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Reducing High Public Debt Ratios: Lessons from UK Experience

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Abstract

This paper examines contrasting experiences of the United Kingdom in addressing high public debt to GDP ratios following major wars. A clear message is that interest rate/growth rate differentials were more important than primary budget surpluses for the different outcomes. The debt to GDP ratio fell very rapidly under financial repression following World War II but remained stubbornly high despite large budget surpluses with price deflation after World War I. Implications for policymakers today are that averting price deflation is a high priority and that supply-side policies that raise growth could play an important part in debt reduction.

Keywords: balanced budget; debt reduction; financial repression; fiscal rule; fiscal sustainability

JEL Classification: H63; N14

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1. Introduction

Recent years have seen a large increase in public debt to GDP ratios in those European countries which have borne the brunt of the financial crisis. In some southern European countries these ratios are very high by historical standards while in the UK the ratio of gross government debt to GDP has doubled since 2007 (cf. Table 1). Worries about fiscal sustainability have led to the adoption of new fiscal rules. For Eurozone countries, a gross government debt ratio no greater than 60% is prescribed and the debt-convergence rules adopted in the light of the crisis indicate that 1/20th of the excess over this level shall be removed each year. For the UK, the government has set a target that the cyclically-adjusted current budget should be in balance by the end of a 5-year rolling period and that public sector net debt as a ratio of GDP should be falling by 2015/16.

The latest projection from the Office for Budget Responsibility sees it as quite likely that the UK will achieve these targets. Its central projection on 'unchanged policies' is for a reduction of about 20 points in the ratio of public sector net debt to GDP over the next 20 years based on an average primary budget surplus of about 1.4 per cent of GDP after which the pressures of an ageing population would return the ratio to its current level by the late 2050s (OBR, 2014). However, OECD (2013) calculates that to stay within Eurozone rules for every year from 2014 to 2023, Greece will have to maintain a primary budget surplus of about 9% of GDP, Italy and Portugal about 6% of GDP, and Ireland and Spain about 3.5% of GDP. Dealing with the debt legacy of the crisis in this way will clearly be much more painful. But even the British path of debt reduction could be considerably more difficult than OBR suggests if pressures to increase public spending prove irresistible and/or the future path of interest rates and economic growth is less favourable than is currently projected.

It is, of course, the case that the UK has successfully dealt with public debt ratios well above anything seen in Table 1 in the past which might seem to suggest that today's European countries can repeat the trick. Indeed, optimistic assessments of the UK's ability to deal with its inflated public debt ratio often emphasize that similar (indeed much more serious) problems have been easily resolved in the past (Neild, 2012). Whilst this could perhaps be claimed for the aftermath of the Napoleonic Wars and World War II, the experience after World War I was much more difficult. Moreover, all of these episodes took place in quite different circumstances from those likely to prevail in the near future. This suggests that in seeking lessons from history it is worthwhile to review the details of past UK policies and achievements in dealing with high public debt ratios. This is the task undertaken by this paper.

In particular, the following questions are addressed:

1) On an ex-post accounting basis, how did the UK reduce the public debt to GDP ratio after the three major wars of the last 200 years?
2) What was the political basis for running primary budget surpluses in each of these periods?
3) What are the lessons from major UK debt reductions for today's policymakers in the UK and in the Eurozone?

The paper proceeds as follows. The arithmetic of debt reduction is briefly reviewed in Section 2. Section 3 analyzes the historical experience of debt reduction in the UK. Section 4 explores implications for today's policymakers and section 5 concludes.

2) The Basics of Reducing Public Debt Ratios

It is well-known that the steady-state condition for the public debt to GDP ratio to be stabilized, such that $\Delta d = -b + (i - \pi - g)d = 0$, is

$$b^* = d(i - \pi - g) = id - d(\pi + g) \quad (1)$$

where b^* is the required primary budget surplus to GDP ratio, d is the public debt to GDP ratio, i is the nominal interest rate on government debt, π is the rate of inflation and g is the growth rate of real GDP. The required primary budget surplus increases with the debt to GDP ratio and with the excess of the real interest rate on government debt minus the growth rate of real GDP ($r - g$) and likewise the b required for any given rate of reduction in d. A balanced budget rule requires that $b = id$, so this will deliver $b > b^*$ when $(\pi + g) > 0$. In 'normal' circumstances with inflation and growth, this condition will be met. In conditions of price deflation or recession, it may not be, and with both deflation and recession, it will not be met.

Of course, if the real interest rate/growth rate differential is negative it is possible to stabilize the debt ratio while running a primary budget deficit. However, conventional theories of economic growth suggest that it is reasonable to expect that $r > g$. A Ramsey-model formulation with optimizing households will imply that in steady state $r^* = \rho + \theta g^*$ where ρ is the rate of time of preference and θ is the elasticity of the marginal utility of consumption with respect to the growth of consumption. Both ρ and θ are expected to be positive which implies $r > g$ (Barro and Sala-i-Martin, 1995, ch. 2).

That said, even if in the long run the real interest rate is determined by the fundamentals of productivity and thrift, in the short to medium term these forces may be subordinate to the impact of monetary and fiscal policies and there have been quite long periods where real interest rates have been below real growth rates in many countries, notably in the so-called 'Golden Age' of European growth after World War II (Allsopp and Glyn, 1999). Explicit policies of 'financial repression', where government interventions allow them to borrow at below market interest rates underpinned by impairment of international capital mobility may also be conducive to an interest rate on government debt lower than the growth rate (Reinhart, 2012).

This implies that there are several ways to address an incipiently unsustainable fiscal position including fiscal consolidation, manipulating the interest rate/growth rate differential, and reducing debt by restructuring or persuading creditors to give debt relief. If an adequate fiscal response is not forthcoming, then resort must be made to one of these other means.

In this context, it is useful to get a sense of how large reductions in d have been achieved in the past. A permutation on equation (1) gives the ex-post accounting formula employed by Abbas et al. (2011)

$$\Delta d = \Sigma [(r - g)/(1 + \pi + g)]d + \Sigma -b + \Sigma sfa \quad (2)$$

This decomposes the change in d into a term which is the cumulative effect of the interest rate/growth rate differential, a term which is the cumulative primary deficit, and a cumulative residual term, Σsfa, which will reflect valuation effects, 'below-the-line' fiscal operations such as privatizations, and errors in the data.

Table 2 displays results of a decomposition of large reductions in the public debt to GDP ratio in the past based on equation (2). Two points stand out. First, in cases where the reduction was from a high initial level of d (> 80 per cent) the growth rate/interest rate differential played a relatively important part. Second, in most periods the lion's share of the reductions in d was due to primary budget surpluses but a major exception to this was observed in the years after World War II when the interest/rate growth rate differential was much more important than budget surpluses.

3) UK Experience in Dealing with Debt after 3 Major Wars

This section reviews the contrasting UK experiences in attempting to reduce high public debt to GDP ratios in the nineteenth century after the Napoleonic Wars and in the twentieth century after the two World Wars. I consider both the arithmetic and the political economy of debt reduction.

a) 1831-1913

Analysis of the post-Napoleonic-War period is undertaken from the point at which national accounts estimates become available on an annual basis in 1830. At that point the public debt to GDP ratio was 1.593 from which level it fell steadily to below 0.6 by 1872 and to 0.247 by 1913. Table 3 shows that, arithmetically, this was achieved by running persistent primary budget surpluses which were sustained at a high average of around 5 per cent of GDP during the 1830s and 1840s and then gradually reduced through the following decades. Nevertheless, in every decade these surpluses were adequate to meet the fiscal sustainability condition since in the later decades the debt ratio was much lower. The real interest rate/ real growth rate differential was positive on average over most of the period. It was over 3 percentage points in the deflationary decades of the 1840s and the 1880s but slightly negative in the relatively fast growth decade of the 1860s. The real interest rate paid on government debt averaged 3.9 per cent and the average rate of growth of real GDP averaged 2.0 per cent per year.

The key feature of these years was a strong commitment to balancing the budget. The actual budget surplus or deficit was less than 1 per cent of GDP in all but 6 years. Deficits greater than 1 per cent of GDP only occurred at the times of the Boer and Crimean Wars and with compensation for slave owners in the mid 1830s. There were no periods of severe price deflation and in the era of modern economic growth that followed the industrial revolution following a balanced budget rule was good enough to deliver steady reduction in the public debt to GDP ratio. The context of this adherence to balanced budgets was an 'unwritten fiscal constitution' which entailed a 'rules-based' approach to economic policymaking that constrained political discretion and also entailed a macroeconomic trilemma choice of a fixed exchange rate (the gold standard) and internationally mobile capital (Middleton, 1996).

To modern eyes, the priority given to balancing the budget and, even more so, the large primary budget surpluses of the second quarter of the nineteenth century seem quite surprising. The political context was, however, very different at this time. In particular, the electorate was very narrow before the Second Reform Act of 1867 (about 6 per cent of adults) or even before the Third Reform Act of 1883 (about 14 per cent) and it was only in the late nineteenth century that competition for working class votes began. This implied that a very low priority was given to government social expenditure (Lindert, 2004) which even in 1913 only amounted to 4.7 per cent of GDP (Middleton, 1996). In contrast, the rules-based approach to policy making and the discipline

that it imposed on politicians, which would mean that Britain would be well placed to borrow in the next military emergency, had some appeal for the enfranchised property owning voters (Bordo and Kydland, 1995).

b) 1921-1938

A striking feature of this period is the continuing very high level of the public debt to GDP ratio which was above 1.4 throughout, reached almost 1.8 at its peak, and was virtually the same in 1938 as in 1921. Equally remarkable is the continued very high level of primary budget surpluses which averaged 6.2 per cent of GDP during 1921-38. Until rearmament changed the fiscal picture after 1935, the primary budget surplus was never below 5 per cent and in seven years exceeded 7 per cent. These data are reported in Table 4. Despite continuing large primary surpluses the debt to GDP ratio rose sharply in the early 1920s and again in the early 1930s and fell only modestly in the late 1920s; the impact of these surpluses was generally outweighed by adverse interest rate/growth rate differentials. Real interest rates were very high in the years characterized by price deflation. After the UK left the gold standard and moved to the era of 'cheap money', the fiscal arithmetic changed dramatically. The debt to GDP ratio fell steadily with positive contributions both from primary budget surpluses and from interest rate/growth rate differentials while real interest rates were much lower.

The early 1920s saw an attempt to return to the pre-war rules of the balanced budget and the gold standard but this did not deliver the nineteenth century result. Balanced budget orthodoxy remained very strong as is demonstrated by the over-riding of the automatic stabilizers in the face of the downturn resulting from the world depression in the early 1930s such that there was an overall surplus of 0.5 per cent of GDP in 1933. Although the budget was close to balance in most years, in the face of price deflation and several years when real GDP fell sharply, this was not enough to reduce the public debt to GDP ratio over the period as a whole. Returning to gold made debt reduction much harder. In the early 1920s, the debt problem was seriously exacerbated by the large fall in prices necessitated by the decision to return to gold at the pre-war parity which required prices to fall significantly to restore international competitiveness and severe deflationary pressures were renewed at the end of the decade through gold hoarding by surplus countries (Irwin, 2010).

A long period of big primary budget surpluses which more or less balanced the budget in the face of high levels of debt service was achieved even though the franchise was extended to about 75 per cent of adults in 1918 and to 95 per cent by the time of the 1929 election which was conducive to strong growth in public expenditure for social purposes (education, health, housing, transfers) which rose from 4.7 per cent of GDP on the eve of World War I to 7.2 per cent in 1925 and 8.7 per cent by 1938 (Middleton, 1996). This seems to reflect a substantial 'displacement effect', namely, that the experience of war finance seemed permanently to raise the maximum tolerable taxation level, which was first identified by Peacock and Wiseman (1961) and has been confirmed by modern econometric analysis (Henry and Olekalns, 2010).[1]

Although the problem of the war debt was a major issue in the 1920s, the Labour Party's proposal of a capital levy was rejected. When Labour formed a minority government for the first time following the 1923 general election the controversial matter was referred in March 1924 to a committee of

[1] Peacock and Wiseman suggested that the displacement effect was about 14 per cent of GDP.

enquiry chaired by Lord Colwyn which eventually published its report in February 1927 (BPP, 1927). Its majority report was against a capital levy. The maximum yield of such a levy was estimated at £3 billion (equal to about 40 per cent of the stock of national debt which would have reduced b from 1.6 to 1.0). The impact on the fiscal arithmetic was seen as relatively modest compared with the potential damage to the legitimacy of the taxation system and the adverse effects on the incentive to save. The net improvement in the annual budgetary position was put at only about £60 million based on interest savings of £150 million offset by reduction in other tax receipt of £90 million.

c) 1950-1970

The outstanding feature of the 1950s and 1960s is the very rapid reduction of the public debt to GDP ratio. From almost 200 per cent of GDP in 1950 it was below the Maastricht limit by 1971 when it had fallen to 58.3 per cent of GDP. These two decades were characterized by primary budget surpluses in every year but one but the average was much smaller than during the inter war years at 2.3 per cent of GDP compared with 6.2 per cent in 1921-38. The average rate of inflation was about 4 per cent per year and in eight years the ex-post real interest rate on government debt was negative. Nominal interest rates were lower than at any time in the 1930s until 1958 and real interest rates were almost always below the real growth rate. Growth was strong by British standards but, even so, the stand-out feature of this period is the very low level of real interest rates; the average over the whole 20 years is only slightly positive. Outlays on debt interest averaged only 4.5 per cent of GDP during the 1950s and 1960s compared with 6.6 per cent in the interwar period. The fiscal sustainability data for this period are reported in Table 5.

The rapid debt reduction of these years was achieved without many years of very painful fiscal consolidation which may explain why many British commentators do not think high public debt to GDP ratios matter. The reason seems to be that it was possible to address the issue through financial repression achieved through controls on banks and capital movements and debt management by a 'subservient' central bank. The financial repression index score calculated by Battilossi (2004) averaged 62.5. [2] The UK maintained foreign exchange controls from World War II until 1979; in terms of the macroeconomic policy trilemma, the choice was a fixed exchange rate together with independent monetary policy. The UK scored low for central bank independence (Cukierman et al. 1992). The evidence presented to the Radcliffe Committee (1959) underlined that the Chancellor not the Bank had responsibility for interest rate policy while debt management and controlling the interest costs of the national debt were central tasks for the Bank throughout these decades (Goodhart, 2012).

After 1945, public expenditure as a share of GDP was much higher than between the wars. Between 1951 and 1964 it was typically around 38 per cent of GDP with social expenditure now amounting to as much as 17 per cent of GDP. World War II once again saw a sizeable displacement effect (Henry and Olekalns, 2010) and the longer-term impact of the expanded electorate and the rise of the Labour Party was reflected in the Beveridge-era welfare state which was regarded as untouchable by the Conservatives when back in office (Middleton, 1996). At the same time, the Conservatives had

[2] The index has 3 components, namely, reserve requirements for banks, real deposit rates of banks and government liabilities held by the banking system. Across Europe, the UK score was exceeded only by Belgium and Portugal at this time; by 1990 the score had fallen to 16.5. Only 52 per cent of government debt was marketable in 1950.

been elected in 1951 on the back of popular dissatisfaction with austerity and 'you've never had it so good' was to be the basis of future electioneering by them (Zweininger-Bargielowska, 1994). In this context, they were constantly seeking ways within the political constraints of the postwar settlement to reduce taxes (Daunton, 2002). By contrast, Labour wanted further expansion of social expenditure which did indeed rise sharply after they regained office in 1964. Moreover, in this 'Keynesian era', balanced budgets were no longer 'mandatory' and overall budget deficits averaged 2.1 per cent of GDP (Middleton, 2010). It seems clear that there was no longer any political possibility of running primary budget surpluses at the level of the 1920s. In the absence of favourable interest rate/growth rate differentials, a sizeable reduction in the public debt to GDP ratio would have been most unlikely.

Although the Labour Party won a landslide victory in the 1945 election, there was no attempt to introduce a capital levy. The issue was dealt with by the National Debt Enquiry Committee in 1945 whose members included Keynes and Meade who wrote the report which rejected the idea mainly because it would do even less to improve the fiscal arithmetic than in the 1920s given that 'cheap money' would continue to prevail, and rates of income and capital taxation were now much higher and highly progressive (Howson, 1988, ch. 15).

d) Overview

Table 6 provides a comparative decomposition of the changes in public debt to GDP ratios in these different periods. This highlights how different was the experience after World War II from what had gone before. In the 1950s and 1960s, well over half of the reduction in the debt to GDP ratio came from a favourable interest rate/growth rate differential in conditions of financial repression and rapid growth. Before World War I, primary budget surpluses did all the work and (r – g) offset a good part of their impact. In the difficult deflationary conditions of the 1920s and early 1930s, very substantial primary budget surpluses were more than offset by very unfavourable interest rate/ growth rate differentials. In turn, these contrasting episodes also underline the importance of the exchange rate regime or more generally the macroeconomic trilemma policy choice in facilitating or obstructing debt ratio reduction.

British economic history demonstrates that it has been possible to run much larger sustained primary budget surpluses even in an economy with a broad electorate than recent OECD experience seems to suggest.[3] However, the circumstances in which that was possible (balanced budget rule plus big displacement effect) are not easy to repeat and they had already disappeared by the 1950s when the displacement effect of World War II went to increase the size of the welfare state. As Keynes (1927) forcefully pointed out in his evaluation of the report of the Colwyn Committee, running large primary budget surpluses to pay off the national debt was not realistic when there were so many more voter-friendly uses for the tax revenues.

The rejection of proposals for a capital levy after each of the World Wars can be as epitomizing the general impracticality of imposing a welfare-improving capital levy that would reduce the deadweight burden of the debt without undermining saving (Eichengreen, 1990). In a democracy, the imposition would only come after protracted argument and delay and probably substantial

[3] IMF (2013a) reported that the maximum annual average primary budget surplus over a 10-year period in an advanced economy since 1950 is only about 3 per cent of GDP.

capital flight. This would make a capital levy ineffectual even in the unlikely event that reputational effects or a credible commitment technology were able to address the time-inconsistency problem.

4) Lessons for Post-Crisis Policy

This section considers current approaches to debt reduction in the UK and the Eurozone in the light of earlier British experience in tackling large public debt to GDP ratios. The environment differs in that debt reduction will be attempted in the context of the fiscal pressures resulting from population ageing, European single market rules preclude capital controls, and balanced budget orthodoxy no longer holds sway. Nevertheless, some useful lessons are available.

a) Future UK Public Debt/GDP Reduction

OBR (2014) projects future debt to GDP ratios in terms of public sector net debt on the basis of 'unchanged policies' and assumptions about key economic variables. In all projections a steady state is assumed in which g = 2.4 per cent per year (based on labour productivity growth of 2.2 per cent and employment growth of 0.2 per cent) and (r – g) = 0.4 (based on a nominal interest rate of 5 per cent and inflation at 2.2 per cent). The primary budget surplus averages about 1 per cent of GDP over the period 2013/14 through 2032/33 with a peak level of 3 per cent in 2018/19 gradually falling to 0.7 per cent by 2032/33. As Table 7 reports this delivers a central projection that public sector net debt will be 54 per cent of GDP in 2032/33. This rate of debt to GDP reduction is quite modest by 1950s standards but requires primary budget surpluses which are more than double the average of the 20 years before the crisis. OBR also projects the implications of smaller and larger budget surpluses and note that returning the debt ratio to 40 per cent by 2032/33 would require the primary budget surplus to average about 2 per cent of GDP.

From an historical perspective, the assumption of a small positive number for (r – g) catches the eye. As section 3 showed, the interest rate/growth rate differential not only matters a lot for the outcome of a fiscal consolidation process aimed at reducing the debt to GDP ratio but it has also exhibited a great deal of variation, at least for periods as short as 20 years. Table 7 reports illustrative calculations with (r – g) at +2.0 per cent from 2018/19, the average for the half-century before World War I, and at -2.7 per cent, the average for the 1950s and 1960s. In the former case, the projected fiscal strategy delivers only a small reduction in the debt to GDP ratio from 74 to 65 per cent whereas in the latter case there is a large reduction to 27 per cent.

In the absence of the framework which sustained financial repression in the early post-war decades (capital controls, banking regulations, and a far from independent central bank), it is not likely that a large negative interest rate/growth rate differential can be contrived by UK policymakers. A more salient aspect of this arithmetic is that supply-side policy is a key ingredient for the reduction of debt to GDP because of the importance of sustaining real GDP growth given the level of real interest rates. The current 'productivity puzzle' strongly reinforces this point since it raises the possibility that OBR's assumption of 2.2 per cent per year labour productivity growth may be too optimistic. Effectively addressing well-known deficiencies in such areas as human capital, infrastructure, regulation and taxation (Crafts, 2013) would reduce the need for further austerity to bring the debt to GDP ratio down.

b) Dealing with Eurozone Debt Problems

Table 1 reported that several Eurozone economies currently have very high public debt to GDP ratios and, as noted above, obeying the new fiscal rules is projected by OECD to require large primary budget surpluses over extended periods of time. The required surpluses depend, of course, not only on the public debt to GDP ratio but also on future real interest rates and growth rates which are projected by OECD (2014) to make debt reduction quite demanding (cf. Table 8). If the ECB fails to prevent a period of price deflation in the Eurozone, real interest rates are all the more likely to exceed real growth rates. As with British participation in the gold standard in the interwar years, the constraints of Eurozone membership make the fiscal arithmetic all the more difficult. This raises the question as to how likely it is that the troubled Eurozone economies will actually comply with the fiscal rules.

In these circumstances, financial repression has obvious attractions as the British experience after World War II highlights. However, this is not the 1950s and adopting such policies nowadays is far more difficult, especially because of the much greater degree of European economic integration. That said, it is reasonable to expect some moves toward financial repression. Although EU rules guarantee free movement of capital and the independence of the European Central Bank, countries largely retain sovereignty over fiscal and financial matters and that gives them some scope for financial repression (van Riet, 2013). Even at the European level, Basel III rules for capital adequacy of banks will privilege government bonds as zero risk and EU law allows for capital controls in exceptional circumstances. Governments under financial stress could be granted increased leeway to introduce national regulatory actions and moral suasion in support of government debt financing.[4]

In the absence of a major return to financial repression, it is quite possible that the maximum politically feasible budget surplus may be too small to meet the Eurozone's fiscal rules (Buiter and Rahbari, 2013). The data in Table 8 inform this judgement. The highest primary budget surpluses sustained over a 5-year period since 1980 are below what will be required according to OECD (2013a) in each of Greece, Italy, Portugal, and Spain. Moreover, in the first three of these countries, the 'fiscal limit' may already have been reached in the sense that estimated fiscal reaction functions suggest that the primary balance will not be improved sufficiently to maintain fiscal sustainability (Ghosh et al., 2013).

The economics literature does not have a good answer as to what the maximum politically feasible primary budget surplus may be. Eichengreen and Panizza (2014) conclude that the very few cases where countries have recently achieved the persistent surpluses needed by these Eurozone economies are so politically and economically idiosyncratic that they provide no guidance. The UK did run such surpluses in the second quarter of the nineteenth century and in the interwar period but this seems to be an outcome of a strong adherence to balanced budget rules which is completely foreign to any of the five countries in Table 8 (Wyplosz, 2012).

There seems still to be scope to increase tax revenues in all the countries which have a potential debt problem. Thus, recent Laffer-Curve estimates suggest that Southern European countries typically have scope to raise revenues from consumption taxes by at least 20 per cent of GDP

[4] Van Riet (2013) itemizes measures already undertaken that epitomize financial repression, especially in distressed Eurozone economies, and discusses the financially repressive implications of new prudential regulations and protective measures against market turmoil.

(Trabandt and Uhlig, 2012). Stochastic frontier analysis has found that 'tax effort' levels are around 70 per cent with the implication that, if potential were achieved, tax revenues would rise by at least 10 per cent of GDP (IMF 2013a).[5] The issue is not the economic but rather the political feasibility of increasing the ratio of tax revenues to GDP. Even if tax burdens are increased, it is apparent that there are significant pressures to increase expenditure on the welfare state.

Given the obvious difficulties of post-crisis fiscal arithmetic, it is perhaps not surprising that the idea of a capital levy has resurfaced in Europe. Piketty sees an exceptional tax on private capital as 'the most just and efficient solution' to the public debt problem (2014, p. 541) and Bach et al. (2014) offer detailed proposals for just such a not-to-be-repeated tax in Germany. Also unsurprisingly, such proposals have been met with fierce criticism that they will have adverse effects on savings and investment, will be hard to implement without provoking capital flight and will call into question the credibility of tax rules more generally (Keen, 2013), arguments that the Colwyn Committee also recognized. Nevertheless, the main reason such proposal were twice rejected in Britain was that the net budgetary gain was not worth these risks, a point which perhaps deserves more emphasis today.

The huge rise of social transfers as a percentage of GDP during the 20th century was driven by the spread of democracy, the desire for safety nets in the face of major economic crises, and population ageing (Lindert, 2004). These forces remain powerful and European countries face demographic pressures that, in the absence of policy reforms, will push social expenditures appreciably higher over the next 20 years. In these circumstances, it is hard to believe that prioritizing the use of additional tax revenues to fund reductions in the stock of public debt will be politically appealing. This is also the message from British economic history. After the interwar depression in an age of mass democracy, the ideas of Beveridge and Keynes ruled the roost in post-war Britain; for both Conservative and Labour governments financing a much expanded welfare state had priority over balancing the budget and paying off the national debt.

In sum, it is quite likely that the primary budget surpluses entailed by the fiscal compact exceed the politically feasible maxima in which case something will have to give!

5) Conclusions

Attempts in the past by the UK to address the issue of high public debt to GDP ratios which were the legacy of major wars produced strongly contrasting experiences. After the Napoleonic Wars, the debt to GDP ratio was steadily reduced over a long period by running primary budget surpluses which were underpinned by a strong commitment to the balanced budget rule. After World War II, the debt to GDP ratio was reduced very rapidly as primary budget surpluses were strongly augmented by policies of financial repression which held the real interest rate below the real growth rate. In the interwar period, price deflation in the context of policies to return to the gold standard meant that large and persistent primary budget surpluses were undermined by unfavourable interest rate/ growth rate differentials. Given the demise of the balanced budget rule and the advent of the welfare state, it seems quite unlikely that the primary surpluses of the 1830s or even the 1920s could be repeated in Europe today.

[5] 'Tax effort' is defined as the ratio of actual tax collection to potential tax revenue.

These contrasting histories underline the importance of (r – g), the real interest rate on government debt minus the growth rate of real GDP, to the success of debt reduction strategies, a point that seems often to be neglected in current policy thinking. Three important points follow from this. First, it is extremely important that central banks prevent price deflation which pushes real interest rates up especially when the lower bound for nominal rates is reached. Second, financial repression policies, which hold down real interest rates on government debt, have strong political appeal when public debt ratios because they offer an alternative to severe austerity. Third, reform of supply-side policies with a view to raising real GDP growth are potentially valuable complements to budget stringency in a debt reduction strategy.

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Table 1. General Government Gross Debt (%GDP)

	2007	***2013***
Austria	60.2	74.2
Belgium	84.0	99.7
Denmark	27.1	45.2
Finland	35.2	57.0
France	64.2	93.9
Germany	65.2	78.1
Greece	107.2	173.8
Ireland	24.9	122.8
Italy	103.3	132.5
Netherlands	45.3	74.9
Norway	50.5	29.5
Portugal	68.4	128.8
Spain	36.3	93.9
Sweden	40.2	41.4
Switzerland	55.6	49.4
United Kingdom	43.7	90.1

Notes: data for Austria refer to 1937 and for Spain to 1940.

Source: IMF (2014).

Table 2. Decomposition of Large Public Debt Ratio Reductions (averages as % GDP)

Start	*Initial Ratio*	*Final Ratio*	*Decrease*	*Budget Surplus Component*	*Growth-Interest Differential Component*	*Residual Adjustment*
Pre 1914	88.9	62.3	26.6	18.5	9.3	-1.2
1914-44	121.7	87.7	34.0	23.1	12.0	-1.0
1945-70	92.3	32.7	59.6	20.7	53.2	-14.2
Post 1970	73.6	46.3	27.3	22.7	0.8	3.8
Ratio > 80	136.7	79.6	57.1	29.0	37.4	-9.3
Ratio < 80	55.2	33.9	21.3	15.1	4.3	1.9

Notes: examples do not include cases where default occurred.

Source: Abbas et al. (2011).

Table 3. Fiscal Sustainability Data, 1831-1913

	b	***i***	***π***	***g***	***d***	***b****
1831-40	5.23	3.68	-0.85	2.26	1.487	3.60
1841-50	4.97	3.68	-1.04	1.66	1.350	4.36
1851-60	3.52	3.58	1.23	2.25	1.071	0.06
1861-70	2.50	3.36	0.48	3.03	0.769	-0.12
1871-80	2.13	3.72	0.16	1.95	0.568	1.06
1881-90	2.08	4.08	-0.62	1.30	0.490	1.72
1891-1900	1.50	3.92	0.63	2.16	0.372	0.50
1901-13	1.34	5.39	0.48	1.68	0.313	1.02

Note:

b* is the required primary budget surplus to GDP ratio to satisfy the condition that $b = (i - \pi - g)d$.

Sources: b, primary budget surplus to GDP ratio, i, average nominal interest rate on government debt, d, public debt to GDP ratio, π, rate of inflation based on GDP deflator, g real GDP growth rate are all from Mitchell (1988).

Table 4. Fiscal Sustainability Data, UK 1921-1938

	b	***i***	***π***	***g***	***d***	***b****
1921	5.10	4.41	-10.52	-4.71	1.472	28.92
1922	7.38	4.45	-16.05	4.11	1.668	27.34
1923	8.92	4.52	-8.01	3.40	1.763	16.10
1924	7.60	4.58	-1.39	5.10	1.726	1.50
1925	6.46	4.59	0.27	2.89	1.633	2.34
1926	6.10	4.85	-1.41	-4.59	1.717	18.63
1927	6.89	4.57	-2.36	8.22	1.635	-2.11
1928	7.53	4.75	-1.12	1.17	1.613	7.58
1929	7.00	4.85	-0.34	3.43	1.584	2.79
1930	6.15	4.75	-0.40	-3.72	1.592	14.12
1931	5.41	4.51	-2.40	-2.37	1.698	15.76
1932	7.25	4.49	-3.58	0.65	1.736	12.88
1933	7.42	3.90	-1.40	4.74	1.792	1.00
1934	6.76	3.58	-0.68	4.78	1.731	-0.90
1935	5.68	3.64	0.87	4.26	1.650	-2.46
1936	4.95	3.59	0.55	4.15	1.587	-1.76
1937	3.89	3.67	3.73	3.17	1.472	-4.75
1938	1.56	3.62	2.77	0.42	1.438	0.62
1925-29 average	6.78	4.72	-0.99	2.22	1.636	5.71
1933-38 average	5.04	3.67	1.67	3.59	1.612	-1.38

Note:

b^* is the required primary budget surplus to GDP ratio to satisfy the condition that $b = (i - \pi - g)d$.

Sources:

b, primary budget surplus to GDP ratio, i, average nominal interest rate on government debt, and *d*, public debt to GDP ratio from Middleton (2010) database; π, rate of inflation based on GDP deflator from Feinstein (1972); *g*, 4th quarter real GDP growth rate, from Mitchell et al. (2012).

Table 5. Fiscal Sustainability Data, UK 1950-1970

	b	***i***	***π***	***g***	***d***	***b****
1950	6.64	2.43	0.65	3.24	1.995	-2.91
1951	4.98	2.63	7.40	3.62	1.798	-15.09
1952	2.22	2.91	9.03	-0.16	1.656	-9.87
1953	0.26	3.09	3.02	4.62	1.547	-7.04
1954	1.96	3.08	2.06	3.80	1.497	-4.16
1955	2.28	3.37	3.64	3.64	1.410	-5.51
1956	1.51	3.43	6.28	1.60	1.309	-5.83
1957	1.56	3.52	4.03	1.91	1.236	-2.99
1958	2.54	3.84	4.53	0.29	1.197	-1.17
1959	1.94	3.92	1.58	4.12	1.142	-2.03
1960	1.48	4.25	1.72	4.93	1.089	-2.61
1961	1.63	4.45	3.16	4.09	1.049	-2.94
1962	2.87	4.49	3.44	2.13	1.006	-1.09
1963	1.61	4.34	1.94	3.48	0.986	-1.06
1964	1.09	4.53	1.98	6.32	0.920	-3.47
1965	1.47	4.83	3.67	2.53	0.863	-1.18
1966	0.94	4.96	5.13	1.92	0.825	-1.72
1967	-0.39	5.35	2.44	2.78	0.797	0.10
1968	1.19	5.58	3.57	4.15	0.786	-1.68
1969	4.74	6.03	5.75	1.30	0.729	-0.74
1970	6.46	6.48	7.61	2.27	0.647	-2.20
1950-59	2.59	3.22	4.22	2.67	1.479	-5.66
1960-70	2.10	5.03	3.67	3.26	0.882	-1.69

Note:

*b** is the required primary budget surplus to GDP ratio to satisfy the condition that b = $(i - \pi - g)d$.

Sources:

b, primary budget surplus to GDP ratio, i, average nominal interest rate on government debt, and *P*, public debt to GDP ratio from Middleton (2010) database; π, rate of inflation based on GDP deflator, and *g*, real GDP growth rate, from Feinstein (1972).

Table 6. Decomposition of Changes in UK Public Debt Ratio as %GDP

	Initial Ratio	*Final Ratio*	*Decrease*	*Budget Surplus Component*	*Growth-Interest Differential Component*	*Residual Adjustment*
1831-54	157.9	103.9	54.0	120.2	(88.6)	22.4
1855-75	101.8	54.7	47.1	53.1	(11.9)	5.9
1876-1913	56.5	24.7	31.8	58.8	(42.7)	15.7
1921-33	147.2	179.2	(32.0)	89.2	(148.7)	27.5
1933-38	179.2	143.8	35.4	22.8	10.7	1.9
1950-70	199.5	64.7	134.8	48.9	72.7	13.2

Source: derived from Tables 3, 4 and 5 using equation (2).

Table 7. UK Public Sector Net Debt/GDP in 2032/33 (%)

OBR Central Projection	54
b: + 1 ppt	40
b: -1 ppt	68
r – g: +2.0 per cent	65
r – g : -2.7 per cent	27

Sources: OBR (2014) first 3 rows, own calculations last 2 rows.

Table 8. Aspects of Future Fiscal Sustainability

	2013 d	*2020 r*	*2030 r*	*2014-30 g*	*Max b*	*Limit of d*
Greece	1.738	6.9	3.2	2.2	3.9	<1.586
Ireland	1.228	3.1	1.8	2.3	5.4	1.497
Italy	1.325	3.1	2.3	1.5	5.3	<1.247
Portugal	1.288	5.4	2.4	1.4	2.4	<0.984
Spain	0.939	4.2	2.0	1.5	2.9	1.539

Sources:
2013 d is public debt to GDP ratio in 2013 (IMF, 2014).

2020 r and 2030 r are projected real interest rates on 10-year government bonds in 2020 and 2030, respectively (OECD, 2014).

2014-30 g is the projected average rate of growth of real GDP between 2014 and 2030 (OECD, 2014).

Max b is the largest average primary budget surplus as a percentage of GDP over a 5-year period since 1980 (IMF, 2013b).

Limit of d is the projected public debt to GDP ratio at which past experience indicates that the response of the primary surplus would no longer satisfy a fiscal-sustainability criterion (Ghosh et al., 2013).