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Managing Public Debt in the UK



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The Covid-19 pandemic that emerged in early 2020 quickly turned into an economic crisis of unprecedented proportions. The UK, one of the worst affected countries, suffered a 9.9 percent drop in output in 2020, the deepest recession in 300 years.¹ The required public health expenditure in the fight against the coronavirus and the ballooning cost of support programs to both households and businesses led to a sharp rise in government spending.² When combined with the significant drop in tax revenues following the contraction in economic activity, the surge in spending pushed the debt burden to levels previously unseen in peace times.

This article assesses the evolution of government debt in the UK both in the recent past as well as over the last century to put the current escalation in indebtedness into context. We then present the sources of debt consolidation both in general and in the UK context. Finally, we provide an evaluation of likely scenarios for debt management in the UK in its transitioning to a post-Covid-19 world.

EVOLUTION OF UK PUBLIC DEBT

A key feature of public debt in the UK has been its significant variation across time. For example, the debt as a ratio of gross domestic product (GDP) went from 194 percent in 1822 in the aftermath of

the Napoleonic Wars to 28 percent in 1913 (Eichengreen et al. 2018). This was followed by a reversal during the First World War and its aftermath, with a substantial rise in the debt ratio reaching 180 percent in 1926, as is visible in Figure 1.

Figure 1 also exhibits a second jump in the debt ratio, following the Second World War, leading to a peak of 251 percent in 1947. From the 1950s onwards, the debt-to-GDP ratio consistently fell until reaching a low of 22 percent in 1990. Since then, debt has generally increased, with a sharp rise following the global financial crisis (GFC) in 2007/08, when the debt-to-GDP ratio more than doubled in less than four years—from 34.2 percent in 2007 to over 70 percent from 2011. Finally, the Covid-19 episode pushed the debt ratio from 84.4 percent in 2019 to over 103 percent in 2021, the highest on record except in war times.

The debt ratio is projected to decrease to 95.1 percent by 2027—an 8.5 percentage point fall in six years (Office for Budget Responsibility, OBR 2021a). Importantly, nominal GDP is predicted to increase by 34 percent over the same period, with public sector net borrowing being positive for all future years of projection; that is, the debt-to-GDP ratio is anticipated to decline not through budget surpluses but increases in nominal GDP, reducing the debt burden in relative terms. Indeed, nominal debt is forecast to increase by 22 percent over the same period (OBR 2021b).

UK DEBT SUSTAINABILITY AND DEBT MANAGEMENT

To better understand the sources of debt management, it is important to consider how the debt to GDP ratio evolves, which can be formalized as follows:

$$\frac{B_t}{Y_t} = \frac{1+r_t}{1+g_t} \frac{B_{t-1}}{Y_{t-1}} + \frac{D_t}{Y_t} \quad (1)$$

where B_t/Y_t denotes the debt-to-GDP ratio at the end of period t ; D_t denotes primary deficit in period t ; and r_t and g_t denote, respectively, the interest rate and the GDP growth rate.³ The above relationship can be further approximated as

$$\% \Delta \frac{B}{Y} \approx r - g + d, \quad (2)$$

where the left-hand side now presents the percentage change in the debt-to-GDP ratio and d denotes the deficit expressed as a percentage of GDP.

Equation (2) suggests that debt can be lowered in one of two ways. First, governments can run budget surpluses ($d < 0$) by ensuring tax revenues

³ For simplicity, we show the evolution of the debt-to-GDP ratio for a portfolio of conventional bonds.

¹ See, for example, Financial Times, February 12, 2021.

² For example, the UK's Coronavirus Job Retention Scheme, in operation from March 1, 2020 to September 30, 2021, benefited 11.7 million workers at a cost of around GBP 70 billion (ONS).

exceed public spending and the difference used to pay off debt; and second, the value of debt can be eroded when $r < g$ when the budget is balanced.⁴ Naturally, policymakers can also use a combination of the two towards reducing the debt burden.

Figure 2 presents the evolution of UK public expenditure and public revenue as a ratio of GDP over the period 1900–2016. Over the 120 years depicted in Figure 1, there have been a total of 15 years (12.5 percent of the time) where the government has run a budget surplus, at an average surplus of 1.31 percent of GDP in those years. Put differently, rarely is the UK government debt managed through a government surplus. Even during the period 1947–1990 over which the debt ratio fell from 252 percent to 22 percent, there were only eight years of surplus at an average of 1.99 percent of GDP. That is, historically debt to GDP in the UK has been mostly lowered through the eroding of the debt—via an increase in the size of the economy (the denominator in the debt-to-GDP ratio).

Interest Rate Versus GDP Growth Rate and Debt Management

To illustrate the sources of UK debt erosion in the past, Figure 3 presents the rate of growth in nominal GDP alongside the implied rate of interest on government debt.⁵ It is clear that during the periods in which debt to GDP has fallen, the growth in nominal GDP has been much higher than the rate of interest, especially during the post-war period until the early 1980s.⁶ In contrast, since the 1980s the rate of interest has been higher than the rate of growth in nominal GDP while governments consistently run budget deficits, giving rise to rising debt to GDP even outside the big events of the GFC and Covid-19.

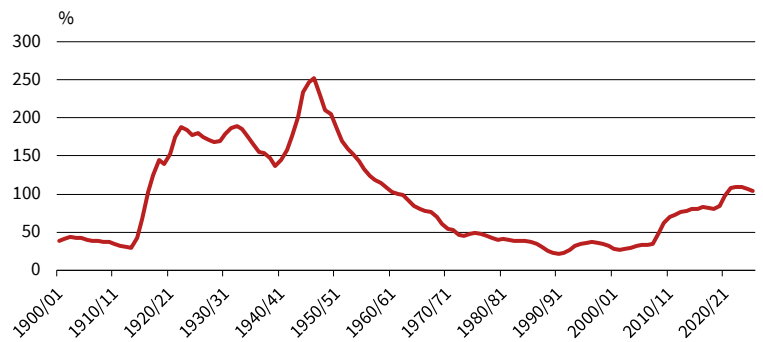
The key message stemming from this discussion is that the debt-to-GDP ratio in the UK has mostly eroded via the growth rate in nominal GDP exceeding the interest rate, rather than budget surpluses.

Composition, Maturity, and Ownership Profile of UK Debt

The composition, maturity, and the ownership structure of debt also has implications for a country’s ability to service and manage a given debt ratio. In what follows, we examine the profile of UK debt for these three characteristics separately and consider their relevance for debt management.

Regarding the composition, as is shown in Figure 4, conventional bonds constitute around 74 per-

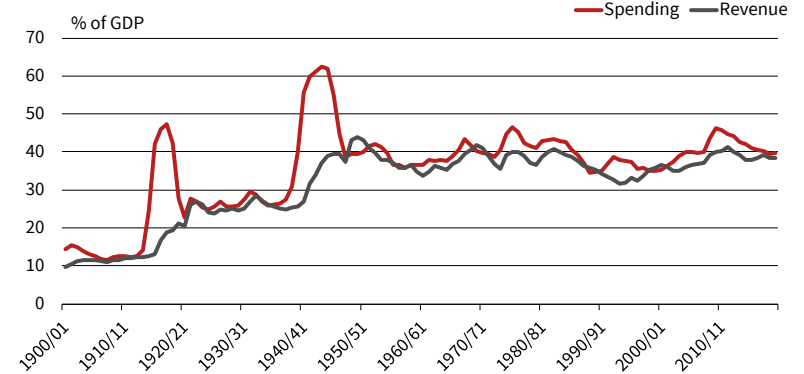
Figure 1
UK Government Debt-to-GDP



Source: The UK Parliament House of Commons Library (2021).

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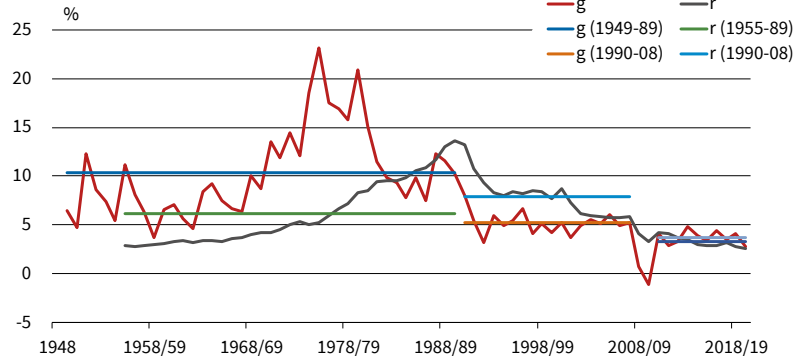
Figure 2
UK Expenditure and Total Government Revenue



Source: The Institute for Fiscal Studies Tax Lab (2021).

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Figure 3
Nominal Interest Rates (r) and GDP Growth (g)



Source: The Institute for Fiscal Studies.

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cent of the overall UK debt portfolio, with the remaining 23 percent coming from index-linked bonds and around 3 percent from Treasury bills. The large share of index-linked bonds in the portfolio suggests that eroding the level of debt via inflation becomes more difficult—higher inflation pushes up interest payments and works against the favorable impact of inflation on the principal.

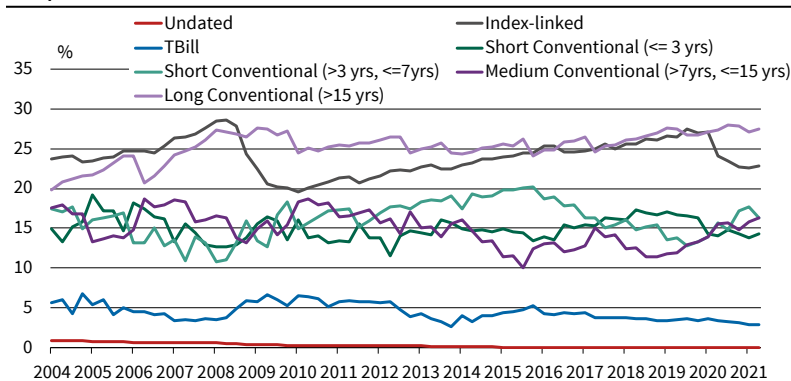
Maturity structure of a debt portfolio also matters. The long maturity of UK debt is widely noted

⁴ Debt ratio would also fall when the deficit is smaller than the portion of debt eroded by $r < g$.

⁵ This is calculated by dividing by the proportion of debt interest to GDP by the proportion of government debt to GDP.

⁶ The growth in GDP also includes inflation (which averaged 6 percent in the six years after 1947) and the population growth (which is estimated to have increased 14 percent in the seven years to 1949).

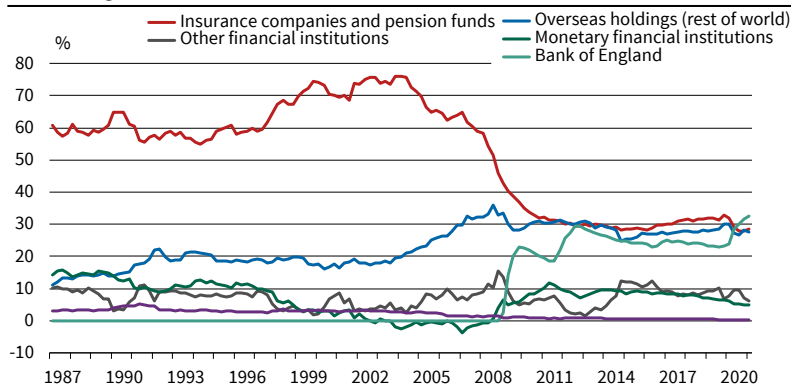
Figure 4
Composition of Debt Portfolio



Source: UK Debt Management Office (2021b).

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Figure 5
Gilt Holdings Ownership



Source: UK Debt Management Office (2021b).

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as a feature distinguishing it from that of other advanced economies. The average maturity of the UK debt in 2020 was close to 15 years, three times that of the US, for example (The US Treasury, Office of Debt Management 2020). The UK debt maturity has been increasing steadily since the early 2000s, driven by an increasing share of bonds with a maturity exceeding 15 years (Figure 4) and increased maturity of index-linked bonds. Clearly, the longer the maturity of a given debt portfolio, the longer it takes for a rise in the interest rate to aggravate interest payments on the outstanding debt obligations, pointing to the fiscal room for maneuver in the UK afforded by the long maturity of its debt portfolio.

Recent changes in the ownership structure of debt have also played an important role in debt burden and debt management in the UK. More specifically, the series of Quantitative Easing (QE) programs adopted by the Bank of England since the GFC in 2007 significantly increased the Bank's holdings of gilts over this period. In fact, the Bank of England became the largest holder of gilts in 2020, with a share of around 32 percent, with clear implications for interest payments (Figure 5). This is because the Bank of England purchases gilts via Asset Purchase Facility (APF) and finances this by issuing reserves. And, importantly, while the reserves pay interest at a rate of

0.1 percent, the gilts held by the APF pays an average rate of 2.1 percent.⁷

UK PUBLIC DEBT MANAGEMENT IN A POST-COVID WORLD

In light of the above discussion, one can think of two broadly defined strategies to reduce the UK's debt-to-GDP ratio in transitioning to a post-Covid world; the first is simply to allow $r < g$ to erode the level of debt; and the second is to run primary surpluses.

Eroding the Value of Debt

The historically low interest rates at present have clear implications for debt management and strongly points to the first strategy as an effective means of reducing the debt burden.⁸ Indeed, the current low-interest rate environment has enabled the UK to sustain its lowest ever interest payments as a proportion of GDP, despite the high levels of debt (Figure 6). In addition, the low-interest rate environment is expected to continue, as evidenced by a forward rate on UK gilts standing at 1.87 percent for the 12–14 years horizon.⁹ Further, the favorable maturity structure of UK debt (average 15 years, as stated above) implies that, on average, 7 percent of debt is rolled over each year, allowing policymakers flexibility in the event of a reversal of the relationship between interest rates and growth rates.¹⁰ Finally, given that it will take time for the Bank of England to reverse QE, its holdings of gilts are likely to contribute indirectly to the depreciation of the debt-to-GDP ratio in the future through the interest payments channels, as is stated above and indicated in the forecast in Figure 6.

There are, however, several counterarguments to such a strategy. First, in contrast to the successful debt consolidation episodes in the past that were characterized by strong growth performance, GDP growth has been on a downward trajectory since the early 1990s (Figure 3).

Second, interest rates hovering below the growth rate of GDP throughout the 2010s did not lower the debt ratio due to the presence of significant deficits and modest excess of growth in GDP over interest rates. In contrast, during 1950–1980, the period characterized by the largest drop in debt-to-GDP ratio, the GDP growth rate was higher than the interest rate on average by approximately 6.7 percentage points with an average deficit of 1.7 percentage points. For comparison, during the period from 2013 to 2020, the excess of the nominal

⁷ Based on data from Office for National Statistics (ONS) and OBR.

⁸ See, for example, Furman and Summers (2021); Mehrotra and Sergeyev (2020) for reassessments of fiscal policy options in an era of low interest rates.

⁹ Based on data from the Bank of England, 30/09/2021.

¹⁰ In line with the UK Debt Management Office (2021a), the UK is on course to redeem, on average, around 6 percent of debt over the next six fiscal years.

GDP above the interest rate was 0.9 percent with an average deficit of 2.3 percent.

Third, in the period after World War II that exhibited the steepest drop in the debt-to-GDP ratio, high levels of nominal growth were driven by inflation (see Ellison and Scott 2020). Whereas the sharp rise in the latest inflation figures should provide support for this strategy, the current forecasts by Bank of England view this surge in inflation rate as a temporary phenomenon with the rate expected to return close to the target by mid-to-end-2022. If, instead, inflationary pressures persist, the Bank would adopt the required policy stance, duly raising policy rates, as is already signaled (see, Bank of England 2021). Moreover, as indicated above, the presence of index-linked securities in the UK debt portfolio renders this channel less effective.¹¹ In sum, there is a limit to how much of the UK debt can be eroded by high inflation in future.

Finally, a strategy of relying solely on eroding debt to GDP through the denominator is a risky strategy in light of the significantly elevated current debt burden. Following the GFC and the Covid-19, collectively, swelled the debt ratio from 34.2 percent in 2007 to 103 percent in 2021. The soaring of debt over this period materialized in spite of both significant fiscal austerity and low interest rates for much of this period. Under these circumstances, any sudden hike in interest rates clearly poses a risk to seriously undermine the sustainability of debt.

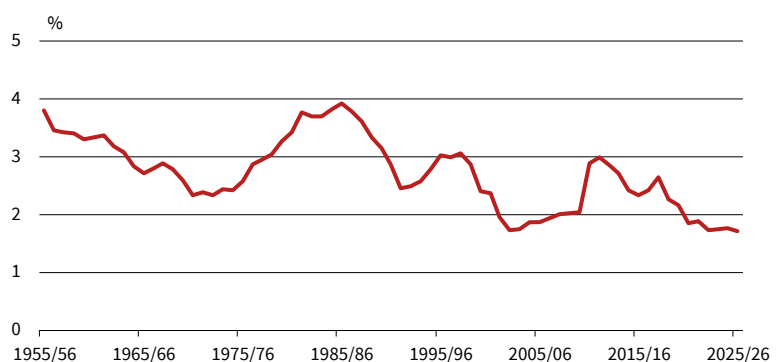
Running Primary Surpluses

The alternative strategy in reducing the debt burden is to simply run primary surpluses, which requires lower spending and/or higher taxes. There are two important reasons why reducing public spending is unlikely to be a realistic policy option. First, due to the nature of the pandemic and the ensuing public health crisis, there are ongoing spending requirements, stretching into the future. The pandemic has been a major shock to the UK's National Health Service, unique as a fully publicly-funded system, with long-lasting cost implications. Second, the fiscal austerity put in place in the UK from 2010 onwards significantly eroded public services capacity and increased income inequality, substantially limiting the room for further spending cuts at present.¹² Indeed, according to the OBR's projections, public expenditure is set to be 18 percent higher in 2022 than in 2019 and is due to increase further. This leaves raising taxes as the only viable policy option in securing primary surpluses. Therefore, it is not surprising that several tax increases have already been announced, including

¹¹ The index-linked bonds were issued in the UK for the first time in 1981, hence following the largest drop in the debt-to-GDP ratio.

¹² See, Joseph Rowntree Foundation (2015) among many others. Recent work on fiscal policy also establishes that unfavorable distributional effects of fiscal austerity are particularly damaging in economic downturns (see, for example, McManus et al. 2021a).

Figure 6
Interest Payments on Government Debt



Source: The UK Parliament House of Commons Library (2021).

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an increase in national insurance contributions from 2022/23; a tax freeze for personal income tax thresholds from 2022/23; and an increase in the corporation tax from 2023/24.¹³

It must be noted, however, that in light of the existing empirical evidence on the economic effects of tax changes, it is unclear whether the above tax increases will succeed in generating additional revenue. Recent work has shown that income tax rises have a much stronger detrimental impact on output growth than previously thought (see, for example, Romer and Romer 2010; Mertens and Ravn 2013). In other words, aggregate economic activity is sensitive to tax changes in such a way that a rise in tax rates leads to a short-run reduction in the size of the economy, reducing the pot from which tax revenues can be collected. For example, McManus et al. (2021b) show that income tax hikes result in a short-lasting increase in tax revenues, followed by a decrease in total tax revenue.

CONCLUSIONS

How is the UK's government debt likely to evolve as the economy recovers from the Covid-19 crisis? Given the record current debt ratios, unprecedented in peace times, there is a common agreement that policy should be directed towards reducing debt to a sustainable level. Such reductions can come from either running primary surpluses or eroding the existing debt levels by ensuring that the economy grows faster than the interest rates, or a combination of the two strategies.

Based on the arguments presented in this paper, it can be concluded that the UK debt is likely to remain at elevated levels for an extended period even at low interest rates. This is particularly the case given the weak growth prospects in the face of a combination of other challenges facing UK policymakers at present, including Brexit.

¹³ See, Budget 2021, available at <https://www.gov.uk/government/topical-events/budget-2021>.

It is also important to note that policymakers will have to pay close attention to the distributional consequences of any policy action as the economy emerges from the pandemic. Covid-19 has significantly worsened the existing inequalities of income, wealth, and experiences. Debt management policies with unfavorable distributional outcomes are therefore likely to be neither effective nor long-lasting.

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