

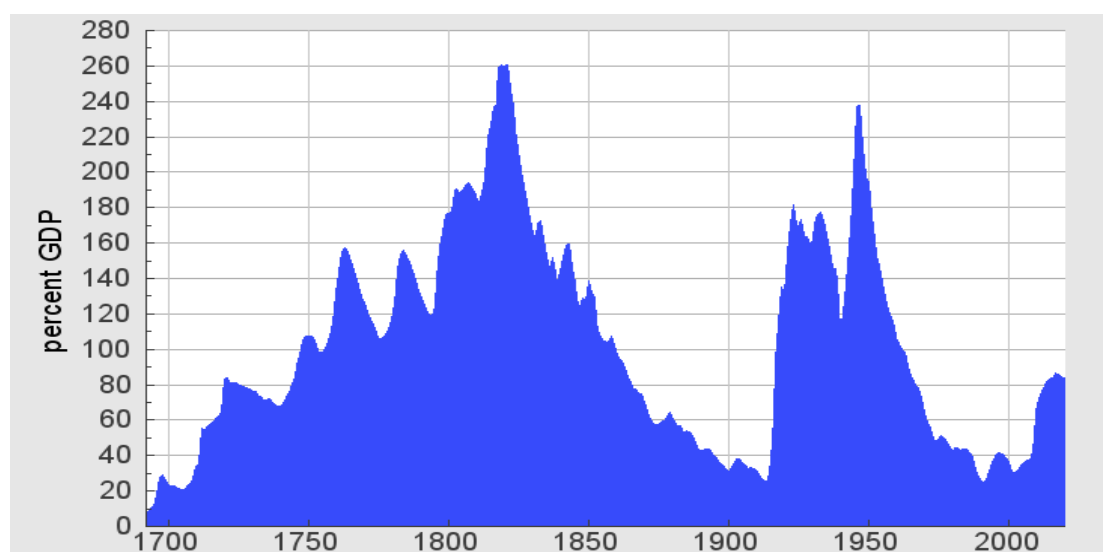
A very short history of the national debt

At every stage in the growth of that debt the nation has set up the same cry of anguish and despair. At every stage in the growth of that debt it has been seriously asserted by wise men that bankruptcy and ruin were at hand. Yet still the debt went on growing; and still bankruptcy and ruin were as remote as ever.

Thomas Babington Macaulay, 1848¹

Adam Smith lamented the sovereign's desire for pageantry, splendid buildings and other public ornaments since 'the want of parsimony in time of peace imposes the necessity of contracting debt in time of war'.² Indeed, the history of the national debt is primarily a story of war and peace – the nominal burden rising in times of war, and the relative burden (usually) falling in times of peace. As England, and then Great Britain, fought increasingly expensive global conflicts so the national debt grew, twice peaking at around 250 per cent of Gross Domestic Product (GDP), first after Waterloo and then again after the Second World War (Figure 1).³

Figure 1. National debt as a percentage of GDP, 1694-2020.



Source: www.ukpublicspending.co.uk

¹ T.B. Macauley, *History of England (The Complete Writings of Lord Macaulay, vol. 8)* (London, 1899), p. 70.

² A. Smith, *The wealth of nations, book V* (first published 1776, London 1999), pp. 508-9.

³ It is anachronistic to refer to GDP before the concept was formalized in the mid-twentieth century. Contemporaries generally paid greater attention to the cost of servicing the debt.

This article opens with a brief history of the national debt before the financial revolution that produced the Bank of England (the ‘Bank’) in 1694. The Bank was central to the fiscal-military state’s ability to outspend its rivals during the long eighteenth century, and then again during the World Wars of the twentieth century. Also important was the state’s ability to consolidate and reduce its debt burden. This article outlines various attempts to lower the cost with interest rate conversions, and to reduce the principal with sinking funds. We show that while the principal rarely fell, the relative burden decreased during the nineteenth century primarily as a consequence of economic growth, and after World War Two through a combination of growth and inflation.

Before the Bank of England

Parliament has explicitly claimed the right to approve the taxes collected from English subjects since 1362.⁴ But the Crown, through its ministers, retains the power to allocate public spending.⁵ This opens a gap that has usually been filled with borrowing which ‘presupposed some command of taxation in the future’ to repay it.⁶ Before the financial revolution that began in the late seventeenth century, the supply of ‘publick credit’ was limited by the rudimentary extent of the taxation system, coupled with the material threat that a monarch might repudiate his own debt and that of his predecessors.⁷ The principal credit instrument was the tally stick (Figure 2). Transaction details were marked on wooden sticks that were split lengthwise, one half (the ‘stock’) going to the creditor, the other (the ‘foil’) remaining at the Exchequer.⁸ When Parliament voted to repay, the creditor would match his half with the Exchequer’s half and receive his principal. Since tallies were non-transferable and the timing of repayment was at Parliament’s discretion, creditors had to keep a close

⁴ Pre-restoration monarchs retained feudal rights such as ‘relief’ (payments upon the inheritance of land), ‘wardship’ (income from land inherited by minors), and ‘livery’ (payments to recover lands from wardship); M. Slater, *The national debt: a short history* (London, 2018), p. 18.

⁵ Parliament exercised closer oversight of ministerial spending after the Glorious Revolution.

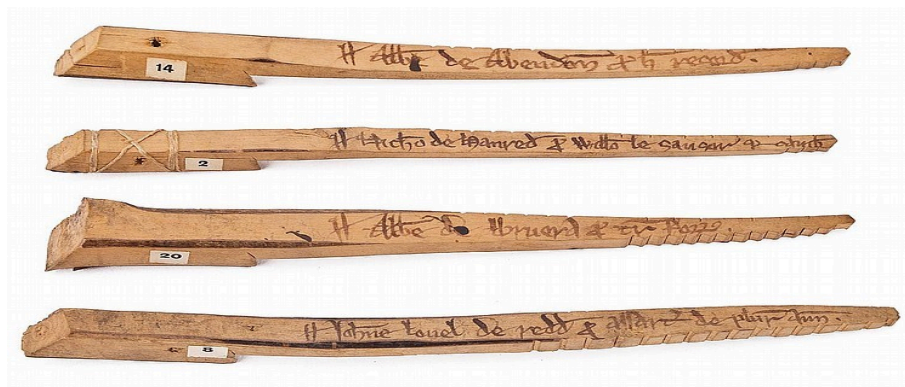
⁶ Short-term borrowing also bridges the time gap between spending and the arrival of tax revenues, especially during wartime emergencies. The Bank of England traditionally covered this with Ways and Means advances; Slater, *Short History*, p. 19.

⁷ Sovereigns such as Henry VIII also periodically debased (‘cried up’) the currency to repay more debt with less specie.

⁸ Burning redundant tallies in the House of Lords furnace initiated the conflagration that destroyed the medieval Palace of Westminster in 1834.

eye on proceedings at Westminster. An important innovation, therefore, was the Order of Repayment introduced by Teller of the Exchequer Sir George Downing in 1664. This created transferable paper instruments, issued alongside tallies, that bore interest at 6 per cent and were repayable in numerical order against new, earmarked tax revenues. In principle, additional indebtedness was limited to new streams of voted taxation. In practice, the government soon began issuing tallies against *all* its current revenue, not just the *additional* revenue that parliament had voted to redeem the pre-existing tallies. By 1672, facing renewed hostilities against the Dutch, the government was diverting current revenue to the military. The resulting default (the *Stop on the Exchequer*) embarrassed a number of City firms that had purchased the (by then transferable) instruments in the secondary market.⁹

Figure 2. Tally sticks.



Source: www.invaluable.com

The Financial Revolution

The National Debt ‘permanent by design, not simply through fecklessness’ is a product of the 1690s, as the Glorious Revolution ushered in the checks and balances that placed the King ‘in parliament’.¹⁰ But this was only after the government, locked into an expensive struggle with Louis XIV (the Nine Years War, 1688-97), had explored a number of makeshifts. In 1692-3, having implemented a land tax and a

⁹ The 6 per cent interest on pre-existing tallies continued to be paid with the revenues that had been explicitly voted. The principal of the ‘stopped’ tallies was halved in 1699 before being converted into South Sea Company shares during the 1720 Bubble.

¹⁰ Slater, *Short History*, p. 15.

range of excise duties, and issued more tallies, the government sought to raise £1 million with a tontine.¹¹ This was a Neapolitan innovation that placed nominees (who could also be subscribers) in groups that received payments that increased as other group members died (see Glossary). The structure was complex and the first tontine raised just £108,100 of the intended £1 million. More successful was the contingent offering of 14 per cent single-life annuities that made up most of the shortfall.¹² A year later, the authorities sought to raise the remaining £118,506 with more 14 per cent annuities, this time tax-free. Also successful was the 1694 ‘Million Adventure’, a lottery that offered every £10 ticket a £1 annuity for 16 years with 2,500 ‘fortunate tickets’ winning up to £1,000 (in addition to the £1 annuity) at an average cost of 14 per cent to the government.¹³ This was followed by a further £300,000 raft of annuities, ‘terminable’ after up to three lives and paying between 10 and 14 per cent.¹⁴ As Hargreaves points out, these were the devices of ‘a financially embarrassed government’.¹⁵

The lasting innovation of the Financial Revolution, however, was the Bank of England, chartered in 1694 to raise revenue ‘toward the carrying on the War against France’.¹⁶ Private banks existed in England but they were small, with their unlimited liability operations restricted to the ‘last acre and sixpence’ of their (up to six) partners.¹⁷ Promoters such as the Scotsman William Paterson had been lobbying for a larger, limited liability bank for some time.¹⁸ Against the backdrop of war they succeeded. In exchange for a monopoly on limited liability joint-stock banking, the Bank lent the government £1.2 million at 8 per cent *in perpetuity*.¹⁹ This provided the Bank with a large income stream secured on earmarked taxes, and the government

¹¹ J.H. Clapham, *The Bank of England: a history 1694-1797*, vol. 1 (Cambridge, 1944), p. 24.

¹² In 1695, subscribers could convert these into 96-year annuities by paying a further £63 per £100 nominal, Smith, *Wealth of nations*, p. 516.

¹³ Clapham, *Bank of England*, p. 25, E.L. Hargreaves, *The National Debt* (Abingdon, 2016), p. 9.

¹⁴ P.G.M. Dickson, *The financial revolution in England* (London, 1967), p. 49.

¹⁵ Hargreaves, *National Debt*, p. 8.

¹⁶ 5 & 6 Will & Mar c. 20.

¹⁷ J.D. Turner, *Banking in crisis: the rise and fall of British banking stability, 1800 to the present* (Cambridge, 2014), p. 6.

¹⁸ Paterson was involved in the Scottish government’s failed 1690s Darien scheme as well as various proposals for land banks, Clapham, *Bank of England*, pp. 14-15.

¹⁹ The original proposal was £1 million at 6 per cent (plus a £5,000 administration fee) in return for a monopoly on legal tender note issue and limited liability joint-stock banking. The Commons Committee caviled at the monopoly on legal tender note issue and agreed to 8 per cent on £1.2 million (plus a £4,000 annual administration fee). The Act provided for a further £300,000 to be lent against annuities, Clapham, *Bank of England*, p. 18

with permanent funding (redeemable should it not renew the Bank's charter) at considerably less than the c. 14 per cent paid to the 1693 annuitants and the participants in the 1694 Million Adventure.²⁰ The Bank was also bound by its charter to lend to the crown only with the express authorization of parliament and the sufficient allocation of taxes ('funding').²¹ As Slater points out 'both parties had locked themselves into an indissoluble relationship', with the public credit now backed by the credibility of the Bank and the authority of the King in parliament.²²

There remained the problem of the expensive short-term debt, issued in anticipation of taxes, rather than explicitly funded. In 1697, the Bank was authorized to increase its capital by just over £1 million with subscribers permitted to contribute up to 80 per cent in tallies (the 'ingraftment of tallies'). A year later, the first of six 'general mortgages' extended the duration of taxes voted explicitly to fund the debt.²³ The legislation for the first general mortgage also authorized the issue of Exchequer Bills. Like Downing's Orders of Repayment, Exchequer Bills bore interest, initially capped at just over 4½ per cent.²⁴ Secondary liquidity was enhanced by the appointment of trustees who would exchange Bills for cash.²⁵ They could also be used to extinguish tax liabilities. With these innovations, Exchequer Bills displaced tallies as the main short-term debt instrument issued in anticipation of taxes rather than explicitly funded by voted revenue.

Consolidating the National Debt

The National Debt stood at £14.5 million at the end of the Nine Years War. This equated to just under a quarter of GDP with the interest consuming about a third of government expenditure in 1698.²⁶ Marlborough's campaigns during the War of the Spanish Succession (1701-14) contributed to increasing the debt to £54 million (c. 55

²⁰ The 1694 Act earmarked 'severall Rates and Duties upon Tunnage of Ships and Vessels, and upon Beere, Ale, and other Liquors' providing the Bank with its first nickname – 'the Tonnage Bank'. The Charter was renewed in 1706, 1742, 1764 and 1781.

²¹ There were similar restrictions on Bank purchases of Crown land.

²² Slater, *National Debt*, p. 35. See also F. Martin, *Money: the unauthorised biography* (London, 2014), ch. 7.

²³ Smith, *Wealth of nations*, pp. 513-4.

²⁴ Hargreaves, *National Debt*, p. 11.

²⁵ The Bank assumed this function in 1707.

²⁶ Hargreaves, *National Debt*, p. 13; www.ukpublicspending.co.uk, accessed 22 October 2019.

per cent of GDP) by 1714 through a by then familiar combination of annuities, lotteries and charter company loans.²⁷ In 1711, the Tory government, reluctant to bolster the power of the 'Whig' Bank, had chartered a new entity – the South Sea Company. Along with a monopoly on British trade with Spanish America, the South Sea Company was authorized to convert just over £9 million of short-term public debt into its own shares, immediately making it a considerably larger entity than the Bank. The Company then exchanged this debt for a perpetual 6 per cent government annuity.²⁸ As a consequence, by 1714 nearly half of the national debt was held by the Bank, the East India Company and the South Sea Company. The rest was a combination of Exchequer bills, tontines, lotteries and annuities some, but not all, of which could be refinanced as interest rates fell from their wartime highs.

Interest rates did fall with peace in 1714.²⁹ The government then set about lowering the interest payments that were consuming about half of all public expenditure.³⁰ Against the threat of repayment (and having to reinvest at even lower rates) the Bank and the South Sea Company agreed to reduce their annuities to 5 per cent in 1717.³¹ This opened up the possibility of reducing the nominal debt by means of a sinking fund. The mechanism worked as follows. Parliament had voted the taxes to service the debt at previously higher interest rates. At the lower rate of interest there would be a surplus that could be used to retire debt trading below par. As debt was retired, so the aggregate servicing cost would further reduce. Assuming the previously earmarked tax revenues were not diverted to other uses, the surplus would grow and increasingly more debt could be retired. William Paterson was on hand again to provide the arithmetic, explaining to Chancellor of the Exchequer Robert

²⁷ The Whig government replicated its earlier success with the Bank when it authorized the East India Company to convert £2 million of expensive short-term liabilities into a longer-term funded annuity, also at 8 per cent.

²⁸ The East India Company and Bank made further loans to the government in 1708-9. With no increases in their annuity payments, the effective rates of interest on their loans was reduced from 8 per cent to 5 and 6 per cent respectively, Hargreaves, *National Debt*, p. 17.

²⁹ In 1714 the usury rate was reduced from 5 to 4 per cent.

³⁰ Hargreaves, *National Debt*, p. 20.

³¹ The Bank also converted £2 million Exchequer bills into 5 per cent annuities. Its original 1694 annuity, restructured in 1697, remained at 6 per cent. Perpetual securities had first been sold to the public in 1715 to repay holders who refused to convert to the lower interest rate, Hargreaves, *National Debt*, p. 30.

Walpole that the public debt could be extinguished in just 22 years.³² The problem, of course, is that successive governments must stay the course and not divert previously voted revenues to other purposes. It is a maxim that parliament cannot bind its successors but Walpole could not restrain himself, succumbing to temptation by repeatedly raiding his sinking fund during the 1720s. Nonetheless, he did reduce the servicing cost from more than half of government expenditure in 1721 to just over a quarter in 1741 while stabilizing the debt at around £50 million (c. 70 per cent of GDP in 1741).

While chartered companies such as the Bank and South Sea Company could be persuaded to lower the interest rate on their loans, there remained the problem of the ‘irredeemable’ annuities. Comprising about a quarter of the public debt in 1720, these illiquid instruments had often been issued under wartime duress and included 14 percent lottery annuities, 9 per cent annuities to 1742 and 7 per cent annuities maturing as late as 1807.³³ Investors were unlikely to convert into fixed income securities paying current rates at around 5 per cent, however much more liquid the new instruments may be. The authorities needed to supplement the future, lower interest income with the prospect of higher returns from some other source.

Britain and Spain had been at war when the South Sea Company was granted its monopoly on British trade with Spanish America in 1711. In July 1719 the company issued shares at 114 per cent of par, suggesting its prospects had improved despite renewed hostilities with Spain.³⁴ In April 1720, after a bidding war with the Bank, parliament authorized the South Sea Company to issue further shares up to the nominal value of any public debt (not just irredeemable debt) it could persuade investors to convert. The goal was ambitious – to convert the entire national debt, save that already held by the chartered companies, into South Sea shares. After switching existing debt holders into its own shares, the Company would then exchange the annuities (and redeemable debt) received for redeemable 4 and 5 per cent (all 4 per cent from midsummer 1727) government annuities, while paying the

³² W. Paterson, *An Inquiry into the State of the Union of Great Britain and the Past and Present State of the Trade and Public Revenues thereof*. By the Wednesday's Club in Friday Street (London, 1717).

³³ Dickson, *Financial Revolution*, p. 104.

³⁴ Ibid, p. 89.

government a fee of up to £7.5 million for the privilege.³⁵ The higher the price of South Sea shares, the more debt the company could convert per share.³⁶ As Dickson explains, with the share price at £200, the Company could convert the entire £31 million of subscribable debt into just £15.5 million nominal of new stock. But the Company was authorized to issue stock up to the *total* nominal value of the debt converted. In this case, it could issue a further £15.5 million nominal of stock at £200 per share, securing itself nearly £8 million in profit after deducting the fee payable to the government. From the government's perspective, the more debt converted, the higher the fee it would receive and the lower its subsequent interest costs.³⁷ The lower its interest costs, the lower the taxes on the 'the landed and trading interest of the nation'.³⁸ But the scheme rested on convincing investors that there was significant upside in the shares. The stage was set for one of the most notorious episodes in British financial history.

In January 1720, South Sea shares were trading at 128. In July they stood at 1000 per cent, boosted by a stockjobbing campaign and fuelled by the company lending against the security of its own shares. By Christmas the price had fallen back to 155 but by then £26 million (*c.* 52 per cent) of the long-term national debt had been converted into just £8.5 million South Sea shares and £3 million South Sea bonds. While the Spanish American trade did generate some modest profits, for those who converted higher yielding annuities, and those who lost money speculating on the shares, the South Sea Bubble was a financial embarrassment. From the government's perspective it was a resounding success, as the cost of servicing a substantial portion of the national debt was reduced.³⁹ Indeed, by 1733 the national debt had been tamed sufficiently for Walpole to argue that creditors focused 'not now which of them shall be paid first, but which of them shall be last paid'.⁴⁰ Indeed, when Walpole's protégé, Henry Pelham converted redeemables to 3.5 per cent securities in 1751 and then 3 per

³⁵ The Company would pay just over £4 million for converting the redeemable debt and 4.5 times the annuity on all irredeemable debt converted, Hargreaves, *National Debt*, p. 28.

³⁶ The 'long annuities' maturing between 1792 and 1807 were valued at 20 times the annual payment and the 'short annuities' maturing in 1742 were valued at 14 times the annual payment.

³⁷ Debt holders choosing not to convert would be redeemed in cash.

³⁸ Walpole, quoted in Dickson, *Financial Revolution*, p. 97

³⁹ Offsetting the lower servicing cost was an increase in the nominal debt. £100 annuities that had been sold for £1,600 or less were exchanged for £2,000 of perpetual debt, Hargreaves, *National Debt*, p. 30.

⁴⁰ *Ibid*, p. 55

cent in 1757, none of the saving was devoted to retiring debt – it all went on lowering tax. Pelham's conversion created two new securities: the 3 per cent Reduced ('Reduced Threes') and the 3 per cent Consolidated ('Consols') both managed by the Bank which thus extended its influence. By contrast, the South Sea Company became a passive investment vehicle for its stockholders.⁴¹ It was wound up by William Gladstone in 1853.

The Seven Years War, the American War and the French Wars

The South Sea episode combined with Walpole and Pelham's reforms to create a national debt based on liquid, low interest perpetual bonds that could be redeemed via the sinking fund. While the national debt had been tamed, this relatively efficient machinery had also created the capacity to borrow ever greater amounts should the need arise. Indeed, by the time of Pelham's second conversion, Britain was again at war with France. The Seven Years' War (1756-63) raised the debt from £75 million (*c.* 100 per cent of GDP) to £133 million (*c.* 157 per cent of GDP). When the opening shots were fired in the American War of Independence (1775-83), a growing economy had reduced the relative burden to *c.* 106 per cent of GDP even if the nominal burden was only marginally reduced to £127 million. By the time peace was concluded with the Americans in 1783, the nominal debt had nearly doubled again.

The size and duration of the debt now made it unlikely the principal would ever be fully repaid, a reality reinforced by Prime Minister Lord North's policy of issuing deeply discounted debt.⁴² North wanted to issue 5 per cent perpetuals but was beholden to the underwriters required to guarantee the money would be raised. At a time of war, the underwriters understandably preferred to purchase liquid, deeply discounted bonds that were less likely to be redeemed when interest rates eventually fell after the war. This reflected Walpole's observation that creditors were

⁴¹ In 1723 the South Sea Company's capital was split into 50 per cent Stock and 50 per cent what became known as 'Old South Sea Annuities' that paid 5 per cent until 1727 and 4 per cent thereafter. In 1733, the Stock was split again with 75 per cent of the capital used to create 'New South Sea Annuities' paying 4 per cent. The East India Company's role in the debt was also diminished.

⁴² By issuing bonds below par, the government increased the national debt by £115 million during the American War of Independence while taking in only £92 million, Slater, *Short History*, p. 55.

increasingly interested in being repaid later rather than earlier. North made a virtue of his weakness, arguing the low coupon bonds were better for the taxpayer since ‘it was the interest that the people were burdened with paying of, and not the capital’.⁴³ This was accurate to the extent the bonds were perpetual. Should the government ever wish to repeat Pelham’s trick and convert the Consols to lower coupon securities, however, then the deeper the initial discount the higher the cost of redeeming at par. But conversion of discounted debt at par was a distant prospect for North who maintained that the government’s liabilities were restricted to its annual payments.⁴⁴

A more immediate prospect was the purchase of discounted debt by a new sinking fund. The foremost exponent of the sinking fund was the nonconformist Reverend Dr Richard Price. Price decried the national debt for increasing the power of the state and the monied interest, for the ‘tribute’ paid to foreign debt holders, and the fact that the necessary taxes raised prices and burdened trade and manufacture.⁴⁵ Price’s scheme differed from Walpole’s in that debt purchased at a discount would be held by the sinking fund and the interest income used to purchase increasingly more debt. The fund’s income would therefore compound faster than the annual contributions from earmarked taxes, ultimately allowing the entire debt to be extinguished. Despite being lampooned for some of his more outlandish claims, Price convinced Pitt the Younger to set up a new Fund in 1786, this time with the greater ‘commitment mechanism’ of independent Commissioners for the Reduction of the National Debt.⁴⁶ The Commissioners would devote £1 million of earmarked revenue to redeem debt trading at or above par, and buy and hold debt trading below par.⁴⁷ The income generated would purchase additional debt each quarter, to stop the fund becoming ‘large enough to tempt the cupidity of a finance minister’.⁴⁸ For the same

⁴³ Quoted in Hargreaves, *National Debt*, pp. 68-9.

⁴⁴ Ibid.

⁴⁵ Ibid, p. 92

⁴⁶ Price argued that a sinking fund earning compound interest could be financed with additional loans at simple interest. This neglects the fact that unless taxes are raised to cover the borrowing costs, the new borrowing also takes place at compound interest. Hargreaves writes of Price that ‘scarcely anything can be said in his favour’, Hargreaves, *National Debt*, p. 97.

⁴⁷ The Commissioners comprised the Speaker of the House of Commons, the Chancellor of the Exchequer, the Master of the Rolls, the Accountant-General of the Court of Chancery, and the Governor and Deputy Governor of the Bank of England.

⁴⁸ Ministerial access to a large sinking fund could potentially reduce parliamentary oversight of spending; E.A. Ross, ‘Sinking funds’, *Publications of the American Economic Association*, vol. 7, no. 4/5 (July - Sep., 1892), p. 14.

reason, when the fund's income reached £4 million per annum (estimated after 28 years), it would no longer buy and hold discounted bonds, but only redeem debt as per Walpole's fund.

Within seven years of Pitt's fund becoming operational, Britain was again at war with France. When the Revolutionary Wars began, the debt stood at £232 million (c. 117 per cent of GDP). When the Battle of Waterloo brought the Napoleonic Wars to a close, it stood at £834 million (c. 250 per cent of GDP) with debt servicing consuming more than half of government spending after the postwar retrenchment. This was despite higher taxation, including the new and deeply unpopular income tax at rates of up to 10 per cent, covering more than half of government expenditure in the last decade of the war.⁴⁹ Pitt correctly anticipated a long drawn-out conflict and rather than letting the floating debt (mainly Navy and Ordnance bills) accumulate as during previous conflicts, he executed four major funding operations. Like North, Pitt would have preferred to issue less nominal debt at higher interest rates. Like his predecessor, he was forced to issue deeply discounted 3 per cents, thereby further increasing the nominal amount of the debt and the cost of any eventual conversion or redemption.⁵⁰

In line with Dr Price's prescriptions, the government continued its contributions to Pitt's sinking fund during the war, despite having to borrow at higher interest rates to redeem lower yielding debt. Professor Robert Hamilton estimated this alone added £16.5 million (c. 2 percent of the 1815 total) to the national debt.⁵¹ Furthermore, the new debt was contracted in depreciated currency after the suspension of gold convertibility in 1797. It had to be serviced in stronger currency after convertibility was resumed in 1819, and without the revenues generated by the income tax which was repealed for the second time in 1816. In its favour, the government could argue that the sinking fund had raised the price of 3 per cent

⁴⁹ When the income tax was first repealed in 1802, the public records were immersed and pestled in water tubs. In 1815, the records were burned although it later emerged that copies had been kept by the Public Remembrancer, Slater, *Short History*, p. 90.

⁵⁰ The nominal debt increased by £336 million between 1793 and 1802 for cash receipts of just £223 million. For an account of loan contractors, see A.B. Leonard, 'Marine insurers, the City of London, and financing the Napoleonic Wars' in J. Hoppit, D.J. Needham and A.B. Leonard, *Money and markets: essays in honour of Martin Dauntton* (Woodbridge, 2019), pp. 55-69.

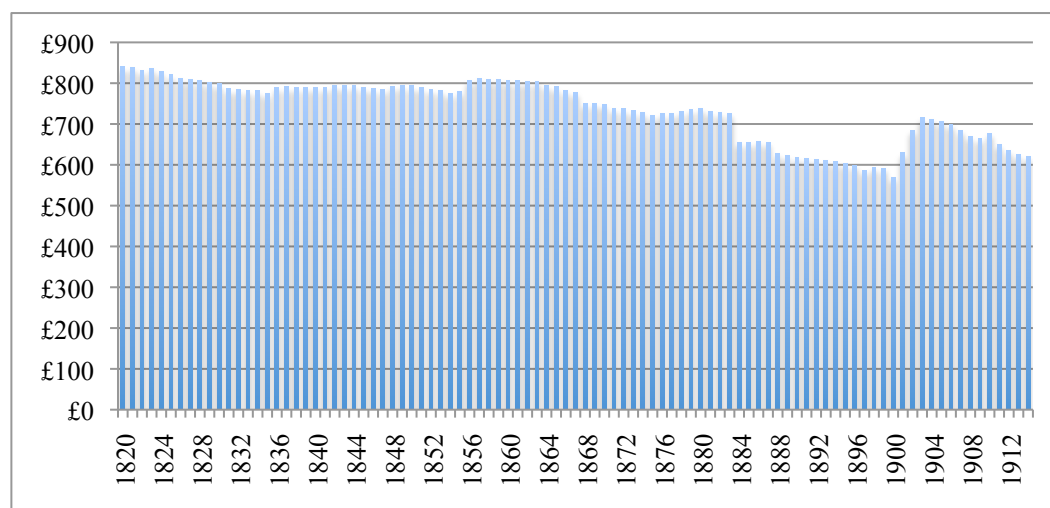
⁵¹ Quoted in Hargreaves, *National Debt*, p. 136.

Consols, allowing more to be issued at the correspondingly lower yield.⁵² It could also argue that issuing 3 per cents was actually cheaper than issuing higher coupon bonds since the underwriters demanded a higher yield on Four or Five Per Cents given the higher probability of post-war redemption.⁵³ Be that as it may, sinking fund payments had kept taxation and borrowing at higher levels than would otherwise have been the case. Pitt's sinking fund was unwound in 1829, at which point the debt held by the Commissioners was retired.⁵⁴ Walpole's fund remained, although it relied for its income on 'accidental' surpluses created by departments under-spending against their projections.⁵⁵

Gladstonian finance

As Figure 1 shows, the national debt fell dramatically as a percentage of GDP between 1820 and 1913. Figure 3 shows that the nominal debt burden fell less dramatically, from £840 million to £625 million across the same period.

Figure 3. The national debt, 1820-1913 (£ millions)



Source: Bank of England.

⁵² Hargreaves, *National Debt*, p. 106.

⁵³ This is to ignore the additional cost of converting more deeply discounted bonds.

⁵⁴ The National Debt Commissioners met regularly until 1860 when their duties were delegated to the Comptroller General and the Assistant Comptroller (both civil servants). At the time of writing, there are ten Commissioners, with the Chancellor of the Exchequer, the Governor and the Deputy Governors of the Bank of England (the 'active' Commissioners) empowered to take decisions.

⁵⁵ The conversions of 1830, 1834, 1844 and 1853 did more to reduce the debt burden than the sinking fund, Hargreaves, *National Debt*, pp. 160-2.

The average price level was slightly lower in 1913, so most of the reduction in the relative burden came from economic growth. Figure 3 also shows that, despite nearly a century of peace (colonial, Crimean and Boer wars notwithstanding), significant reductions in the nominal debt came only after the introduction of Gladstonian finance in the 1850s.

Gladstone was determined that a Chancellor should never have ‘to go begging to the Bank’.⁵⁶ This meant reducing the aggregate debt burden so that governments would have greater borrowing capacity in the event of future national emergencies such as war.⁵⁷ But Gladstone also believed in low taxation – letting the money ‘fructify’ in the pockets of the people.⁵⁸ These constraints shaped a policy in contrast to the 1720s. Rather than converting terminable annuities into perpetual debt as the South Sea Company had done, Gladstone converted perpetual debt into terminable annuities.⁵⁹ This rested on the belief that repayment of the capital component of the terminable annuity was a legal requirement. In this respect, Parliament *could* bind its successors by forcing them to fund the principal, as well as the interest, on public debt instruments. As Slater explains, ‘if the public could be induced to switch their perpetual annuities into new, long-term but finite annuities, the debt would be put on an automatic path to extinction with only a moderate current sacrifice’.⁶⁰ But Consols had become an attractive, liquid investment, with some trustees legally prohibited from receiving principal repayments.⁶¹ In the event, as in the seventeenth and eighteenth century operations, the principal converters were investors over which the government exercised some sway, in this case the Post Office Savings Bank and the Trustee Savings Banks.

⁵⁶ J.D. Tomlinson, *Problems of British economic policy, 1870-1945* (London, 1981), p. 46.

⁵⁷ The impact of diminished coal stocks on industrial supremacy added to the renewed focus on reducing the national debt, W.S. Jevons, *The coal question; an inquiry concerning the progress of the nation, and the probable exhaustion of our coal mines* (London, 1865).

⁵⁸ HC Deb, 4 April 1867, vol. 186 c. 1138.

⁵⁹ Spencer Perceval had taken a similar approach in 1808, Hargreaves, *National Debt*, p. 155.

⁶⁰ Slater, *Short History*, p. 103.

⁶¹ The declining capital value of terminable annuities as they approach maturity creates problems for trustees charged with maintaining the capital value of investments. Also, income tax was charged after 1842 on the entire annuity which included a portion of capital repayment.

Gladstone's former private secretary Stafford Northcote had more success in reducing the nominal debt burden.⁶² Northcote's 1876 'New Sinking Fund' (as opposed to Walpole's existing 'Old Sinking Fund') legislated for annual payments of £27.215 million (rising to £28 million) to cover interest charges, with surpluses going towards redemption. This approach proved more sustainable because most of the £28 million went on the unavoidable servicing of terminable annuities rather than more avoidable purchases of existing debt. The growing economy also generated healthy tax revenues, reducing the pressure for voted revenues to be diverted, while the low interest environment permitted Chancellor Goschen to reduce the rate on Consols from 3 per cent to 2¾ in 1889.⁶³ After a further reduction to 2½ per cent in 1903, and with the debt standing at just 38 per cent of GDP, the servicing cost comprised around 15 per cent of government spending.⁶⁴

'This hideous war memorial'.⁶⁵

The British 'business as usual' war strategy in 1914 rested on bankrolling allies with larger armies to do most of the fighting while the Royal Navy blockaded the Germans into submission. The British government preferred to keep its labour force at home, producing munitions and the exports required to pay for imports of food and war matériel. The strategy changed in 1915 as the French army proved insufficient match for the Germans and Lord Kitchener raised his conscript army. Britain had entered the war with the national debt at 27 per cent of GDP, consuming about 17 per cent of government revenue. But only about a quarter of the British war effort was paid for with taxation.⁶⁶ By the Armistice, therefore, the debt had grown nearly ten-fold, and would continue to grow as a percentage of GDP until 1923 as, following a postwar restocking boom, the British economy entered a deep depression in the spring of 1920.

⁶² When Gladstone left the Tory Party in 1846, Northcote remained. He succeeded Gladstone as Chancellor after the Conservative election victory in 1874.

⁶³ This was despite the government extending its reach with the 1868 purchase of the telegraph system, the purchase of Suez Canal shares in 1875 and increased loans to local authorities via the Public Works Loans Fund.

⁶⁴ Treasury bills were introduced in 1877 and comprised c. 1 per cent of the National Debt in 1913.

⁶⁵ Hugh Dalton referring to the First World War debt in 1927, quoted in M.J. Daunton, *Just taxes: the politics of taxation in Britain, 1914-1979* (Cambridge, 2002), p. 60.

⁶⁶ Hargreaves, *National Debt*, p. 246.

In 1914, the national debt was composed almost entirely of 3 per cent Consols. By 1919, more than £2 billion of the £6.1 billion sterling debt was concentrated in one dated issue, the 1917 5 per cent War Loan repayable between 1929 and 1945. This issue was so large because the holders of the previous war loans could switch into it. With their initial investments quickly falling below par, most of them did. The 1917 War Loan was unlikely to be converted while higher interest rates were required, first to rejoin and then to stay on the gold standard. Britain rejoined the gold standard at the pre-war parity of 112.75 grains of gold (worth \$4.86) to the pound. As Keynes argued this was almost certainly overvalued since it assumed that relative prices would resume their pre-war level i.e. higher UK wartime inflation versus the United States would be reversed. It also took little account of the fact that earnings on overseas capital, which had comprised *c.* 10 per cent of GDP, had been reduced as assets had been sold down to pay for the war. An overvalued pound required high Bank Rate to attract the overseas capital required to balance the external account. But after the War, New York exerted a larger gravitational pull on international capital flows. Only when the gold standard was abandoned in September 1932, and monetary policy independence was regained with the cheap money policy of 2 per cent interest rates from June 1932 could the conversion take place. Most of the stock was converted into 3.5 per cent perpetuals, redeemable after 1952 with the interest saving equivalent to 2.1 per cent of government spending in 1932.

There was also a new element to the national debt – borrowing in foreign currency, in this case US dollars. In 1913 Britain had been the largest global creditor with £4 billion of overseas capital representing about 44 per cent of all overseas investment. Because of her superior credit standing, the Americans insisted on channeling their Allied lending through Britain. Indeed, Britain was a net dollar creditor at the end of the war, having lent more to Allies such as France and Russia than she had borrowed from the Americans and Canadians. But France would not pay until she received reparations from the Germans and the Soviet Union would not pay under any circumstances. After honouring her American debts in the 1920s, Britain resorted to token payments in 1932 before stopping all payments in 1934.⁶⁷ The US Congress responded with the Johnson Act, excluding sovereign defaulters from US

⁶⁷ D.J. Gill, 'An economic and political history of the United Kingdom's unpaid First World War debts to the United States of America, 1917-2018', unpublished PhD thesis (Cambridge, 2020).

capital markets. This caused difficulties at the start of the Second World War when the British were forced to pay for supplies with existing reserves ('cash and carry') before Lend Lease was introduced in 1941.⁶⁸

'Victory at all costs'⁶⁹

The Second World War was longer and even more expensive than the First, with the British contributing an estimated 84 per cent of GDP.⁷⁰ Unlike the Great War, less than half was paid with borrowing. This was partly because the country entered the war with debt still around 140 per cent of GDP. By 1946 the debt stood at about 240 per cent of GDP. Nonetheless, servicing the debt in 1946 consumed less than 10 per cent of government expenditure, about a third of the share in 1923 as the immediate imposition of capital controls and financial repression in 1939 enabled Britain to fight a 'Three Per Cent War'.⁷¹ Approximately a third of the additional debt comprised short-term instruments: Treasury bills, Tax Reserve Certificates and Treasury Deposit Receipts (see Glossary). Just under a third comprised products designed for smaller savers such as National Savings and Post Office Savings, with the remainder (c. £6 billion) in longer-term debt.

Foreign assistance came mainly from the Americans in the form of Lend Lease, but only after most of Britain's remaining dollar assets had been sold to pay for supplies under the cash and carry system. Before the US entered the war President Roosevelt was constrained in the assistance he could offer. But from 1941 his government could 'lease' matériel – without financial compensation – to 'the government of any country whose defense the President deems vital to the defense of the United States' until it was either destroyed or returned.⁷² Even after Pearl Harbor, the Americans sought to avoid the debt entanglements that had caused such difficulties after World War One, providing Britain an estimated \$31.4 billion of

⁶⁸ The 1930s Neutrality Acts prohibited the transport of US goods and passengers to belligerent ports on US ships. British ships could, however, fetch munitions and other supplies from the US if these had been paid for in advance.

⁶⁹ Speech by Winston Churchill, HC Deb, 13 May 1940, vol. 360 c. 1502.

⁷⁰ S.N. Broadberry and W.P. Howlett, 'The United Kingdom: "Victory at all costs"', in M. Harrison (ed.), *The economics of World War II: six great powers in international comparison* (Cambridge, 1998).

⁷¹ *Economist*, 20 January 1940.

⁷² In practice, rather than being returned, most of the remaining equipment was sold to Britain at around 10 per cent of initial cost.

supplies before terminating Lend Lease in 1945. This was equivalent to about half the increase in the UK national debt over the course of the war. After the war, denuded of overseas assets and with her export industries struggling to regain pre-war production levels, Britain's external position remained precarious and she was forced to borrow \$4.4 billion from the US in 1946.⁷³ Unlike the American debt accrued during the First World War, this 50-year loan at 2 per cent interest was finally paid off in 2006, albeit after several suspensions.⁷⁴

There was another international debt legacy of the Second World War – the sterling balances. These were obligations to allies that had provided goods and services to Britain during the war, particularly those countries, like Egypt and India, that had quartered Empire troops. Unlike the United States, these countries could not afford to provide assistance at a very steep discount. Instead, they accumulated over £3 billion of sterling balances at the Bank which they could, in theory, withdraw or exchange for dollars at any time. In practice, the Bank had insufficient reserves to pay, and the sterling balances hung like a sword of Damocles over British governments until the mid-1970s.⁷⁵ The threat of a weaker pound or a current account deficit would force the government to reduce aggregate demand – contributing to the 'stop go' policies often blamed for Britain's relative economic underperformance during the postwar 'Golden Age'.⁷⁶ The external debt also prolonged the financial repression imposed in 1939, with capital controls remaining in place until 1979 and the clearing banks required to keep a percentage of their loans in liquid assets, primarily Treasury bills, until 1981.

We have reached the part of the Figure 1 where the national debt declined as a proportion of GDP even faster than during the nineteenth century. Once again, this was a period largely free of expensive wars. This time, however, the nominal debt increased as its ratio to GDP decreased (Figure 4).

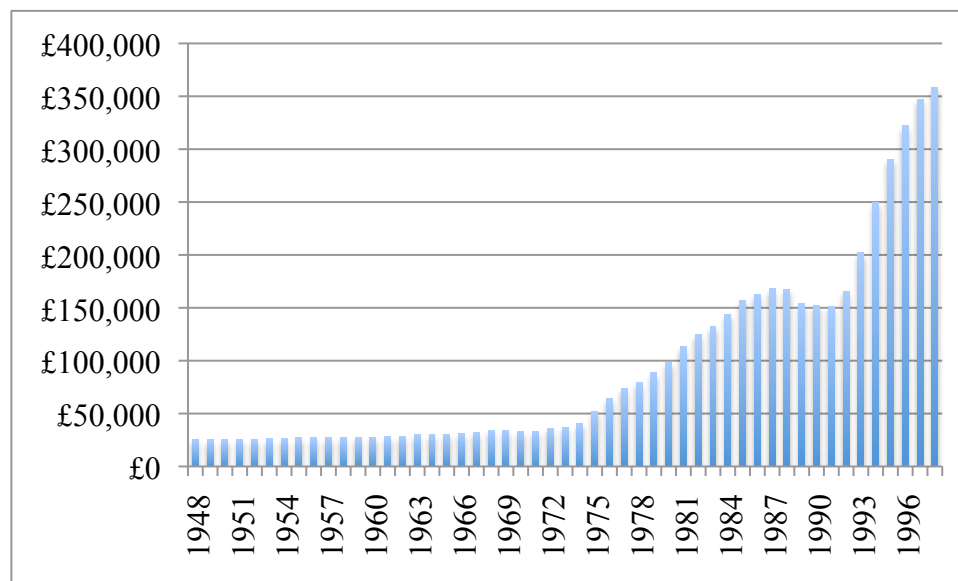
⁷³ Canada contributed a further \$1.19 billion.

⁷⁴ Interest payments were suspended in 1956, 1957, 1964, 1965, 1968 and 1976. The 5-year grace period before payments started in 1951 reduced the interest rate below 2 per cent, Gill, *Unpaid First World War debts*, p. 230 and p. 256.

⁷⁵ The sterling balances were finally neutralized after the 1976 IMF deal, C.R. Schenk, *The decline of sterling: managing the retreat of an international currency, 1945-92* (Cambridge, 2010), p. 392.

⁷⁶ Samuel Brittan writes that 'Chancellors behaved like simple Pavlovian dogs responding to two main stimuli: one was a 'run on the reserves' and the other was '500,000 unemployed', S. Brittan, *Steering the economy* (Harmondsworth, 1971), p. 455.

Figure 4. The national debt, 1948-98 (£ millions)



Source: Bank of England.

In 1946 £24 billion of debt was equivalent to *c.* 250 per cent of GDP. By 2008, £557 billion of debt was equivalent to just 35 per cent of GDP. About 30 per cent of the percentage drop was attributable to real GDP growth. The rest was attributable to inflation, with the price level more than thirty times higher in 2008 than in 1946. Unlike the Victorian purchaser of Consols who could expect their investment to hold its value, a buyer of the 1932 debt redeemed in 2015 had lost more than 98 per cent of their purchasing power. To safeguard against the implied default of inflation, the Labour government introduced indexed-linked National Savings contracts in the 1970s with the Thatcher government issuing index-linked gilts in 1981.⁷⁷ In 2019, index-linked gilts comprised *c.* 25 per cent of the national debt.⁷⁸

Conclusions

This article opened with an 1848 quote from Macauley which explained why, despite the fears of ‘wise men’, the growth of the national debt had not brought Great Britain

⁷⁷ M.J. Oliver and J. Rutterford, ‘The capital market is dead’: the difficult birth of index linked gilts in the UK’, *Economic History Review*, (forthcoming, 2019).

⁷⁸ Slater, *Short History*, p. 202.

to bankruptcy and ruin. The eighteenth-century British fiscal-military British state borrowed sums that would have been unthinkable before the Glorious Revolution placed the King in Parliament and the financial revolution gave birth to the Bank of England. Walpole and his contemporaries were concerned enough to set up sinking funds, trusting to the arithmetic of compound interest. But they were also politicians for whom lower taxes were an enticement to 'lay hands' on the revenues required for the sinking fund to work. In the nineteenth century, salvation lay instead in economic growth. As J.R. McCullough pointed out in 1845:

the stupendous inventions and discoveries of Watt, Arkwright, Crompton, Wedgwood and others have hitherto falsified all the predictions of those who anticipated national ruin and bankruptcy from the rapid increase of the public debt.⁷⁹

The compounding effect of economic growth, much more than the efforts of politicians such as Gladstone, reduced the real debt burden from *c.* 250 per cent of national income in 1820 to just *c.* 30 per cent by 1914.⁸⁰ Just as war raised the national debt in the long eighteenth century, so war raised it again during the first half of the twentieth century. Britain exited the Second World War with a debt burden similar to that after Waterloo. It was again reduced to *c.* 30 per cent by 2002 even more rapidly through a combination of inflation and unprecedented economic growth in the largely peaceful postwar period. With an inflation target now part of the orthodoxy, significant debt reduction will have to come from real economic growth and, hopefully, the avoidance of major wars.

⁷⁹ J.R. McCullough quoted in Hargreaves, *National Debt*, p. 167.

⁸⁰ The population of Great Britain grew from *c.* 18 million to *c.* 42 million so the per capita debt also fell significantly.

Glossary

Annuities are bonds that pay annual coupons but do not repay principal at maturity. They could be (finite) **terminable annuities** that lasted for one or more lifetimes or **perpetuities**.

A debt **conversion** involves the voluntary exchange of debt for cash, a new asset (e.g. South Sea Company shares) or, more commonly, a new obligation with different terms such as a lower interest rate.

Government **lotteries** usually offered a fixed annuity to 'losing' ticket holders with bonuses for the 'winners'. Lotteries were also attached to loan issues to encourage subscriptions and lower the average cost of borrowing.

Perpetuities are bonds with no fixed maturity date, such as the 3½ per cent Consols launched in 1752. In practice, after the American War the government usually retained the option to redeem perpetuities, sometimes after a minimum term. For instance, the 1917 5 per cent War Loan, redeemable after 1929, was converted in 1932 to 3½ per cent (redeemable after 1952).

Sinking funds purchased government debt, sometimes after a conversion had released tax revenue previously earmarked for servicing the debt at higher, pre-conversion interest rates. The debt could be retired or held to maturity with both approaches relying on compounding. In the first case, as the cost of servicing the debt declined with retirements, increasingly more earmarked revenue could be diverted to retire increasingly more debt. In the second case, the fund's increasing income could be used to buy increasingly more debt. Both approaches relied on the government, and its successors, staying the course i.e. not diverting previously earmarked revenue or raiding the sinking fund for other purposes.

Tax reserve certificates paid 1 per cent interest on balances received for pre-payment of tax from 1941.

Tontines added lottery features to a group annuity to reduce the overall cost to the government. In 1692, for each £100 subscribed, holders (or their nominees) received a £10 annuity, secured on additional excise duties, until 1700. Annual payments after 1700 comprised a £7 annuity (per £100 subscribed) from a total pot of £70,000, plus a (lottery) share of the pot left over due to other nominees dying. When seven nominees remained the payments ceased upon the death of each nominee. In 1783, the last nominee died having received a payment of £1,081. There were two further tontines in 1766 and 1789.

Treasury Deposit Receipts were non-transferable 6-month instruments that provided a less liquid alternative to, and paid slightly less interest than, Treasury Bills during the Second World War. The government used TDRs to withdraw liquidity from the banks.