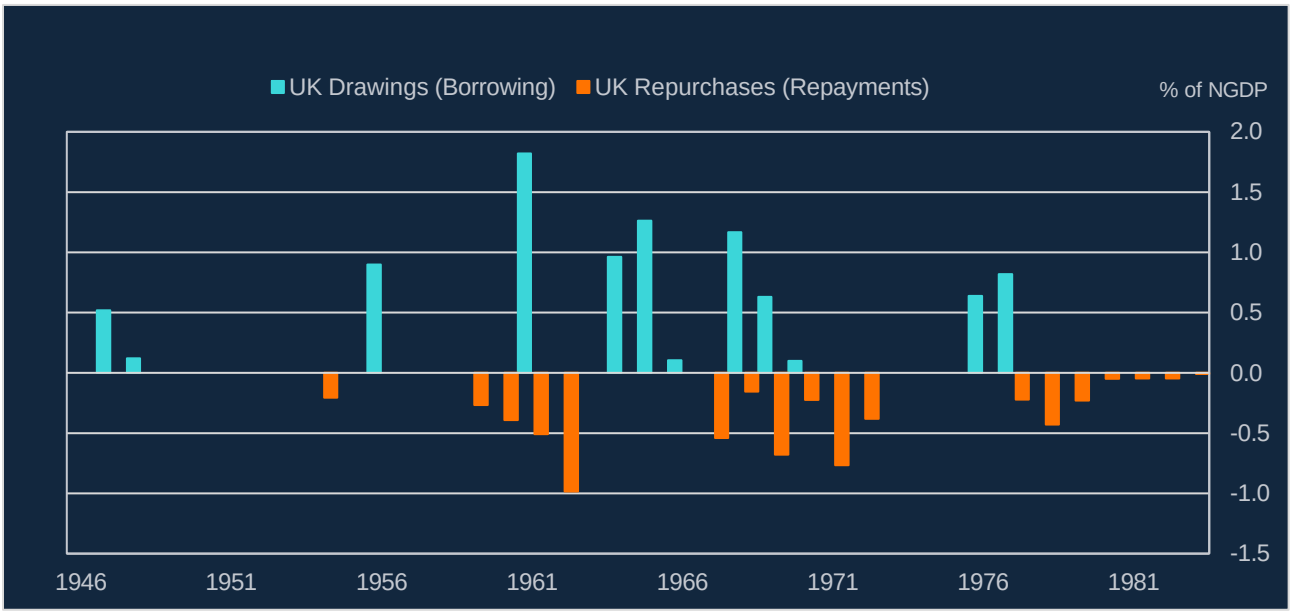
The UK experienced frequent balance of payments problems in the post-WW2 period and experienced both devaluation (in 1949 and 1967) and several rounds IMF assistance (see **Chart 4.13** and **Chart 4.14**) such as during the Suez crisis in 1956 and both before and after the 1967 devaluation. Those problems reflected a combination of factors. There were the fundamental weaknesses on the supply side of the British economy already discussed, and many of these were reflected in the tradeable sector of the economy, with exports a declining share of world trade. The 1949 devaluation had been large and as discussed in Meyer et al. (1970) and Ball et al. (1977) that shielded the UK from making the necessary adjustments to compete with its competitors in some of the newer industries. Coupled with a desire by successive UK governments to maintain full employment this led to a generally higher rate of inflation in the UK than overseas. By the mid-1960s much of the competitiveness gain had been lost and there was a progressive worsening in the net trade position of the UK (**Chart 4.15**).

Chart 4.13: S/£ nominal and real exchange rate 1946-1997



Sources: Thomas and Dimsdale (2017)

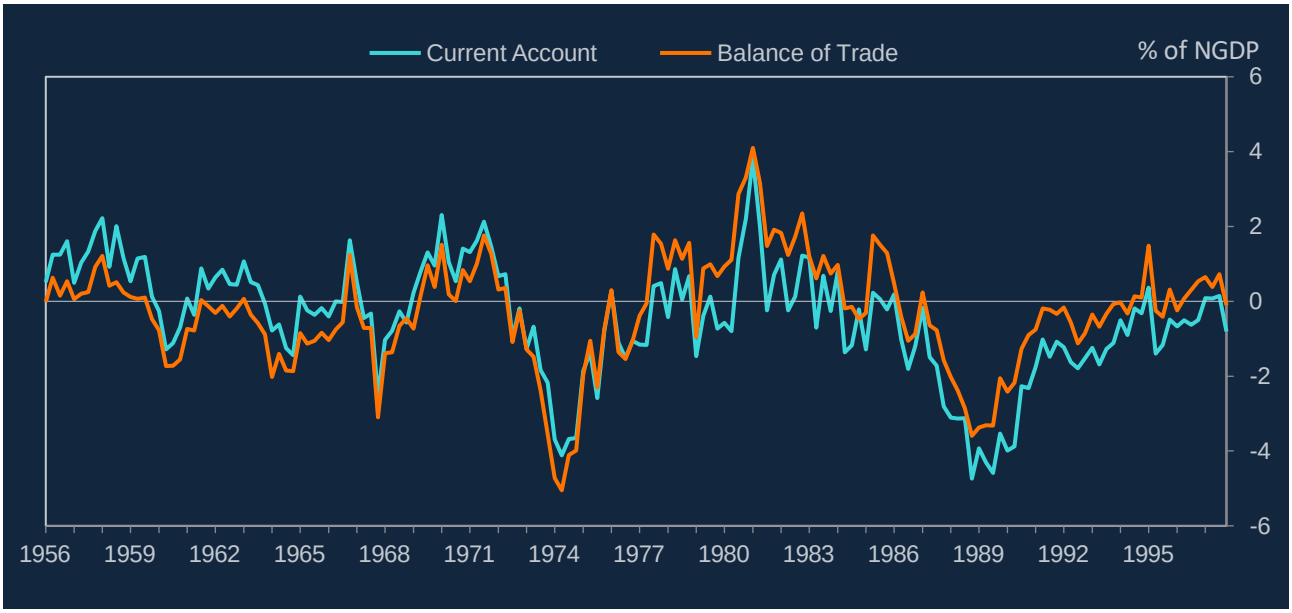
Chart 4.14: UK drawings from the IMF



Sources: UK Balance of Payments (Pink Books).

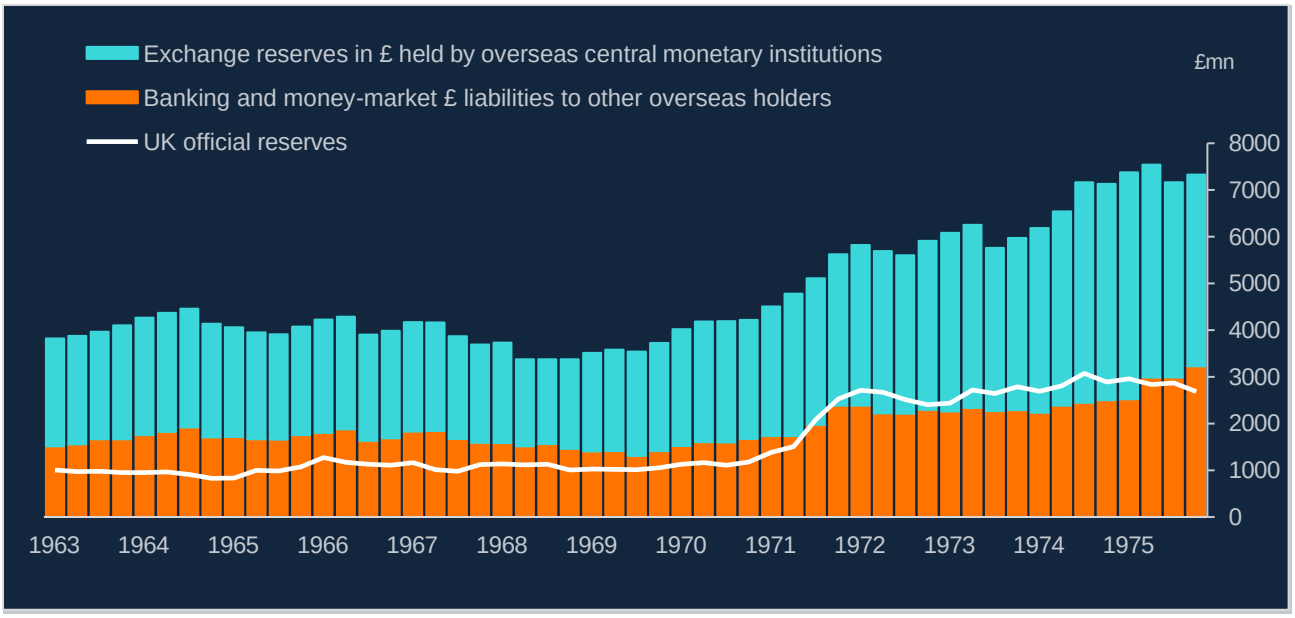
Despite the dominance of the dollar in the Bretton Woods system, sterling also acted as a reserve currency during the Bretton Woods period for the so-called Sterling area countries, who held their foreign exchange reserves in this currency. This required the UK to have adequate reserves of foreign currency to meet potential sales by £ area holders. But the lack of sustained balance of payments surpluses never allowed the UK to build up sufficient reserves which remained only a relatively small proportion of total liabilities (**Chart 4.16**).

Chart 4.15: The UK current account and balance of trade deficit



Sources: ONS

Chart 4.16: Reserves and the £ balances



Sources: Bank of England Statistical Abstracts and Quarterly Bulletins, CSO Financial Statistics.

The apparent failings in the British economy and its responsibilities to the £ area were an important factor in the decisions of policymakers over this period. They sought to understand and remedy the reasons for the UK's productivity performance but were always wary about the constraints it posed and the risks for sterling should its reserve currency status become undermined as a result[20]. The attempts to break out of the straitjacket would frequently come up against the constraints of the Bretton Woods system. Maudling's Dash for growth in the early 1960s was a case in point. The Bretton Woods system clearly acted as some form of restraint on fiscal policy. The message of the 1966 Budget was 'a strong pound' as the first part of a

[20] See Schenk (2010) and Avaro (2024) for a discussion of the methods through which UK government ensured sterling area countries continued to hold their reserves in £.

'Triple Objective' that included full employment and growing industrial strength. A significant increase in taxes was announced (including the SET mentioned earlier), and the Chancellor made the following commitment:

The Government will use all the means at its disposal to ensure that during the next five years the longstanding balance of payments problem will be finally overcome. To do this we are ready to innovate and break new ground in our fiscal policies.

The devaluation of 1967 proved a key watershed for the UK. It ended sterling's role as first line of defence for the dollar and led to an attack on the Gold Pool arrangements in which major central banks pooled interventions to stabilise the dollar price of gold. This in turn led to pressure on the dollar and set the stage for the speculative attack that would end Bretton Woods system in 1971 and led to the floatation of sterling in June 1972. The removal of the fixed exchange rate constraint loosened the fetters tantalisingly at a time when the government was under pressure to reduce unemployment and deliver the improvements it had promised. This was the genesis of the Barber Boom. Barber's aim was to achieve a growth rate of 5% for the next two years, adding 10% to the level of GDP. This would be achieved by decreasing income taxes (largely through raising allowances) by £1 billion, in order to increase consumption, with an overall expansion of public sector borrowing by £3.4bn. In his Budget speech of March 1972, Barber stated:

I do not believe that the stimulus to demand I propose will be inimical to the fight against inflation.

He also mentioned explicitly the freedom the new exchange rate flexibility offered him.

…it is neither necessary nor desirable to distort domestic economies to an unacceptable extent in order to maintain unrealistic exchange rates. Certainly, in the modern world, I do not believe that there is any need for this country, or any other, to be frustrated on this score in its determination to sustain sound economic growth and to reduce unemployment.

A further key factor around this time was North Sea Oil. The discovery of the Montrose field in 1969 followed by the Forties and Brent fields, implied large reserves of oil and gas in the North Sea. However, it was uneconomical at the prices in the early 1970s to extract this. The quadrupling of oil prices in late 1973 changed all that and the prospective fiscal revenues from North Sea oil meant a further reason not to worry about running fiscal or trade deficits given the higher oil price. This would be offset by future North Sea oil revenues predicted to come on stream in the late 1970s and early 1980s. The short-term difficulties arising from higher import prices could be absorbed by the public finances via the various fiscal measures discussed earlier. It was just a case of "tunnelling through" until then. Of course in official pronouncements such as budget speeches, Chancellors were careful not to give this impression, but all too often the masked slipped. For example, in Healey's first budget of 1974 he is at pains to say a tough adjustment is ahead, but he uses the prospects of North Sea oil as a reason for avoiding a large fiscal adjustment.

The challenge the nation faces today, though as formidable as any in our peacetime history, is one we can be confident of overcoming if we can now combine in a sustained and united effort. The rewards of success and the penalties of failure are not to be counted in economic terms alone. Unless we can somehow halt the accelerating inflationary trends in our economy, the resulting political and social strains may be too violent for the fabric of our democratic institutions to withstand. Britain is at present moving fast in the wrong direction. Serious dangers lie very close ahead. Somehow we must steer ourselves on to a safer course. Yet to

seek to do so too suddenly could produce the very catastrophe we seek to avoid—and perhaps produce it only a year or two before the offshore oil comes to our aid.

However, financial markets were not impressed. As the stockbrokers Pember and Boyle put it:

The influence of North Sea oil on economic policy so far has been wholly malign; the feeling that in due course the country will be fabulously rich, and therefore that there is nothing to worry about, has been consciously or subconsciously responsible for much of the failure to face reality which is the worst feature of recent years. Let us get our present position right; we can enjoy the future when it comes.
Preface to *British Government Securities* 1976 edition.

(c) Financial repression and funding deficits from the banking system

At the interface of monetary and fiscal policy in the post-World War 2 period was debt management. At the end of World War II, public sector net debt stood at around 250% of GDP, much of it short-term debt held by the banking system. Although such "monetary financing" had been justified in wartime, there was a fear after the War that the resumption of private sector activity would lead to a large increase in credit and money creation given the liquidity of the banking system. As a result, there was a push to term out the debt by selling medium-term debt to the banks and longer-term debt to non-bank investors as the short-term debt became due. However, there was also a desire to ensure this funding was as cheap as possible to keep the costs of government debt service manageable. In particular, the prevalent Keynesian view of the late 1940s and 1950s was that long-term interest rates should be kept low to promote investment and which permeated official thinking at various points.

As a result, much of monetary policy, in terms of interest rate setting, was tactically involved in walking a tightrope of trying to ensure sufficient sales of longer-term debt to the market without raising the cost of finance too drastically. This was made difficult by the microstructure of the gilt market where the matching of buyers with particular gilt issues was dependent on stock market "jobbers" that were poorly capitalised. One approach the Bank used was the so-called "Duke of York" tactic, where the Bank would increase short-term rates to a peak level in the hope of generating expectations of a future fall in rates and a rise in gilt prices to engender greater demand for long-term government bonds (i.e. assuming regressive expectations in the gilt market). More generally, the Bank would lean into the wind and attempt to sell more gilt to the market when it was buoyant and fewer when the market was tighter (see Howson (2004), Allen (2019)).

It was only in the later 1960s when monetarist thinking and the credit counterparts framework for monetary control began to impinge on policymaking that the link between the deficit, gilt sales and the money supply became more recognised. As the deficits became larger in the 1970s, this issue became more important for monetary policy. Competition and Credit Control in 1971 led to a change in the Bank's operations in the gilt market. In line with the motivations of CCC, it would intervene less in the gilt markets to smooth out fluctuations in interest rates and allow more market determination of yields. That of course put pressure on the jobbers as market makers and made the gilt market more sensitive to economic developments given the change in the Bank's role. In practice that meant gilt sales to non-bank investors increasingly happened in opportunistic bursts when the Bank felt it could sell a lot of gilts. This meant that large, unexpected government deficits would be financed by default via the banking system if the Bank judged it too difficult

for gilt sales. This impinged on bank balance sheets and money growth. **Box A** discusses the detail of this. As a result, the authorities frequently allowed the deficit to be funded by (broad) money growth.[21]

In 1972, this was not necessarily judged to be a problem given the government was going for growth. In fact, the government was very sanguine about monetary growth. In his Budget speech, Barber said:

…this Budget will entail a growth of the money supply that is also high by the standards of past years, in order to ensure that adequate finance is available for the extra output. To proceed otherwise would reduce the growth of output itself.

However, as the 1970s progressed and especially after 1976, when the government adopted monetary targets and the counterparts framework, they were less sanguine about the link between deficits and broad money creation especially given the increased market attention on debt financing. The aim professed in several budget speeches was to fund the deficit from non-banks as far as possible. However, this did not prevent the government from resorting to this form of finance especially during 1975 and the lead up to the IMF visit in 1976, when there was a "gilts strike" in July even with yields in the region of 15%. The authorities felt that debt finance at above this level of yields was simply inconceivable and given the market itself was unwilling to hold the gilts it did not want to try. It was also combined with operation of the Corset which attempted to ensure there was little additional expansion of broad money from the extension of private sector credit.

It was only the move to "overfunding" the deficit from early 1980s onwards when the government overtly made the link between the funding of deficits and money growth as part of its counter-inflationary policy and used it to signal its counter-inflationary intent.

A further major change occurred in 1986 with the "Big Bang" which ushered in significant changes in the gilt market. In place of the single-capacity structure of separate stock market jobbers (who were market makers and could hold stock on their own account), and brokers (who bought and sold shares on behalf of clients for commission, but were not allowed to trade on their own account), the market-making function was undertaken by dual-capacity gilt-edged market makers (GEMMs) who dealt directly with clients, thus integrating the trading and sales functions in a single operation. The entry of larger overseas banks as gilt-edged market makers made the gilt market more liquid and made it easier to fund deficits from non-banks. From 1985 in fact the government switched from an over-funding rule to a full-funding rule where it committed to try and fund the deficit without resort to the banking system. It was the Big Bang that helps explain why the government was able to fund the large primary deficit in the early 1990s mentioned earlier almost entirely from the non-bank sector. This lasted until 1993 and the introduction of inflation targeting after which sales of debt to the banking system were once again permitted, which was confirmed in the Debt Management Review of 1995.[22] However, monitoring ranges for broad money were retained and so any significant or persistent underfunding (as defined by the 1985 funding rule) that led to excessive broad money creation would be apparent to both the government and, importantly, financial markets.

[21] There are analogies here with the "even keel" policy adopted by the Federal Reserve in the 1960s and 1970s. See Consolvo at al. (2020). However, in the case of the UK operations, the banking system would end up holding short-term government debt rather than reserves.

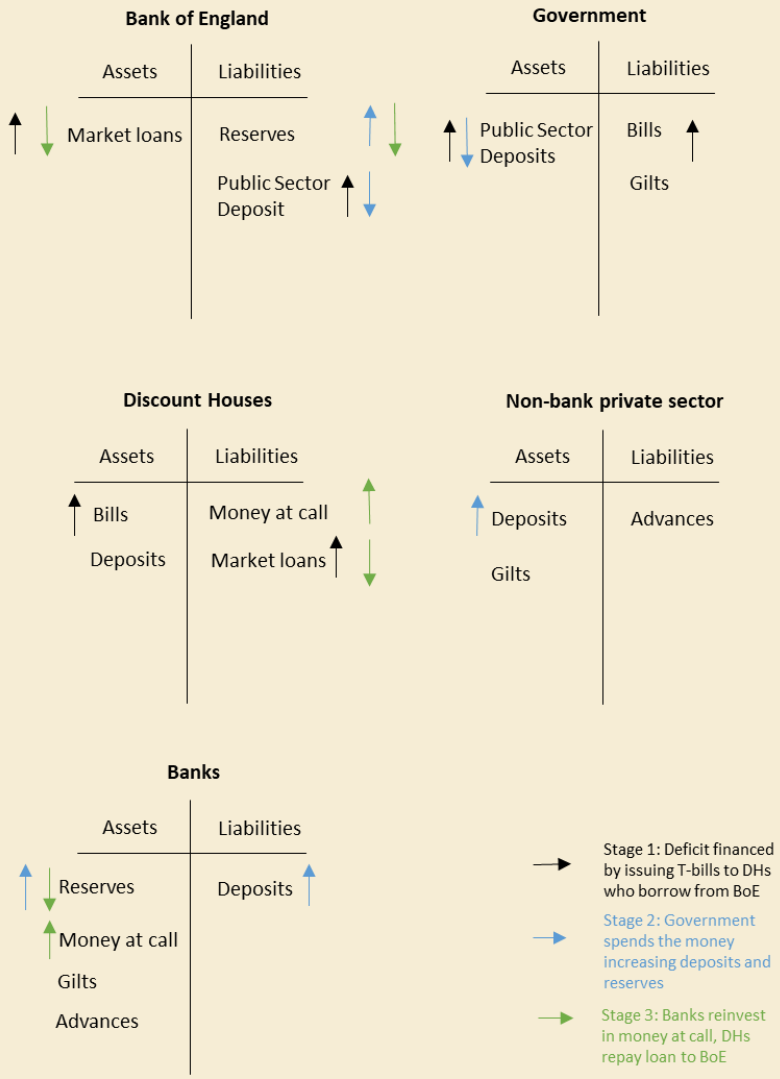
[22] Debt Management Report 1995.

Box A: The links between debt management and the money supply

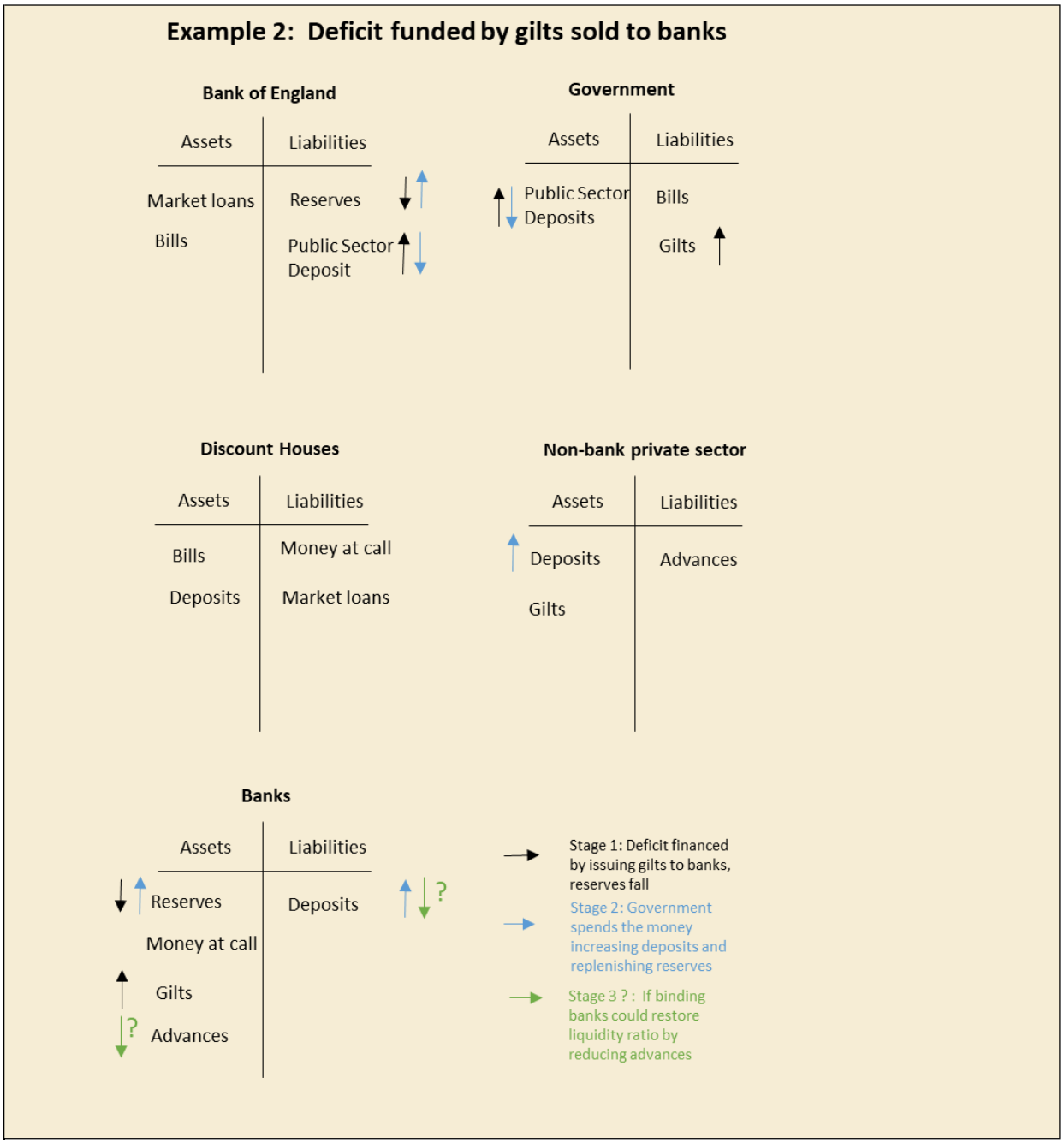
Between the early C19th and late C20th, the Bank of England carried out its liquidity operations at arms' length from the commercial banking system preferring to operate via specialist financial institutions known as discount houses (see King (1936) for a history). These operated as shadow banks, taking short-term funds from the banks ("money at call") and investing them in high quality public and private bills that could be used to secure liquidity from the Bank of England either through direct sales (re-discounting) or through repos (market loans secured on bills). By the 1950s and 60s the system had developed such that government deficits would automatically be financed by the discount houses or the banking system in the event the Bank of England could not secure sales of government debt to investors in the non-bank private sector. This could happen in various ways and two examples are illustrated below.

Under arrangements made during the cheap money period of the 1930s, the discount houses agreed to underwrite the government's Treasury bill tender in return for retaining its privileged access to the Bank's liquidity facilities. The discount houses were also required to hold a certain amount of their assets in government securities and bills. That meant any residual financing the government needed to finance its deficit spending would automatically be taken up by the houses. If that left them temporarily short of funds, the Bank would make short-term market loans to the houses at Bank Rate (the rate charged by the Bank in its role as lender of last resort to the market) to ensure control of short-term market rates. In this case, the Bank would credit the government's account with funds from the sale of the bills, backed on the asset side by increased loans to the discount houses (possibly secured on the bills issued). Once the government spent the money, either on goods and services or transfers of various kinds (Stage 2 in Example 1), this would flow into the commercial bank accounts of recipients in the non-bank private sector. The Bank of England would accordingly debit the government's account by the amount of funds spent and credit the banks' reserve accounts in settlement for the transaction between the government and the non-bank private sector. Given the banks earned no interest on their reserve accounts with the Bank, they would then seek to lend this money back to the discount houses as "money at call" which earned an agreed positive interest rate. That in turn, as a third stage, would incipiently boost the deposits of the discount houses (not shown in the diagram) and immediately allow them to repay their loan to the Bank. In settlement that would imply a reduction in the commercial banks' reserve accounts at the Bank matched by a fall back in the Bank's market loans. The result of this complicated set of transactions is that the issuance of bills to the houses at the rate of interest set by the Bank (or desired by the authorities) would lead to an increase in the broad money stock in the form of higher deposits held at the commercial banks. The houses themselves would make a small profit on the different between the T-bill rate and the money at call rate. The banks would then make a turn on the gap between the call rate and the deposit rate (possibly zero if the deposits created were largely current accounts).

Example 1: Deficit funded by T-bills taken up by discount houses



The Bank could achieve the same ultimate ends in funding the deficit by a sale of gilts directly to the banks. The banks generally preferred to hold short to medium-term gilts as investments and the Bank often was able to sell these to banks even if long-term investors' demand for long-term and undated issues was weak. In this case, the discount houses would not necessarily be involved, and the banks would end up holding gilts directly as a counterpart to increased deposits. These transactions relate quite closely to modern day QE (central bank asset purchases) which also lead to the creation of bank deposits. The only difference is that it is the central bank rather than commercial banks buying gilts, and rather than holding gilts on the asset side of their balance sheet the commercial banks end up holding central bank reserves, which currently now pay interest, in order for central banks to keep control of short-term interest rates. Given both gilts and reserves are both liquid forms of public sector debt, many see commercial bank and central bank purchases as only superficially different, with the key common element the impact on the money supply.



(d) Unionisation, public sector wages and government spending

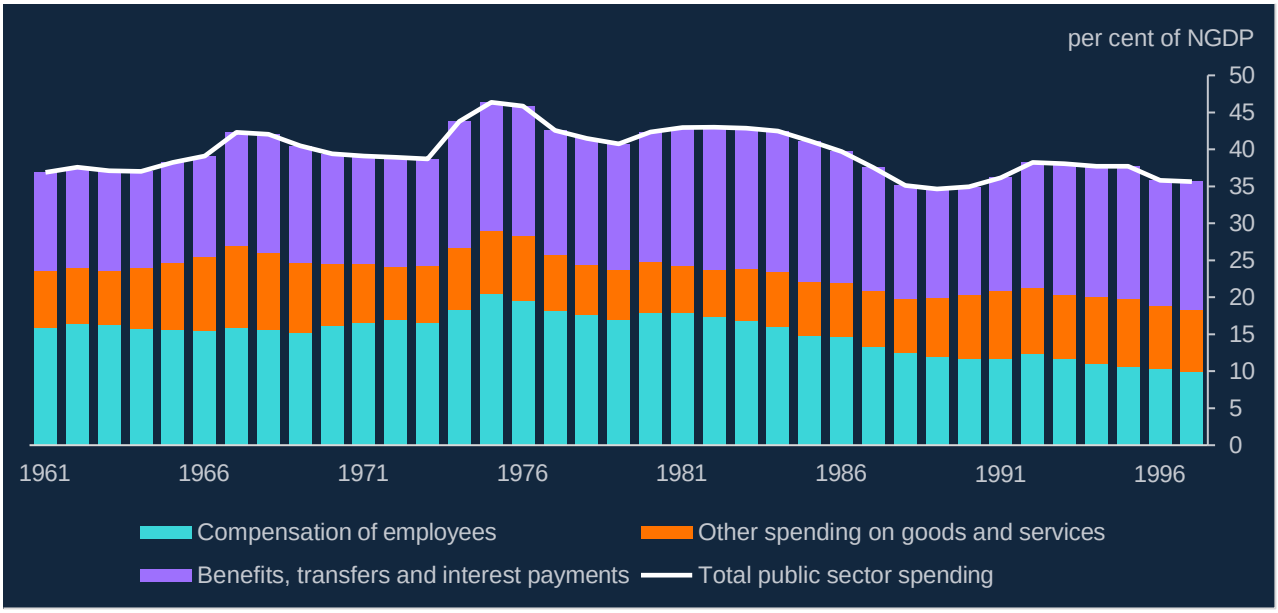
The fourth structural factor that impacted adversely on the public finances was the link between union power and the public sector wage bill. **Chart 4.17** shows that public sector compensation was responsible for increasing public sector spending by around 4pp of nominal GDP between 1971 and 1975, accounting for over half of the deterioration in the primary deficit. This was an important component of the "relative price" effect mentioned earlier as part of the Godley critique. It reflected wage growth in the public sector exceeding that of the private sector in the critical years of the mid-1970s.

A particular distortion, argued to have been induced by prices and incomes policies, was the wedge between private and public sector earnings growth. The government was in principle more able to impose pay restraint on its own workers (at least initially) than those in the private sector but this would then lead to

changes in wage relativities that public sector unions would attempt to make up once controls were lifted or it would lead to strikes, the miners' strike in 1972 being one example. **Chart 4.18** shows that public sector earnings growth for manual workers would greatly exceed those in the private sector during the peaks in the 1970s following the incomes policies of earlier periods, which had essentially prevented a catch up of public to private sector pay (which had enjoyed a premium for manual workers since WW2). In particular, public sector workers became more heavily unionised (**Chart 4.19**) and became a larger part of the workforce during the 1960s (**Chart 4.20**) peaking at around 30% of the workforce in the mid-late 1970s, which also helped them more than make up the difference with the private sector given many of these were in critical industries. The strikes during the Winter of Discontent in 1978 were also largely concentrated in the public sector. The acceptance of the Clegg public sector pay recommendations by the incoming Conservative government in 1979 also contributed to an increasing public sector wage bill and primary deficit in the early 1980s.

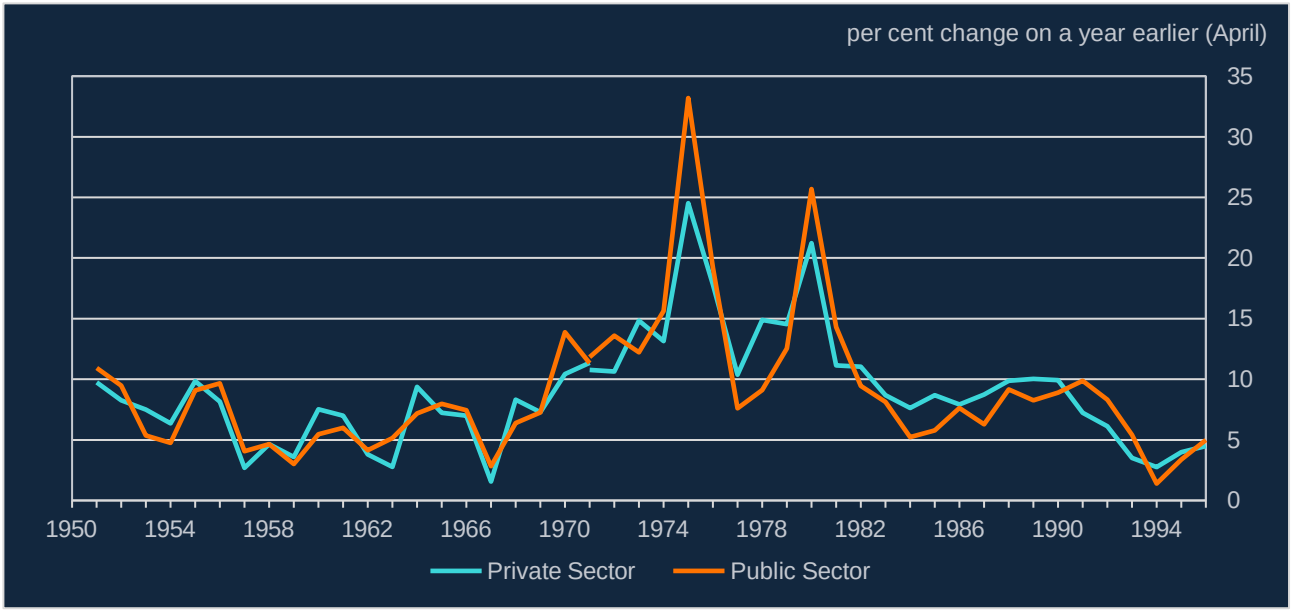
Usually, the effect of public sector wage growth on inflation in the marketed sector of the economy is thought to work through the spillover effect on to private sector wages, through increasing the outside option and bargaining power of private sector employees. However, the above suggests a potentially important channel was the impact on the public sector finances through the government's wage bill. Increases in the wage bill raised the deficit and inflation and expectations working through the channels discussed earlier. This would introduce a destabilising feedback loop to the deficit in the mid-1970s and add to the pressure induced by using the deficit to absorb cost push pressures through subsidies and transfer payments.

Chart 4.17: Public sector wage bill and public spending, 1961-1997



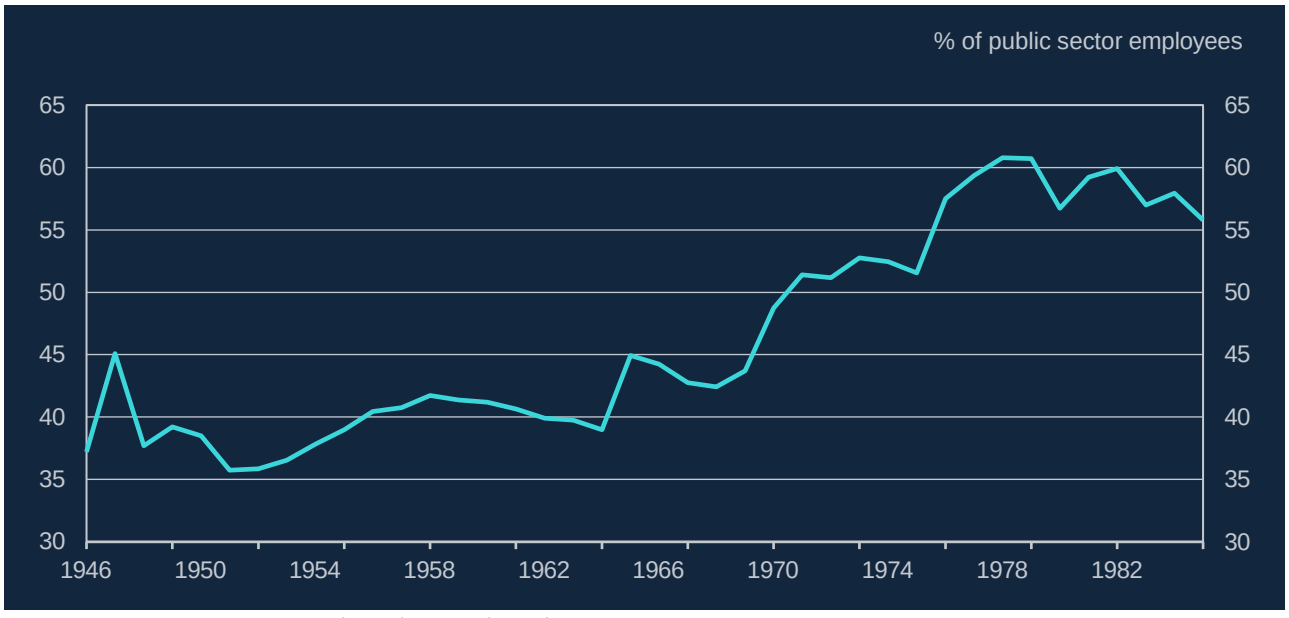
Sources: ONS

Chart 4.18: Public and private sector earnings of manual workers, 1950-1997



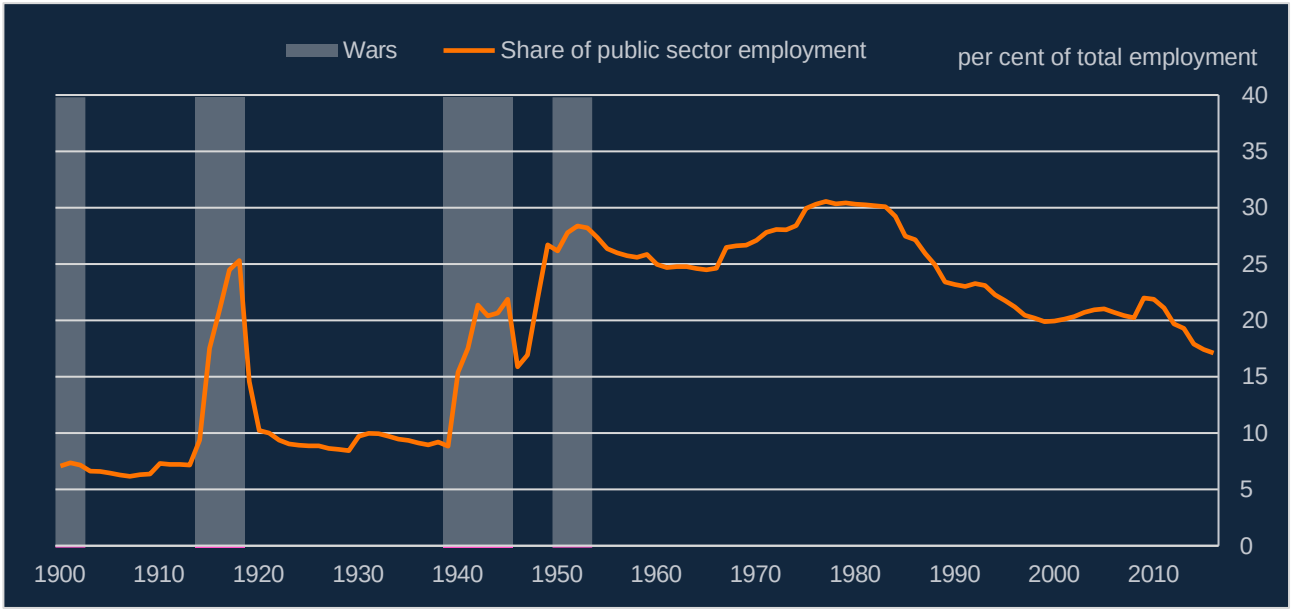
Sources: Dean (1975), CSO New Earnings Survey.

Chart 4.19: Unionisation in the public sector, 1946-1985



Sources: Thomas and Dimsdale (2017), Gyles (1988)

Chart 4.20: Public sector employment as a % of total employment since 1900



Source: Thomas and Dimsdale (2017)

(iv) Econometric evidence - a comparison of fiscal financing regimes

The empirical and narrative evidence above suggests that from the late 1960s onwards the fiscal financing regime was one where inflation, with all its associated costs, appeared to play a role in stabilising the public finances, unlike earlier regimes. Fiscal shocks themselves were a source of instability especially after the collapse of Bretton Woods and monetary policy acted passively in response. As well as being a source of shocks, the operation of fiscal policy was almost certainly a reason why "bad luck" shocks resulted in inflation. Policymakers responded to weak output growth and rising unemployment with expansionary fiscal policy.[23] Other endogenous fiscal responses include subsidies introduced following terms of trade shocks and tax cuts to induce wage restraint. Union pressure originated in the public sector and provided a direct hit to the public finances. Set against that, the oil price shocks made North Sea oil extraction profitable and increased future tax revenues, but that prospect seemed only to relax fiscal discipline further. Because there was no automatic mechanism or belief that the ensuing deficits would be paid for by future primary surpluses, the operation of fiscal policy was likely to be an underlying cause of inflationary problems, if only because contemporaries had their own theories of the link between fiscal policy and inflation and believed deficits would lead to excessive money growth and balance of payments problems which would affect inflation via asset prices and exchange rates. It was only when the commitment to stabilise the public finances became widely accepted again in the 1980s and re-affirmed in the early 1990s, when faced with a large cyclical deficit, was a low inflation regime established.

This narrative speaks to the broader literature on how changes in the fiscal policy regime (and perceptions thereof) matter for inflation. As is well known (see e.g. Bordo and Kydland (1995) and Canzoneri et al (2001)), nominal targets in which bygones are not bygones such as the pre-WW1 and interwar gold

[23] Of course the response of other determinants of debt dynamics such as the *ex-ante* real interest rate and the growth output could also have been margins of adjustment. But a fall in trend productivity growth would, other things equal, have meant even more of the burden of adjustment was put on unexpected inflation.

standards are fiscal, as well as monetary, regimes because they commit the government to repay in units over which they have relinquished control. The Bretton Woods regime and the monetary targets first publicly announced in 1976 both allowed bygones to be bygones – the BW regime because the peg was adjustable with no expectation that a devaluation would be followed by a revaluation and the money targets because there was no expectation that overshoots would be followed by undershoots. There is plenty of narrative evidence that they were a source of *some* restraint in those periods. But the degree of restraint varied over time. For much of the mid-1970s that restraint appeared to be completely missing.

To reinforce these conclusions, we attempt to support the narrative with some econometric evidence. Using local projection methods (see Jorda (2005)), we estimate the response of consumer prices to exogenous fiscal shocks in different regimes. If the Great Inflation period represents a different fiscal financing regime from earlier and later regimes we should expect to see a different inflationary response to shocks that worsen the deficit. We use the fiscal shocks from Cloyne (2013) and Cloyne et al (2023) which are narrative measures of exogenous changes in tax policy in Britain for the interwar and post-WWII periods, based on the method used by Romer and Romer (2010).[24]

We compare the response of inflation in three regimes: the interwar regime of 1920-1938, the period 1965-1982 when there is the most evidence that the fiscal financing regime was not geared towards stabilising the debt, and the post-1982 period following the Howe consolidation when fiscal sustainability became increasingly accepted. **Chart 4.21** shows that, in response to an exogenous reduction in tax policy of 1 pp GDP during the 1965-82 fiscal financing regime, prices rise economically and statistically significantly after a lag. It supports the idea that unexpected inflation played the stabilising role in the absence of a commitment to fund tax cuts with subsequent primary surpluses. In stark contrast, the other regimes, in which stabilising the public finances was a clear objective of fiscal policy, it is clear expansionary tax cuts did *not* raise prices (**Charts 4.22** and **4.23**).

Chart 4.21: Impact of 1pp tax cut on prices, 1965-82

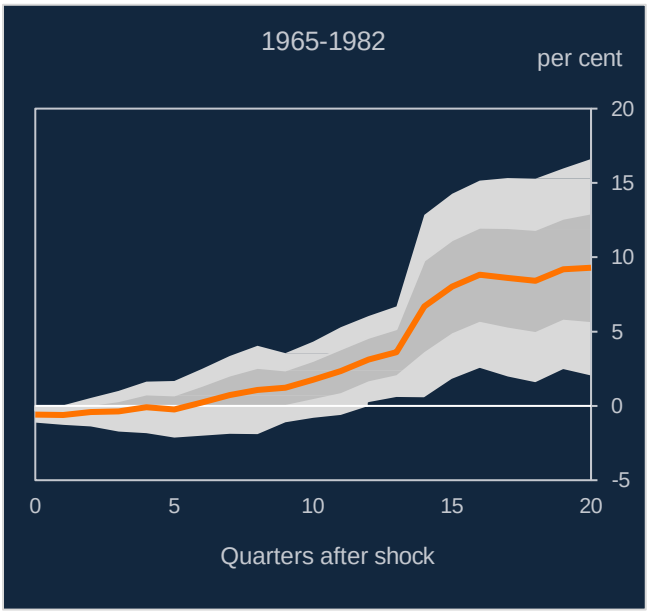
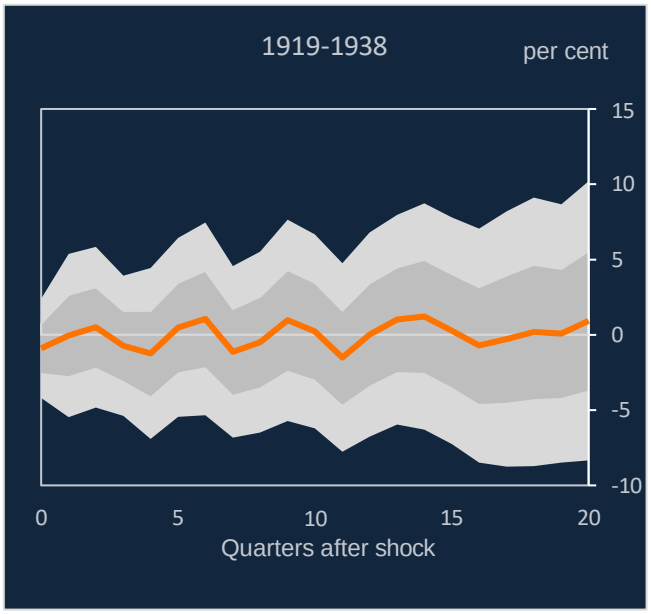


Chart 4.22: Impact of 1pp tax cut on prices, 1919-38



[24] See Bush (2024) for the full specification used here.

Chart 4.23: Impact of 1pp tax cut on prices, 1983-2009

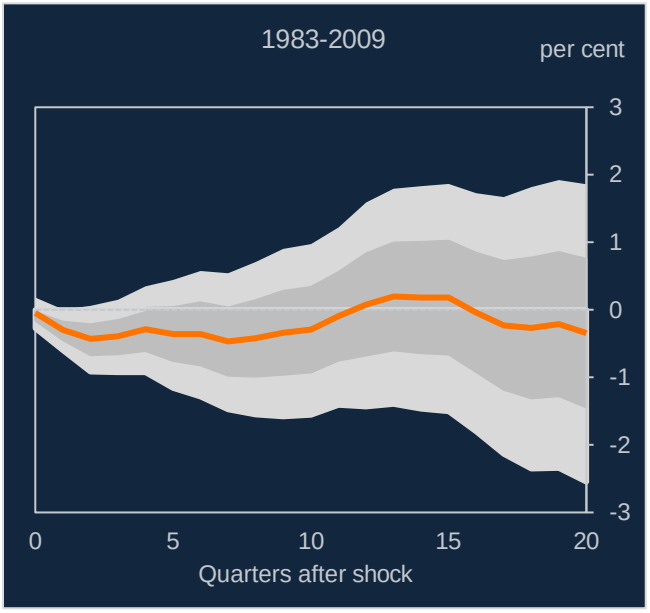
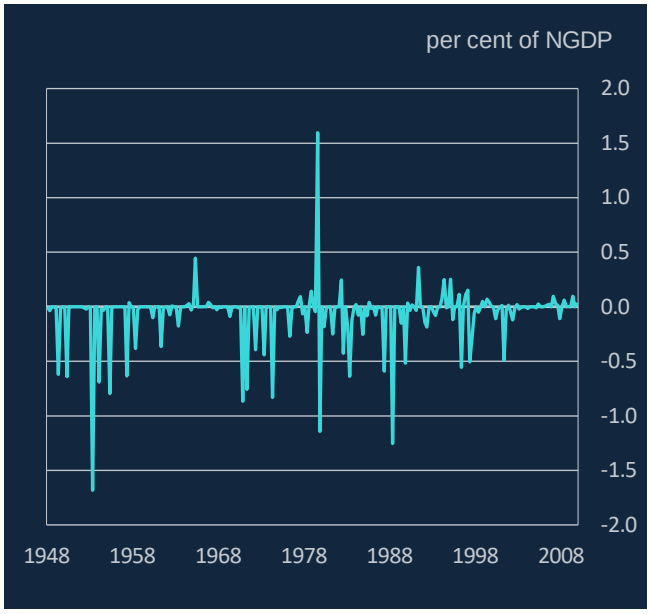


Chart 4.24: Exogenous tax changes (cut (-))



In Charts **4.25 to 4.28** we probe the 1965-1982 regime further. We show the responses of the primary surplus, inflation expectations, broad money growth and the exchange rate in response to a 1pp cut in taxes over the 1965-1982 period. It shows that the primary surplus worsens and there is no attempt at consolidation in future periods. Inflation expectations increase as does broad money growth (albeit neither response is significant based on 95% confidence intervals) and the exchange rate eventually depreciates. These simple experiments support the narrative evidence on the potential channels through which fiscal policy may have been important for inflation. Fiscal shocks that worsened the deficit did not lead to future primary surpluses and led to faster money growth, higher inflation expectations and, with a delay, a large depreciation of the exchange rate. It suggests that the period from the late 1960s until the early 1980s did represent a different fiscal financing regime to that of earlier and later periods. It supports the idea that the regime shifts observed in Section III, that led to increases in inflation expectations from the late 1960s onwards, may plausibly reflect changed beliefs about the fiscal regime following major policy announcements.

Chart 4.25: Impact of tax cut on the primary surplus, 1965-1982

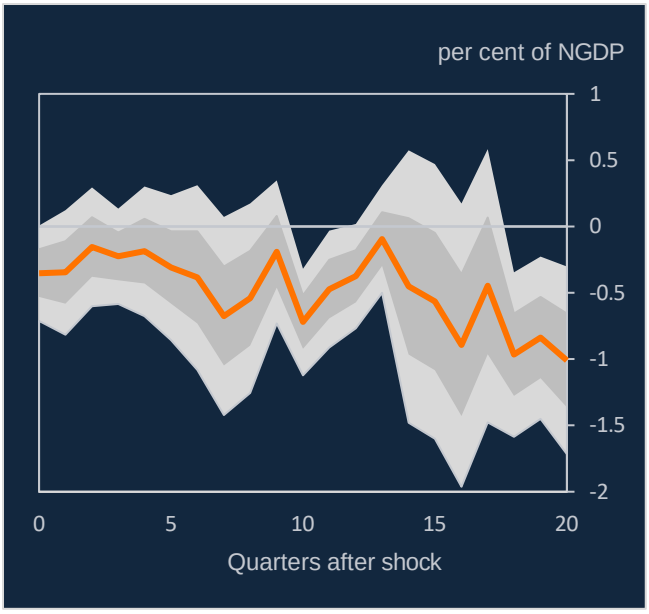


Chart 4.26: Impact of tax cut on inflation expectations, 1965-1982

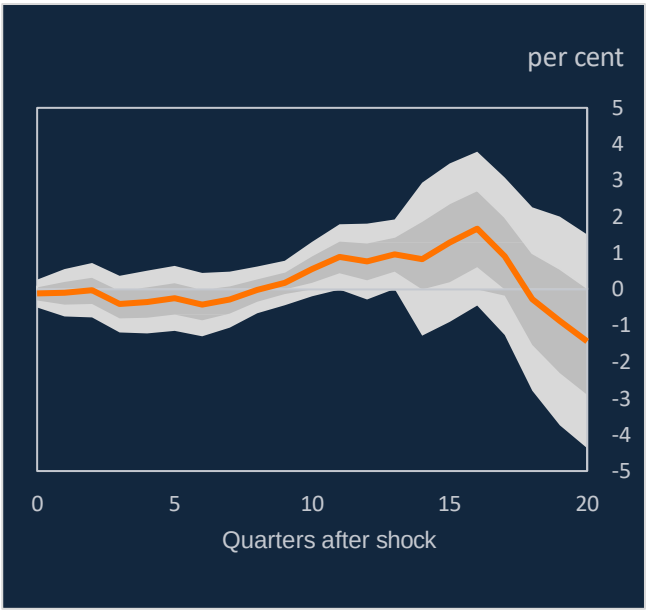


Chart 4.27: Impact of tax cut on M4, 1965-1982

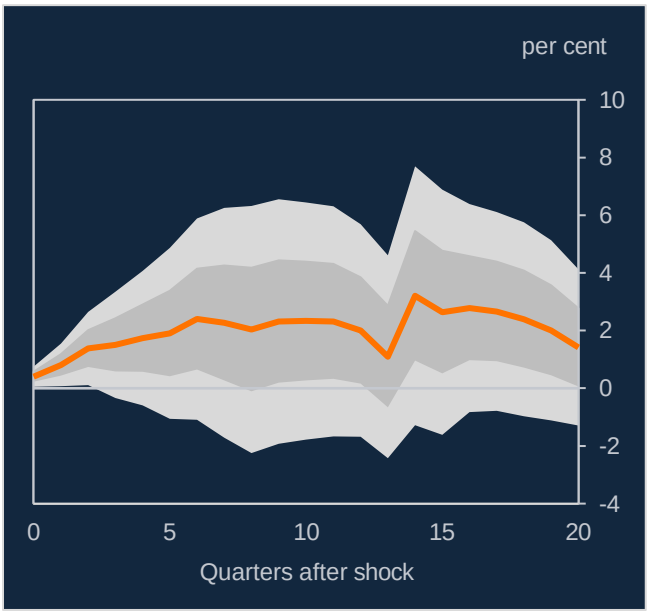
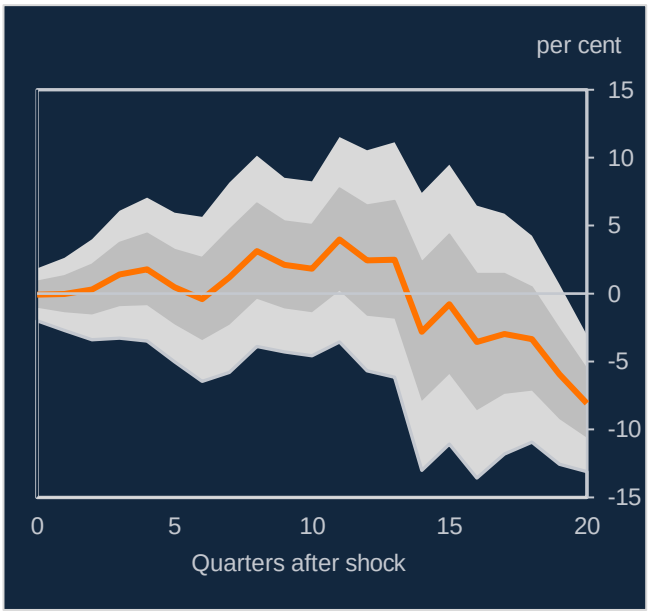


Chart 4.28: Impact of tax cut on the exchange rate, 1965-1982



Overall, the evidence of this section suggests that fiscal policy played a significant role in generating inflation in the Great Inflation years, unlike the regimes before and after. In this paper, we do not go further and attempt a more explicit quantification of the role fiscal policy played in the rise and fall in inflation. However, recent work by Bianchi et al (2024) supports our conclusion that this contribution was significant based on a particular characterisation of how the monetary-fiscal regime evolves over time. The use an estimated DSGE model in which the monetary policy response of the authorities does not respond actively to all the fiscal shocks that occur. They find that such "unfunded" fiscal shocks were most apparent in the 1960s and 1970s and responsible for a large proportion of the rise and fall of inflation in their model.

V Conclusion - muddling through or tunnelling through?

Our paper has revisited the causes of the Great Inflation in the UK. In doing so we have documented how the institutional policy framework in the UK we have today was the result of the painful process of transition from a planned, command economy at the end of WW2 to a liberalised, open economy with an independent central bank and a fiscal rule explicitly geared to debt stabilisation. Our results support some of the conclusions already in the literature about the causes of inflation but we argue that without consideration of the fiscal policy regime those explanations remain incomplete.

Our analysis suggests that the roots of the Great Inflation start in the 1950s and 1960s with the inability of go- stop policies and government planning to alleviate the fundamental weaknesses on the supply-side of the economy, which were increasingly becoming apparent. The post-WWII welfare state also meant there was a more direct channel through which supply-side problems, such as an increase in the NAIRU, led to deficits. The Bretton Woods system prevented over-ambitious demand policies from creating sustained inflation because of the balance of payments constraint and the enforced tightening of policy that was required to maintain the exchange rate peg. Once this constraint was removed, highly expansionary monetary and fiscal policies could lead to inflationary pressures given that sterling was free to depreciate in response to balance of payments difficulties.

However, the deeper underling narrative is one of the authorities realising that the inflationary nettle, which had been a growing problem since World War 2, had to be grasped once and for all. For much of the 1970s they were feeling their way towards a new framework and anchor for monetary stability following the demise of Bretton Woods, with an eclectic and changing mix of targets and instruments in the face of difficult structural issues on the supply side and large shocks to commodity prices. This is the "muddling through" hypothesis or "Rocky Road to Stability". As a result, there were many missteps and difficult moments along the way before inflation was ultimately brought down in the early 1980s. However, by the mid-1970s there was a determination by the authorities, and indeed trade union leaders, to bring inflation down to more acceptable levels. A key part of that was setting in place a fiscal regime that meant that public sector deficits would not just be a safety valve for cost-push shocks of various kinds, with no commitment to follow deficits with primary surpluses. The prospective benefits of North Sea Oil revenues would help make that transition but were perhaps over-relied upon in the mid-1970s. The authorities during the mid-1970s very much saw the trials and tribulations of the 1974-1976 period as part of "tunnelling through" until the benefits of greater monetary and fiscal discipline and improved industrial relations could be achieved. The same was true of the Thatcher government in the 1980s, following its own period of difficulties in its early years in office.

So, what started off as a case of largely "muddling through" transitioned to a case of largely "tunnelling through" as the causes of the UK economy's problems became better understood and the longer-term vision of what was necessary to become a low inflation economy with sustainable growth became clearer. Part of that adjustment also required reforms on the supply-side of the economy to make the UK product and labour markets more competitive and allowed all parties in the economy to co-ordinate on a low-inflation economy capable of delivering sustained growth.

The question of course, with the benefit of hindsight, is whether a better mix of policies would have produced better outcomes. It is possible that tighter monetary policy in the early 1970s may have reduced

inflation and inflation expectations at the expense of higher unemployment. That may have avoided the large rises in unemployment that seemingly had to be suffered in the 1980s to bring inflation back down from what was undoubtedly a more entrenched inflationary environment. But that would have had to be accompanied by fiscal discipline and an acceptance by the trade unions of the need to co-ordinate with government on a lower rate of inflation, neither of which appeared politically feasible in the early-to-mid 1970s. One might even go back to the late 1960s as the period of missed opportunity, where the transient successful fiscal retrenchment of Roy Jenkins following the devaluation in 1967, was not matched by a similar success in achieving the "In Place of Strife" agreement with the trade unions. That would have placed industrial relations on a surer footing that may have helped avoid the move into double-digit inflation in the first place.

The answer to many of these questions depends crucially on the behaviour of inflation expectations. A contribution of our paper is to re-evaluate the behaviour of inflation expectations, using the available survey data. We show that household inflation expectations, derived from qualitative surveys over the period, appear to be better characterised a series of regime shifts rather than showing clear signs of adaptive behaviour. The upward shifts in inflation expectations happened well before the oil and commodity prices of the mid-1970s suggesting inflation was already an important issue in the minds of policymakers and the public in the late 1960s and early 1970s. They appear correlated with shifts in the institutional framework for monetary policy, such as the devaluation of sterling in 1967 and the collapse in Bretton Woods followed by the floatation of sterling in 1971/1972. But they are also arguably influenced by the change in the fiscal regime from the austerity of the late 1960s back to a more expansionist dash for growth in the early 1970s, coupled with an accommodating monetary policy.

The commodity price shocks of 1973/4 and 1979 do not appear to have fundamentally de-anchored expectations further, but merely led to temporary overshoots of inflation. Those overshoots were however large and do appear to have represented both misguided incomes policy that locked in real wage resistance coupled with an "over-accommodation" of those shocks that reflected an overwhelming preference of the authorities to stabilise unemployment and at levels that were below an increasing natural rate of unemployment. But it is not clear that a tighter monetary policy on its own would have been sufficient to reduce underlying inflation expectations. The evidence suggests the fiscal financing regime in this period placed little weight on stabilising the public finances and deficits were frequently funded from the banking system boosting money growth, which was increasingly viewed by contemporaries as a yardstick of policy credibility. Until the fiscal nettle was grasped, inflation expectations would remain high and monetary policy on its own would be incapable of restoring price stability. In particular, financial market participants doubted the government's commitment to tackle public spending in 1974-76 with implications for both funding the budget deficit and the exchange rate that would delay the fall in inflation and lead to a final reckoning in the 1976 IMF crisis.

Our estimates suggest that there were structural shifts down in household inflation expectations starting in the late 1970s and more concretely in the early 1980s and early-to-mid 1990s. The major shifts down in expectations again appear correlated with major changes in the fiscal policy framework as much as they are related to those in monetary policy. It appears consistent with Sargent's view that moderate inflations are brought fundamentally to an end as much by changes in the fiscal policy regime as the monetary policy regime, and an acceptance of that regime by all participants in the economy.

This leads us to more fundamental questions in the conclusion to this paper. How much of the inflation experience was inevitable given the collapse of Bretton Woods as a disciplining device, the structural supply-side problems facing the UK and the openness of the economy, making the UK vulnerable to shocks from abroad? How much of this was the inability of the institutional framework of monetary and fiscal policy in the UK to adapt to those changes quickly enough? How much was it the slowness of policymakers and politicians to grasp and absorb the major changes in economic thought occurring in the 1960s? Much has been written on these issues already. It is hard not to have sympathy with the policymakers in the 1970s and 1980s given the external shocks that they faced and the supply-side difficulties that were crystallising, and especially given household expectations that the living standards improvement of the Golden Age would continue.

Credit must also be given to policymakers for grasping the inflationary nettle in the late 1970s, 1980s and 1990s making difficult decisions about fiscal policy that were against the consensus of many in the economics profession and their own parties and constituency base. But there were also periods when policymakers were overoptimistic about what fiscal and monetary policy could achieve and periods when they prematurely believed that the corner had been turned and they had already "tunnelled through" to a low inflation equilibrium (such as 1978 and the mid-1980s). Both problems would lead to expansions of policy that contributed to a resurgence inflation. But perhaps the lessons learned from these steps were a necessary part of muddling through incrementalism.

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