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Crowding in during the Seven Years' War☆

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ABSTRACT

We present a financial history of the Seven Years' War (1756–1763) using a new dataset derived from the Bank of England minutes. We argue that the war and the associated actions of the Bank of England led to a transformation of the financial system. Additionally, while there was short-term crowding out of private investment when interest rates rose due to the issue of war-related government debt, in the long-run there was crowding in: government spending led to an increase in private sector investment.

1. Introduction

The Seven Years' War (1756–1763) was a global conflict among European powers. It was rooted in territorial and colonial disputes, and reshaped the geopolitical landscape, marking a pivotal moment in world history. We provide evidence that during the Seven Years' War, England's financial system crowded in private investment in response to public (mainly military) expenditure. The quantity of debt financed increased, even as interest rates rose to draw external funding, supporting a remarkable financial system and keeping the Bank of England's gold reserves from falling too low.[1] When short-term interest rates rose – or were raised by financiers in the City – they kept exchange rates from falling. This drew in foreign funds to the City of London. While the financiers also demanded higher rates from the government, the rates paid by the government rose by less than short-term interest rates did. These relatively low rates on government debt made the funding of the debt easier and more sustainable, particularly over the long run. The Bank of England's funding of short-term government debt was a backstop, but not on a steadily growing basis. Short-term government debt earned the same rate as long-term debt, due to a risk premium, because it was not necessarily funded.

This policy facilitated a substantial – yet sustainable – increase in government debt over time. The central question revolved around the feasibility of raising taxes to realistically cover the interest on this debt. At times of war, when government needs were high, the Bank supported private commercial activity, but at a relatively high interest rate: 5 per

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[1] Crowding out occurs when government borrowing competes with the private sector for savings and private investment decreases. By contrast, under crowding in, increased public spending leads to increased private sector spending. When public and private investments are complements, an increase in government spending can lead to an increase in the investment of private firms as well. As with crowding out scenarios, the effect of public spending on private spending can operate through interest rates, but we interpret it more broadly as also potentially operating through other channels.

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cent, instead of 3 per cent. Ultimately, there was a massive increase in the Bank's financing of the private sector: while the average from 1751 to 55 was less than £500,000, that from 1766 to 70 – when interest rates were similar, 3 per cent – was more than five times that amount.[2] Hence, over the long run there was crowding in, not crowding out.[3]

The model of crowding out assumes that when government borrowing increases, investors need to move funds out of alternative private investments to buy government bonds. Thus, private investment is crowded out. By contrast, when there is crowding in, investible funds increase alongside the needs of government. We see this in the Bank of England balance sheet as short-term lending to government increased by 50 % over the war years from 1756 to 1763 and short-term lending to the private sector more than quadrupled. As a result, even though the market rate on prime bills increased in response to the increase in the government demand for funds, the money market was supported by the expansion of Bank of England lending. Notably this took place without a significant increase in the overall size of the Bank's balance sheet, as short-term lending (private and public) increased from 19 % to 38 % of the balance sheet.

In short, crowding in was made possible due to a process of the Bank learning how to make effective use of its balance sheet. While, of course, the Bank did not account for the whole of the money market, its place at the core of the money market was well established even in the second half of the 18th century (Sissoko 2016, p. 6). This capacity for supporting the money market is what protected the money market from shrinking during the Seven Years' War when the demands of government grew heavy.

The eighteenth-century financial system, with the Bank of England at its centre, contrasts with the goldsmith bankers' decentralized system in the seventeenth century, prior to the 1672 Stop of the Exchequer. In the latter context, there was crowding out: goldsmiths drew money from throughout the country by offering 6 per cent and used the funds received to finance government debt at 10 per cent (Roseveare 1991, p. 20).[4] This situation persisted throughout Europe after the War of the Spanish Succession (1701–14), in the early days of the Bank of England, as money market speculation – such as the South Sea Bubble – often paid more than business investment (Roseveare 1991, pp. 59).[5] But over time, and most clearly by the time of the Seven Years' War, government borrowing from the Bank of England was leading to the development of a financial system with actively traded government debt, and to the deepening of short-term and long-term debt markets.[6] This financial system was a pillar of Britain's overseas military victories in the mid-eighteenth century, leading to the preservation of the North American and West Indian markets (Dickson 2016, p. 11; Sissoko and Ishizu 2021). These markets became crucial sources of demand for exports and providers of imported goods and raw materials, with significant economic and fiscal consequences (Palma 2016; Dal Bó et al. 2022; Sissoko 2022b).

Compared to previous work, our work is innovative in several ways. O'Brien and Palma (2020; 2023) present an overview of the symbiotic relationship between the Bank of England, the state, and the private economy over the eighteenth century, while Dickson (2016) and Roseveare (1991) stop their analysis before the Seven Years' War and Sissoko (2022a, 2022b) focuses on the period after the Seven Years' War. By contrast, we present the first detailed study of the nexus between the Bank of England, the English state, and the economy, with a focus on the period of the Seven Years' War.[7] Our findings contrast with the views of those who argue that there was considerable crowding out in eighteenth-century England (Williamson 1987; Temin and Voth 2005, 2013), and provides evidence for crowding in at an earlier period than that considered by Heim and Mirowski (1987).[8] Our analysis suggests that military spending due to the Seven Year' War had positive spillovers, particularly after some time.[9] Our evidence hence supports the viewpoint defended by Neal (1990, p. 201), who noted implicitly that British war finance in the eighteenth century crowded in domestic investment, particularly in the growing manufacturing sectors that exported consumer goods. Army and navy expenditure peaked in real terms during the Seven Years' War years – having only been surpassed by the later French wars from the 1790s (O'Brien and Palma 2023, p. 310). Yet government spending at this time led to lower private interest rates, via additional business opportunities, investments, and economic growth. The Bank of England kept the exchange rate from falling by raising short-term interest rates and drawing in foreign funds to London.[10] It raised rates on government debt, but by less than short-term interest rates rose, so the state remained funded and solvent over the long run. Our findings complement prior research which suggests that the English economy was increasingly monetized (Palma 2018, 2020), and confirm the existence of a symbiotic relationship between the Bank of England and the City of London more than a century before Bagehot's doctrine (O'Brien and Palma 2020; 2023; Sissoko 2022a, 2022b).

2. Evidence from the bank minutes

The basic outline of the role played by the Bank of England in financing the British government in the early 1750s is described in Dickson (2016) and Roseveare (1991). Due to their emphasis on the Financial Revolution, they focus on the period until 1756. Drawing on the Bank of England minutes, we expand on their work with greater quantitative precision and cover the period of the Seven Years' War,

[2] The price level was approximately stable during the period we cover (Broadberry et al. 2015). In fact, despite some second-order fluctuations over time, as late as the early 1770s it was similar to what it had been in 1700. Accordingly, for simplicity we do not deflate current prices in our analysis.

[3] While the motivations behind the Bank's increase in private sector lending remain obscure, it appears that the Bank learned that an increase in short-term lending to the government could be combined with an increase in short-term lending to the private sector, as the increase in government obligations had the effect of increasing liquidity in the money market.

[4] Goldsmith bankers were offering the maximum legal rate (6%), which had the effect of draining private investment funds that could have flowed elsewhere. Hence this raised the rate others had to pay to borrow on private markets. The return on mortgage lending, for example, rose during 1665-89, relative to prior and subsequent decades (Allen 1988).

[5] In developed economies today, the private sector pays a risk premium over government bonds, but in the early modern period the opposite was often the case because it was not possible to take the ruler to court. Yet in England, from 1720–39 the market judged the public sector to be less risky, hence the government's funding costs were lower than those of the private sector (Henriques and Palma 2023).

[6] In short, there was increased liquidity, including via advancing credit to individuals who in turn bought government debt.

[7] It has been noted that the Seven Years' War is an under-studied period (Browning 1971).

[8] Clark (2001, p. 417, 421) finds little support for crowding out in the data on private rates of return from 1727 to 1840, but proposes that if there was an increase in the supply of loanable funds, then it is possible that crowding out in fact took place. Temin and Voth (2005, p. 346), in turn, acknowledge that a negative impact of government borrowing "may have been largely short-term in nature" and could have been "outweighed in the long run" by a "positive institutional impulse of creating a pool of liquid, low-risk securities".

[9] Aschauer (1989) argues that non-military public expenditure can generate crowding in, but has a more pessimistic view towards military spending.

[10] The London and Amsterdam markets were closely integrated during this period (Neal 1990). In fact, during the Seven Years' War, the government was enjoying a strong market for its long-term debt, mainly in the form of Three Per Cent Consols in Amsterdam (Neal, 1977, 2015). Additionally, Amsterdam played a complementary role in financing the Seven Years' War on the European continent (Quinn and Roberds 2015, 2024). The superior performance of the British financial system was anchored by the Bank of England in a way that could not be matched by the Bank of Amsterdam.

which we argue was critical to establish British financial, and by consequence, military dominance.

In times of peace prior to the Seven Years' War, around £3.75 million of the public debt was financed in two ways. First, there was an annual issue in late July or early August of up to £2.5 million in Exchequer Bills held by the Bank, but with up to two-thirds funded by a subscription of private individuals.[11] Second, there was an issue at the start of the calendar year of £1.25 million in Exchequer Bills funded by the Bank in exchange for an advance on the year's Land and Malt (i.e. beer) taxes.[12] For exceptional needs, the Bank was also willing to fund Exchequer Bills as an advance against a statutory right to the revenue accruing in the Sinking Fund.

In the existing literature, the big picture focus of the Financial Revolution is on the funded –long-term – debt (Roseveare 1991, p. 61). But major innovations during the Seven Years' War took place in the context of a bilateral relationship between the Bank of England – which on a year-to-year basis financed mostly short-term debt – and the government. These innovations have been overlooked.[13]

In the early 1750s, the Bank was financing the government debt – not an annual government deficit. That is, in these years of peace, the Bank supported the government by rolling over £2.5 million financed by Exchequer Bills but did not support an increase in the amount financed. Furthermore, the role played by the Bank in the Exchequer Bills that were backed by taxes was to help the government efficiently manage the flow of its annual receipts, which did not involve the financing of an annual deficit. This situation was about to change dramatically with the Seven Years' War.

2.1. Exchequer Bills funded by subscription

While it is possible to characterize the £2.5 million in unsecured funding as a simple loan from the Bank to the government, from the Bank Directors' point of view the Bank was underwriting a private placement of government debt. The subscription was a contract that (to use modern terminology) had the effect of structuring this issue of Exchequer Bills into two tranches. The Bank held the senior tranche and was protected by the subscribers who held the junior tranche and were paid a premium for taking on the contractual obligation of protecting the Bank in the event of a liquidity crisis. The Bank was protected from excessive exposure to any single individual by limiting the amount of the subscription that any one person could hold to £5000, or a little less than one-third of one percent of the total.[14] This is not how, typically, the literature discusses the relationship between central banks and the private sector financiers (e.g. Calomiris and Haber 2014). Hence, it is worth exploring the structure of the subscriptions in more detail.

Whenever large sums were being raised on the stock or money markets, the norm throughout the eighteenth century was that the investor was expected to pay only a portion (typically 10 per cent) upfront when the investor 'subscribed' to the issue. The remainder would be collected in a series of calls that depending on the security being issued might, or might not, be expected to occur. In particular, when the government in the late eighteenth century was issuing long-term debt, the full amount was expected to be called over the course of the year. By contrast, for privately issued stocks, the proprietors of the company in question typically did not call the full amount, because the uncalled obligations of the shareholders were viewed by creditors as a guarantee fund if the corporation ran into trouble, and thus played an important role in supporting a corporation's borrowing capacity.

In the case of the subscriptions 'for circulating Exchequer Bills', investors were required to pay 10 per cent up front. They entered into a contract lasting exactly one year, typically starting in October or November, engaging themselves to be 'subjected to a call or calls for the Remainder (not exceeding one-fifth part at a time) on ten days' notice'. For taking on this obligation, the investors were paid 4.5 to 5 per cent per annum on the funds invested (that is on the money that they actually paid in, 10 per cent of the total).[15] Any additional funds called up would pay 5 per cent.[16]

Dickson's data on the Bank's income from circulating Exchequer Bills through the early 1750s indicate that only in 1753 did the whole £2.5 million remain outstanding for long, and that it was more typical for significantly less to be outstanding (Dickson 2016, p. 387). Thus, the Bank was being paid 3 per cent per annum, while paying out something less than 0.5 per cent of the whole to the subscribers, for a net income of a little over 2.5 per cent on the transaction. In the meanwhile, the subscribers were being paid almost twice that for funding the junior tranche of the loan – and for taking on the risk of insuring the Bank against a liquidity crisis.

The subscription was underwritten in the form of a private placement with each Director responsible for placing 2.3 per cent of the subscription and the Governor and Deputy Governor each responsible for approximately 25 per cent of the subscription. When in 1745 the Bank did issue a 20 per cent call – with the option of paying in 90 per cent – it was successful in raising funds amounting to 24 per cent of the issue (Dickson 2016, p. 386). This call was, perhaps, not a surprise as the Bank had in 1745 raised the premium paid to subscribers from 6.5 per cent to 9 per cent (Dickson 2016, p. 384). In 1755 the premium was raised from 4.5 per cent to 5 percent, and in 1756 to 6.5 per cent where it remained through 1759.

Peacetime financial developments in England may, however, have caused a deterioration in the subscription system. In 1753, it was reported that some subscribers would realize their gains on the interest rate premium immediately by selling their subscriptions on the market (Dickson 2016, p. 385).[17] And there does not appear to have been any mechanism by which the Bank could ensure that those who ultimately held the subscription were likely to have the capacity to meet a call in a liquidity crisis. Over the course of the Seven Years' War this situation would trigger a major transformation in Britain's system of public finance.

2.2. Exchequer Bills issued in advance of taxes

In the early 1750s, the other regular form of Bank finance of the government was the purchase of Exchequer Bills that were issued, typically early in the year, in advance of the taxes that would be collected that year. The two most important taxes for which the receipts were financed by such advances were the Land Tax, which was 10 per cent in peacetime, and the Malt Duty, which was effectively a tax on beer consumption. Table 1 shows the Exchequer Bills financed by the Bank

[11] C.D.M., September 26, 1751, p. 35; October 10, 1751, p. 38.

[12] Note that, even though the Bank's minutes describe its actions as 'circulating' Exchequer Bills, this language appears to be a relic of the early eighteenth century, when the Bank did indeed circulate them. By the 1750s, the Bank typically held the Bills on its balance sheet (Dickson 2016, p. 383).

[13] Neal (2015, pp. 100-133) additionally notes how an "ocean of annuities" from the British government inundated the Amsterdam market during the Seven Years' War and considers the interaction between the sovereign debt of Britain and war finance in Europe. Amsterdam played a key role in marketing the long-term debt of Britain during the war, despite its neutrality. This attracted capital: for example, it was the financial aftermath of the Seven Years' War which impelled David Ricardo's father to move from Amsterdam to London to oversee the marketing of 3% Consols.

[14] While the subscription could be as much as £1.65 million, it was more typically a little less.

[15] They were paid 4% plus a premium of 0.05% to 0.1% on the total amount subject to a call (C.D.M. September 26, 1751, pp. 35–36).

[16] C.D.M., September 26, 1751, p. 36; October 12, 1752, pp. 99–100; October 11, 1753, p.159; October 24, 1754, 222–23; October 16, 1755, pp. 278–79.

[17] The existence of this market itself was an important component of the financial revolution.

Table 1
Bank financing of Exchequer Bills: April 1751 to December 1756.

Date	Amount (£M)	Security	Yield paid by Govt	Subscr.	Yield paid by Bank
Aug 8, 1751	2.5	–	3 %	Y	5 %
Jan 29, 1752	0.5	Land Tax 1752	3 %	N	N.A.
Jan 29, 1752	0.75	Malt 1752	3 %	N	N.A.
April 9, 1752	0.5	Land Tax 1752	3 %	N	N.A.
April 16, 1752	1.4	Sinking Fund 1752	3 %	N	N.A.
July 30, 1752	2.5	–	3 %	Y	4.5 %
Feb 15, 1753	0.75	Malt 1753	3 %	N	N.A.
Mar 22, 1753	0.5	Land Tax 1753	3 %	N	N.A.
Aug 23, 1753	2.5	–	3 %	Y	4.5 %
Jan 31, 1754	0.75	Malt 1754	3 %	N	N.A.
Jan 31, 1754	0.5	Land Tax 1754	3 %	N	N.A.
Oct 17, 1754	2.5	–	3 %	Y	4.5 %
Jan 16, 1755	0.75	Malt 1755	3 %	N	N.A.
Jan 16, 1755	0.5	Land Tax 1755	3 %	N	N.A.
Apr 17, 1755	0.5	Sinking Fund 1755	3 %	N	N.A.
Aug 14, 1755	2.5	–	3 %	Y	5 %
Dec 12, 1755	0.75	Malt 1756	3 %	N	N.A.
Jan 15, 1756	1.5 (*)	Land Tax 1756	3 %	N	N.A.
Sept 23, 1756	0.27 (**)	Land Tax 1756	3 %	N	N.A.
Sept 23, 1756	2.5	–	3 %	Y	6.5 %

Sources: C.D.M., volume 18, pp. 27, 57, 71, 72, 89, 120, 125, 151, 177, 221, 235, 248, 269, 288, 293, 335.
Note: C.D.M, volume 18 is the volume of minutes from the Bank's Court of Directors meetings from April 4, 1751, to September 29, 1757. Notes: When no security is indicated, this means that no funding source was given. When N.A. (not applicable) is given for the yield, the Bank held the bills, so no yield is applicable. (*) Land Tax was doubled for 1756 (**). War declared May 17, 1756.

and the taxes dedicated to each Bill issue form 1751 through 1756.

Both taxes would be increased over the course of the Seven Years' War. The Land Tax was typically raised in times of war and lowered in years of peace. Through the early 1750s, it brought in about £1 million and was levied at a rate of two shillings in the pound (Browning 1971, p. 345). Every year the Bank advanced the government at least £500,000 against the security of the Land Tax (Table 1).

As hostilities were ramping up in the months preceding the formal declaration of war, the Land Tax was doubled starting in the year 1756 (Browning 1971, pp. 346–47), and in January 1756, the Bank advanced £1.5 million on the Land Tax. A further sum of £270,000 would be advanced on the Land Tax in September 1756.

From 1752 through 1763, the Bank financed receipts of £750,000 on the Malt Duty. This was not, however, an indication that the duty remained constant through the war. An increase of almost 50 per cent was imposed in 1760, dedicated to the funding of the interest on a long-term debt issue (Browning 1971, p. 347).

2.3. Bank role in government funding

The Bank frequently exhibited a strong measure of independence in its relationship with the government (O'Brien and Palma 2020; 2023). During the early 1750s, the Bank extended new advances against Exchequer Bills only when they were funded. In 1752 the Bank agreed to advance funds on £1.4 million in Exchequer Bills for the purpose of paying off the Navy debt, and in 1755 a similar advance of £500,000 was made. In both cases the Court of Directors approved the loan 'provided they have the security of a clause in an Act of Parliament that the said principal sum … and interest be paid out of the first excesses or surpluses of the Sinking Fund'.[18] In short, the Bank was careful to demand adequate security as a condition of funding the government's issues of Exchequer Bills. This principle of appropriation was a well-established component of the long-term public debt (Roseveare 1991, p. 26), but was applied with much less regularity to issues of short-term public debt, such as Navy Bills, Victualling Bills, Transport debts, and Clothing Assignments (Dickson 2016, pp. 393–406).

Over the course of the eighteenth century, the Bank of England gradually discovered that increased lending on a short-term basis to the government in fact had the effect of supporting liquidity in the private money market.[19] As mentioned in the introduction, this behaviour was different than that of goldsmith bankers prior to the 1672 Stop of the Exchequer. At that time, crowding out did happen, affecting mortgage rates. Goldsmith bankers used to draw money from the country by offering 6 per cent to finance the government at 10 per cent (Roseveare 1991, p. 20). Indeed, there is clear evidence of a rise in the returns on mortgage lending for the period 1665–1689 relative to preceding and subsequent decades (Allen 1988).

When the government decided in 1754 that the duties on sweets were to be carried to the Sinking Fund (and no longer to be managed as a separate account) and that 'the present Exchequer Bills on those Duties' are to be charged to the Fund, the Chancellor of the Exchequer 'acquaints' the Bank with the decision (C.D.M., volume 18). Later the Secretary of Treasury submits to the Court of Directors the exact wording of the text of the bill implementing this change. And the Court proceeds to edit the text of the bill so that it states explicitly that it is the Bank that has advanced funds on the Exchequer Bills in question and that the Bank consents to the alteration in terms (C.D.M., volume 18).

This makes it clear that by 1754 the government had largely accepted that its relationship with the Bank (as with other creditors) was governed by the law of contract, and that the government did not have the power to make unilateral changes to its debt contracts. That is, while the financial settlement of 1690 established the primacy of Parliament and of the rule of law with respect to the monarch (Roseveare 1991, p. 31), there remained the question of the degree to which Parliament itself was subject to the rule of law: did a sovereign's right to alter the terms of payment vest in Parliament? In 1749, this issue arose when the – heavily taxed – 'landed interest' sought to impose a debt conversion on the 'monied interest', including the Bank of England, the South Sea Company, and the East India Company. This happened even though it was far from clear that the government had the right to redeem the debt funded by the Companies. When none of the Companies voted to accept the long-term debt conversion, the plan was at risk of failure. An embarrassing withdrawal of the conversion proposal was avoided only by behind-the-scenes manoeuvring that induced first the Proprietors of the Bank of England to change their vote, and eventually the other Companies too (Dickson 2016, p. 233–39; Sutherland 1946, pp. 26–28).

[18] C.D.M, December 19, 1751; April 17, 1755.

[19] Evidently, external loans were different. For example, in 1749 Pelham anticipated that if the King of Poland had been permitted to raise a loan on the London Market, it would stymie the rise in value of the London funds, and thus prevented it from taking place. This was because Pelham was determined to execute a successful conversion to 3% (Sutherland 1946, pp. 25–26).

This episode makes it clear that Parliament had no interest in challenging the principle that it too was bound to abide by the law of contract: an amendment to the terms of a loan was subject to the lender's acceptance of the change. On the other hand, by the mid-eighteenth century, the contractual structure of the British government debt facilitated such voluntary conversions of the debt.[20] The debt had no maturity date, and thus no creditor had the right to demand a principal payment. At the same time the government had the right to redeem the debt (Dickson 2016, p. 244). As a result, the contractual structure of debt issuance was effectively designed to facilitate conversion after the exigent circumstances that led to its creation had passed.

This structure also meant that the debt could be (fully) funded simply by appropriating a tax that was adequate to pay the interest on the debt. Such funding of the long-term debt was the norm by the middle of the eighteenth century. Increased ministerial responsibility meant that this was now possible on a regular basis (Cox 2016). The principal constraint on debt conversion was that the government, in choosing to abide by contract law, had to stand ready to redeem the debt held by any creditor who rejected the terms of the conversion.

2.4. Bank of England finance and the seven years' war

The opening years of the Seven Years' War (1756–1763) were financed by a doubling of the Land Tax and by new annual issues of long-term debt. While the Bank did issue advances on the Land Tax that reflected the increase in the government's revenue from the tax, through 1759 this was the only indication that the Bank played a role in the finance of the War that differed from the role that it played for government finance in times of peace. Table 2 shows the Exchequer Bills financed by the Bank and the taxes dedicated to each Bill issue from December 1755 through March 1763 when the war ended.

In 1760, however, we see a marked change in the pattern of the Bank's relationship with the government. At the start of the year, we find that the Bank had only advanced half the amount on the Land Tax compared to previous years (Table 2). And in February, the minutes document an extraordinary Friday meeting of the Court of Directors discussing the minutes of a meeting of the Lords of the Treasury that had been transmitted to the Governor. These minutes state that the Prime Minister had spoken with the Governor and Deputy Governor of the Bank and explained that 'as the Bank had refused any further advancements to the Public', Treasury would have to seek authorization from Parliament for the Navy and Victualling Board to issue their own bills to 'be received, as Cash, in all offices of the Revenue'. However, 'if these methods would be inconvenient to the Bank', the Bank could consent to the issue of up to £2 million in Exchequer Bills on the Land Tax of 1760 and the remaining Sinking Fund. The transmission continues to explain that after giving the Governor and Deputy Governor time to bring the matter before the Bank, a 'paper' had been received back from the Bank stating that the Court of Directors had resolved to approve the £2 million in Exchequer Bills. The minutes conclude with the Lords of the Treasury agreeing to the Bank's resolution and ask that 'said resolution may be transmitted to their Lordships, confirmed under the Common Seal of the Bank of England some time tomorrow' (C.D.M., Feb 15, 1760).

The minutes of the Bank state that the Governors deny having delivered said Resolution to Treasury, but only conveyed 'a sense of the Court that they would acquiesce (emphasis in original)'. In any event, the resolution that the Treasury sought was voted on, approved, and sealed. This exchange is remarkable because it documents the Bank slow-walking funding of the War effort in the midst of the War, and

[20] See Dickson (2016, pp. 199-215), for Walpole's reforms of the national debt.

Table 2
Bank financing of Exchequer Bills December 1755 to August 1763.

Date	Amount (£M)	Security	Yield paid by Govt	Subscr.	Yield paid by Bank/Notes
Dec 12, 1755	0.75	Malt 1756	3 %	N	–
Jan 15, 1756	1.5	Land Tax 1756	3 %	N	NB: War declared May 17, 1756
Sept 23, 1756	0.27	Land Tax 1756	3 %	N	–
Sept 23, 1756	2.5	–	3 %	Y	6.5 %
Jan 21, 1757	0.75	Malt 1757	3.5 %	N	–
Jan 21, 1757	1.3	Land Tax 1757	3.5 %	N	–
May 26, 1757	0.2	Land Tax 1757	3.5 %	N	–
Oct 13, 1757	2.5		Not stated	Y	6.5 %
Oct 27, 1757	0.2	Land Tax 1757	3.5 %	N	–
Dec 29, 1757	0.75	Malt 1758	3.5 %	N	–
Dec 29, 1757	1	Land Tax 1758	3.5 %	N	–
Feb 23, 1758	0.5	Land Tax 1758	3.5 %	N	–
Aug 10, 1758	2.5	–	Not stated	Y	6.5 %
Dec 16, 1758	0.75	Malt 1759	3.5 %	N	–
Dec 16, 1758	1	Land Tax 1759	3.5 %	N	–
Jan 25, 1759	0.2	Land Tax 1759	3.5 %	N	–
Nov 5, 1759	2.5	–	Not stated	Y	6.5 %
Dec 14, 1759	0.5	Land Tax 1760	4 %	N	–
Jan 7, 1760	0.75	Malt 1760	4 %	N	–
Feb 15, 1760	2	Land Tax 1760 and Sinking Fund	Not stated	N	–
April 24, 1760	0.316	Land Tax 1759	4 %	N	Note: advance to pay off bills issued in 1757
July 8, 1760	0.5	Vote of Credit	4 %	N	–
Aug 7, 1760	0.178	Vote of Credit	4 %	N	–
Nov 13, 1760	2.5	–	Not stated	N	–
Dec 11, 1760	1	Land Tax 1761	4 %	N	–
Dec 11, 1760	0.75	Malt 1761	4 %	N	–
Feb 12, 1761	0.101	Sinking Fund	4 %	N	NB: Advance to pay off Bills issued on Malt Duty 1758
Apr 6, 1761	0.7	Land Tax 1761	4 %	N	–
July 9, 1761	0.5	Sinking Fund	4 %	N	–
Dec 10, 1761	2.73	–	Not stated	N	–
Dec 10, 1761	1	Land Tax 1762	4 %	N	–
Jan 28, 1762	0.75	Malt 1762	4 %	N	–

(continued on next page)

Table 2 (*continued*)

Date	Amount (£M)	Security	Yield paid by Govt	Subscr.	Yield paid by Bank/Notes
Mar 11, 1762	0.6	Land Tax 1762	4 %	N	–
Aug 5, 1762	2.8	–	Not stated	N	–
Sept 16, 1762	0.4	Land Tax 1762	4 %	N	–
Dec 23, 1762	1	Land Tax 1763	4 %	N	–
Dec 23, 1762	0.75	Malt 1763	4 %	N	–
Mar 3, 1763	0.5	Land Tax 1763	4 %	N	NB: War ended 10.2.1763
Mar 24, 1763	0.5	Land Tax 1763	4 %	N	–

Source: C.D.M., volume 18, pp. 288, 293, 335, 356, 382; C.D.M., volume 19, pp. 2, 5, 16, 17, 26, 59, 85, 91, 141, 150, 156, 164–66, 182, 198, 204, 218, 224, 237, 246, 267, 290, 298, 305, 332, 338, 354, 367, 370, 396.
Note: C.D.M, volume 18 is the volume of minutes from the Bank's Court of Directors' meetings from April 4, 1751, to September 29, 1757. C.D.M, volume 19 is the volume from October 6, 1757, to September 1, 1763.

shows the coercive measures that the government was forced to use in 1760 just to get a standard advance on the value of the Land Tax.[21] A clue as to what might have generated this confrontation is found in April 1760 when the Bank approved an advance on the Land Tax 1759 for the purpose of paying off bills that date from 1757. In short, it appears that the increased Land Tax was not bringing in the £1.7 million per annum anticipated, so that there were arrears of bills that needed to be paid off.

Two other unusual events took place in 1760. In both cases, the Bank advanced money against unfunded Exchequer Bills without any protection beyond the promise of the government to pay. In July and August 1760, the Bank took the highly unusual action of authorizing an advance of £678,000 on Exchequer Bills that was not funded but was issued based on a Parliamentary Vote of Credit.[22] And then in November 1760, for the first time, the Bank's contract to 'circulate' £2.5 million in unfunded Exchequer Bills was not associated with a subscription (Table 2). Thus, from August 1760 on, the Bank was holding these bills only on its own account and was no longer protected by a junior tranche of investors. This pattern was to continue in subsequent years, with some slight increases in the amount of bills circulated.[23]

Aside from the changes in the 'circulation' of the unfunded Exchequer Bills, the Bank's finance of the government for the years after 1760 followed a pattern that clearly built on the pre-war model. Advances on the Land Tax were made in two or three stages every year and added up to £2 million – quadruple the amount advanced in the typical pre-war year – while advances on the Malt Tax were the same as they were in the pre-war years. The question then is this: what happened that culminated in the events of 1760?

[21] Note that the fact that the government occasionally used such measures does not contradict the basic fact that the Bank of England exerted a strong – albeit not perfect – measure of independence (O'Brien and Palma 2020; 2023).
[22] Apparently, this set a precedent for the future, as we find similar votes in later years (e.g. May 16 1793, 153; also 178, 261, 388). Browning (1971, p. 371–72) considers Bank finance on the basis of such Votes of Credit to have been the norm. Dickson (2016, p. 211, n. 5) has a different view.
[23] For background concerning the financial development of selling exchequer bills against earmarked taxes, see Coffman (2013).

3. Crowding out in the short run, crowding in the long run

To understand how the relationship between the Bank of England and the government evolved over the course of the Seven Years' War it is useful to look at the evolution of the Bank of England's balance sheet.[24] Fig. 1a presents the year-over-year change in each asset category as a percentage of total assets. In the first two years of the War, the expansion in the Bank's balance sheet can be largely explained by the increase in Bank holdings of short-term government debt, likely related to the increase in the Land Tax. The year 1758 is different, however: the balance sheet shrank due to an outflow of £2 million of gold, offset in part by a £1 million increase in the Bank's holdings of private securities.

Fig. 1b.

The nearly fourfold increase in the Bank's private sector lending activity from August 1757 to August 1758 together with the outflow of gold is strong evidence that in 1758 Bank lending was supporting the private sector and thus that there was stress on the London money market. The Bank's discount rate on inland bills was 5 %, and on foreign bills it was 4 % from 1746 through 1773 (Clapham 1970, p. 299). There is no evidence that the Bank lent at rates below this level, promoting a boom, or that it lowered its credit standards in other ways.[25] The outflow of gold was also a form of liquidity provision, so it additionally supports this view.[26] Furthermore, as Fig. 2 shows, the Bank's income from discounts almost tripled from fiscal year 1756–57 to the fiscal year 1758–59 (Clapham 1970, p. 301).[27]

Remarkably, money market stress does not show up in the interest rate series for prime bills, which in any case rarely hit the 5 % usury ceiling (Fig. 3).[28] In short, for 1758 there is strong evidence that the Bank was protecting private sector activity by using its balance sheet to absorb money market stress.[29] Additionally, there may have been pressure on the exchange rate with the result that merchant bankers had an incentive to export gold, causing a drain on the Bank's reserves.

By the end of 1758, the Bank was almost certainly worried about the pressure on the money market and the resulting outflow of gold. Unfortunately, the (long-term) loan for 1759 was being negotiated by the

[24] It is not possible to estimate how the Bank of England's private lending affected private consumption and investment due to a lack of detailed national expenditure estimates for this period. Nonetheless, following increased government borrowing, there is no evidence that the private money market shrank, and it continued to finance more economic activity: real GDP per capita grew more than 7% between 1755 and 1763 (Broadberry et al. 2015).
[25] The market rate during this period was 3%. The only way the Bank's business could have increased was for individuals to borrow from the Bank at 4 or 5%. The fact that many were willing to pay these rates is evidence of money market stress. If funds were abundant at 3%, it made no sense to borrow from the Bank.
[26] The outflow of gold from the Bank is an indicator of demand for liquidity and of stress on the money market. Most of the literature on the Bank as lender of last resort has it lending more when there is stress on the market (and thus private demand for liquidity), even though there is some debate concerning when did it become to act in this way systematically (O'Brien and Palma 2023; Sissoko 2022a). Note that the Bank supported individuals by lending to them, and hence supported market prices, but it was in no sense targeting a specific interest rate or price at this time, unlike modern central bank interest rate targeting.
[27] As mentioned in the introduction, the price level was stable between 1700 and the early 1770s. Hence Fig. 2 would look similar in constant prices of a given year, such as 1740 (Broadberry *et al.* 2015).
[28] Note that the Temin and Voth (2005) quantity rationing argument due to the 5% usury limit could only potentially operate when the market interest rate was at that upper bound. Clearly, when the market rate was 3% or 4%, as usually the case, the usury limit was neither binding nor particularly relevant.
[29] James (2012), Kosmetatos (2018), Sissoko (2022a, b), and O'Brien and Palma (2020, 2023), among others, provide evidence that the Bank of England was providing liquidity to the market and acting in other central bank-like ways at times of stress well before Bagehot's dictum in the nineteenth century.

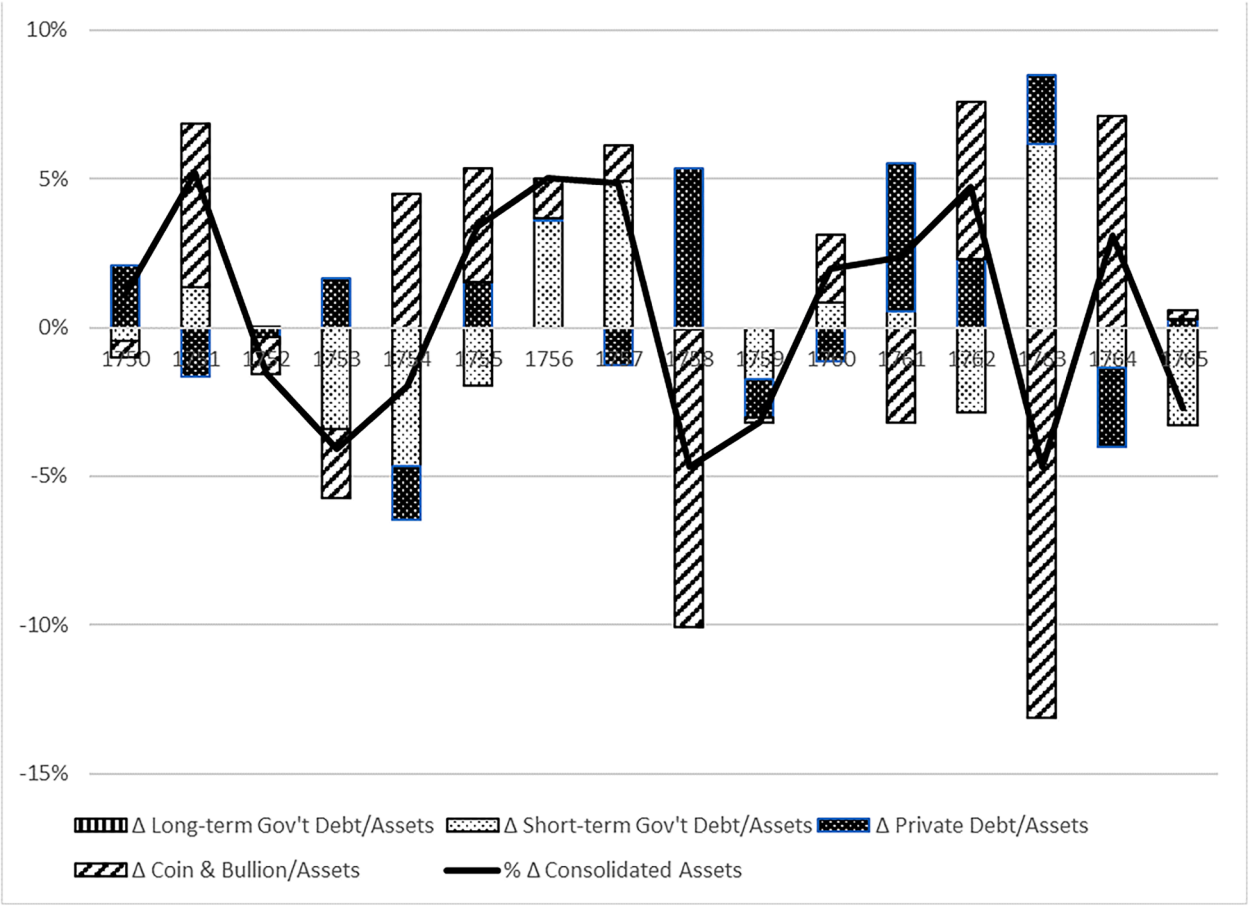

Fig. 1a. Bank of England assets: changes from previous year as a fraction of total assets, 1750–1765.
Source: Thomas and Dimsdale (2017). Notes: The balance sheet data prior to 1763 are August data; that from 1764 on are February data; and the 1763 datapoint is interpolated.

Chancellor of the Exchequer – possibly because the Duke of Newcastle was ill (Browning 1971, p. 366) – and the Chancellor did not have a profound understanding of financial markets. Thus, the government insisted on funding the 1759 loan at a nominal rate of 3 per cent and on opening the issue up to a broader class of investors. Ultimately, however, the 1759 debt had to be sold at a discount, even after lottery-based inducements had been added to the loan (Browning 1971, p. 354).

Given the already weakened state of the money market, the mismanaged funding of the 1759 loan imposed severe strain on it. The Bank had cut back its tax-funded advances to the government by 13 per cent and was forced to cut back the credit it provided to the private sector by shortening the term of the bills that it would discount to 30 days (40 days for foreign bills) (C.D.M., volume 18). The discount rate on prime bills began to rise above 3 per cent and would reach 4 per cent by June (see Fig. 3). To further bolster its position given the money market stress, the Bank sought to issue a call on the subscribers to the circulation of Exchequer Bills, just as it had in 1745. Recall that the Bank was paying 6.5 per cent for this privilege in a market where the typical rate was closer to 3 per cent. The Bank was, however, convinced not to issue the call by an advisor to the Treasury (Browning 1971, p. 370; Dickson 2016, p. 386). It is hardly surprising then that after this episode, the Bank stopped taking a subscription for the circulation of Exchequer Bills (Dickson 2016, p. 384).[30]

Overall, the evidence indicates that the loan of 1759 was issued in a manner that put severe stress on the money market and had the effect of crowding out private sector investments. This then is the environment in which we find the Bank curtailing its loans to the government in early 1760. In order to maintain its holdings of gold it had to limit its lending to both the public and the private sector. Just a few months earlier the Bank had learned that the contractual protections in the form of subscribers to the circulation of Exchequer Bills that it relied on to protect its liquidity in a crisis could not in fact be called upon. Furthermore, the pressure on the money market was apparently also affecting tax receipts as we find the Bank advancing funds in April 1760 to pay off unpaid Exchequer Bills from 1757. For all of these reasons, in early 1760 the Bank dramatically reduced its advances to the government, precipitating the near confrontation described above.

Thus, while the Prime Minister's aggressive approach did successfully induce the Bank to lend in 1760, the Bank's balance sheet (Fig. 1a) indicates that this increase in lending to the government in 1760 came at the expense of the private sector. That is, the balance sheet supports the view that crowding out took place in 1760, as well as in 1759. At the same time, the Prime Minister had stepped in to manage the long-term loan of 1760, which was completed, as was the norm in the past, on a 'closed' or private placement basis, and at the negotiated rate of 4 per cent (Browning 1971). Note that after the painful experience of 1759, subsequent loans would also be issued on a 'closed' basis (Roseveare 1991, p. 65).

Meanwhile, in 1760 gold was flowing back into the Bank and the money market pressures had stabilized at 4 per cent. Thus, in late 1760 the Bank was able to reverse its policy constricting lending to the private sector by re-establishing the policy of discounting bills with two months

[30] Dickson (2016) claims the subscriptions were stopped as of October 1759. But the minutes show that the last subscription is dated November 8, 1759.

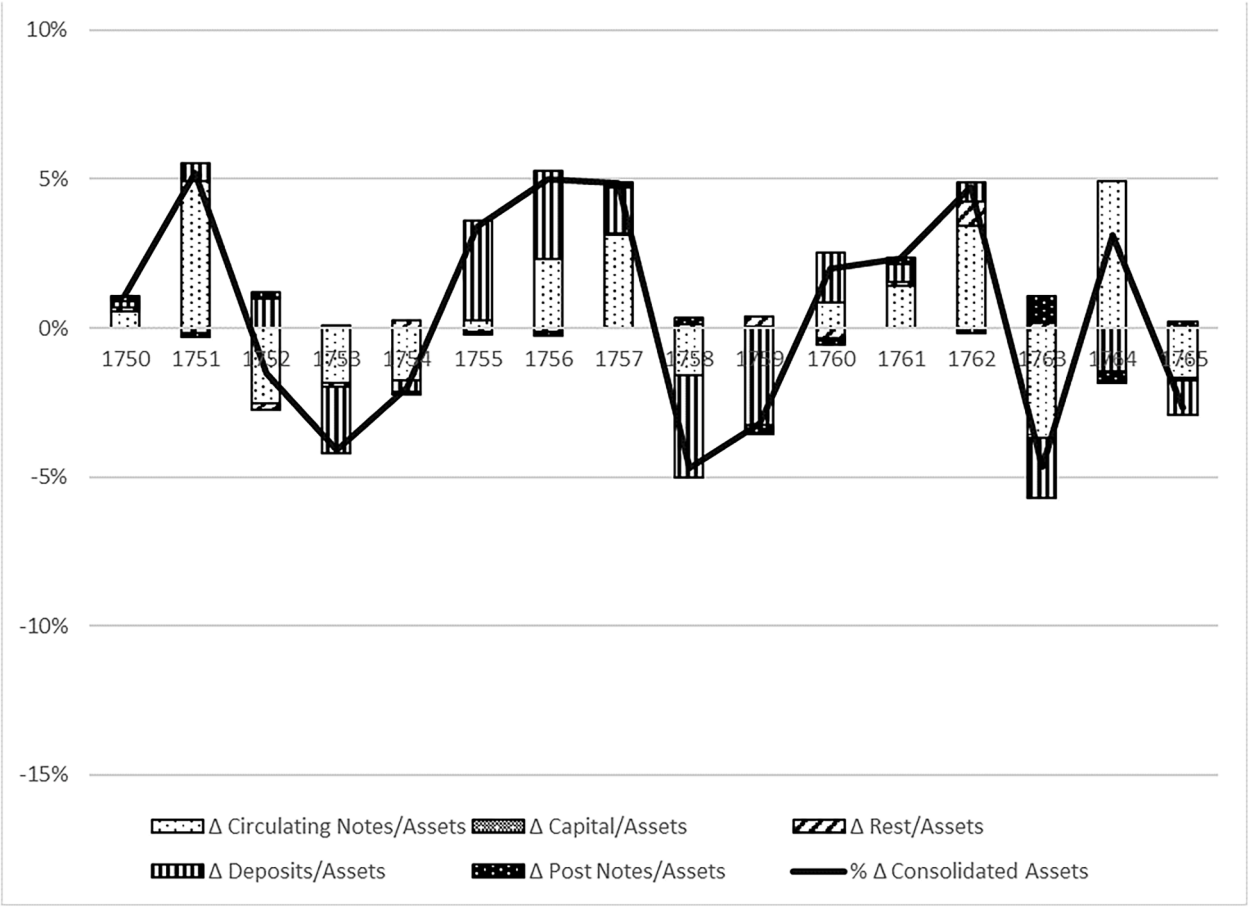

Fig. 1b. Bank of England liabilities: changes from previous year as a fraction of total assets, 1750–1765.
Source: Thomas and Dimsdale (2017). Notes: The balance sheet data prior to 1763 are August data; that from 1764 on are February data; and the 1763 datapoint is interpolated.

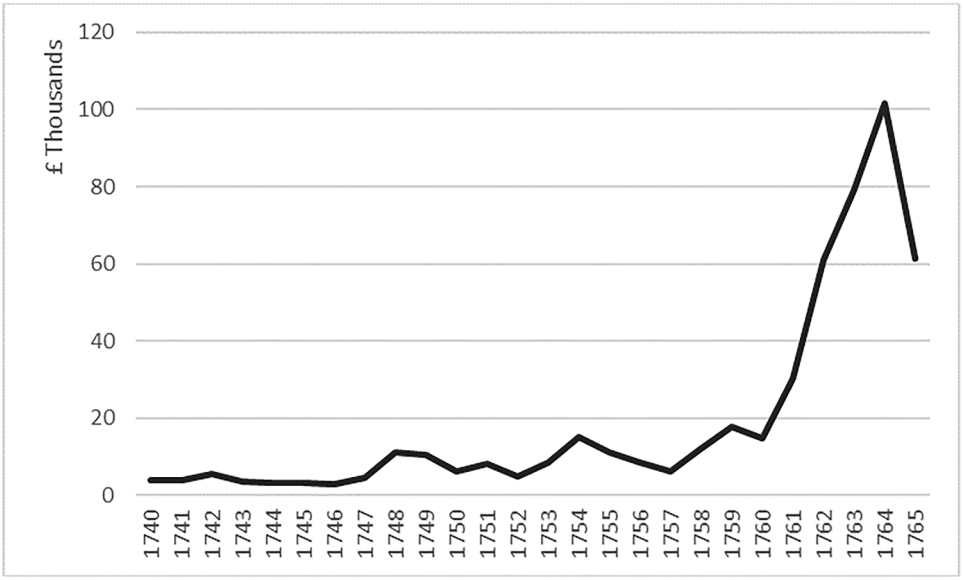

Fig. 2. Discount Income.
Source: Clapham 1945, Appendix B.

to run and reversing the policy adopted in 1759 (Aug 14, 1760; Nov 20, 1760). The Bank stood ready to discount foreign bills at 4 per cent (Clapham 1970, p. 299), so it is unsurprising that the Bank's discount activity and private sector security holdings increased.

From 1760 to 1761 this increase in private securities is accompanied by a decline in gold reserves, indicating that the Bank was still

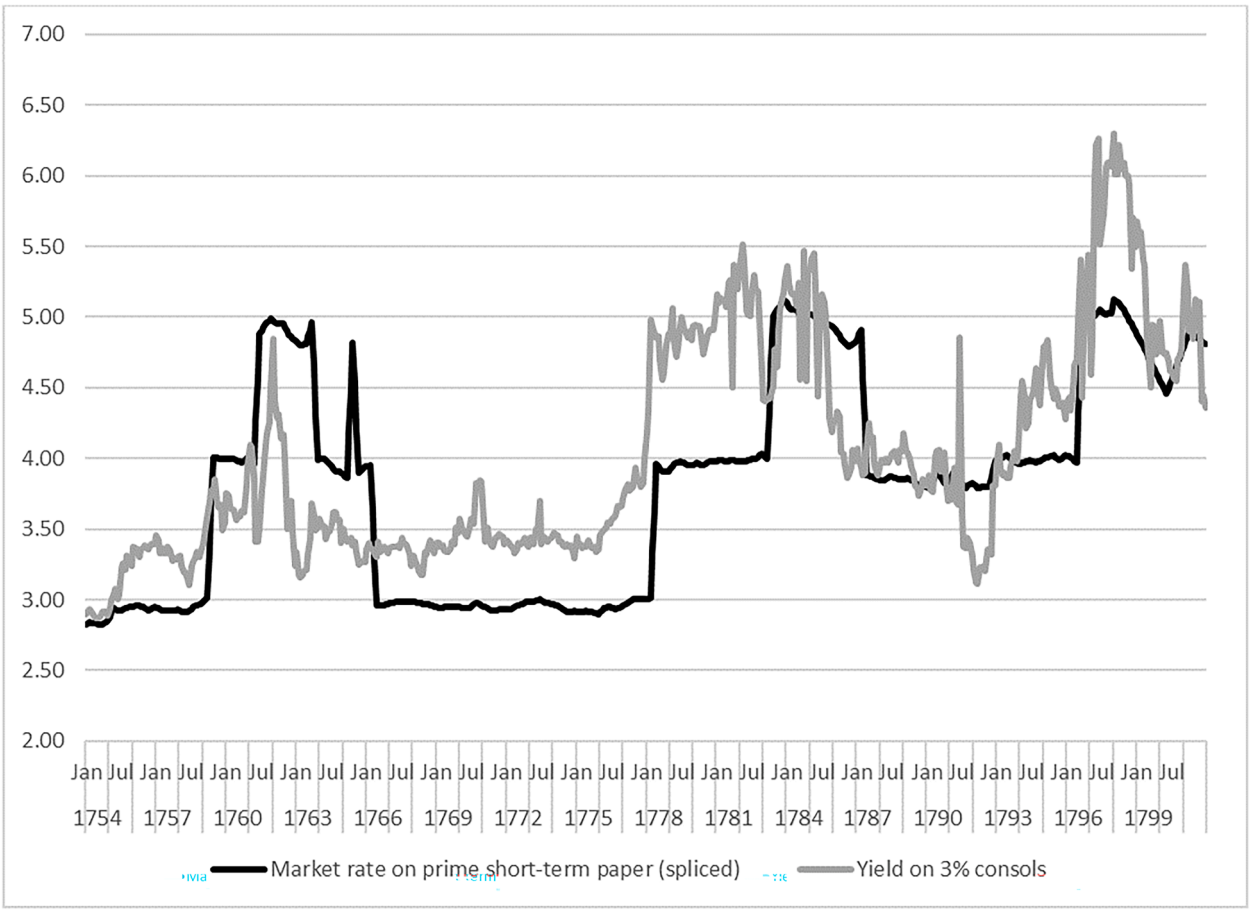

Fig. 3. Interest rates.
Sources: For the discount rate, Thomas and Dimsdale (2017); for consols: Neal (1990)

supporting the private market. This decline in gold reserves was, however, less than one-third of the decline experienced in 1758. And in 1761 the decline supported an increase in private lending that amounted to 150 per cent of the decline in reserves, rather than a fraction of the decline in reserves as had been the case in 1758. This difference is likely explained by yet another rise in the market interest rate that took place in 1761. From March to July 1761, the market discount rate on prime bills increased to 4.9 per cent or by 0.9 percentage points, which almost surely had the effect of drawing foreign gold into England. During this period the Bank's discount rate for foreign bills remained at 4 per cent while the Bank's rate for inland bills held at 5 per cent.

Assuming that the market rate for foreign bills had risen above 4 per cent alongside the market rate for prime bills, one would expect a strong inflow of foreign bills into the Bank as the preferred venue for rediscount. At the same time, the Bank was close to matching the market rate for inland bills, so as compared with previous years a much higher proportion of them would also flow into the Bank. The elevated level of the market discount rate through October 1763 then explains the sixfold increase in the Bank's discount income from fiscal year 1759–60 to fiscal year 1763–64 (Clapham 1970, p. 301) and the related increases in the Bank's holdings of private sector securities. In short, when the prime bill rate came close to the usury limit of 5 %, there was likely not much rationing because of the increase in the Bank's discounts which we document at the time that the 5 % ceiling was binding.[31]

This evidence indicates that the Bank, the City, and the government were learning the power of interest rates in managing the money market. As Boyer-Xambeu et al. (1994) show, merchant bankers had long used changes in the rates of return to address shortages in the local money market and draw in foreign funds.[32] Thus, when City financiers raised the rates they were paying on short-term funds, one of the results – and indeed, likely one of the purposes – was to draw in foreign money market flows.[33]

On the other hand, during these episodes many City financiers would be paying 5 per cent on their short-term debt while earning only 4 per cent on their loans to the government. This is what is implied by the inversion of the yield curve in Fig. 3.[34] Financiers taking this position

[31] See also Flandreau et al. (2006) for evidence that it was in fact possible to earn interests above the usury ceiling using bills of exchange.

[32] We interpret an increase in the market rate as evidence of tightening conditions in the money market. That this had the effect of drawing in foreign funds is a ceteris paribus argument, and one that reflects international flow dynamics widely acknowledged at the time by individuals such as David Hume, Adam Smith, and Henry Thornton, among others. Boyer-Xambeu et al. (1994) provide evidence that prices in short-term markets had long played an important role in directing the flow of international money market resources across Europe. See also Sperling (1962) and Quinn (1996).

[33] Around 15% of Britain's long-term debt was held by foreigners (Clark 2001, p. 426). This is itself evidence in favor of the existence of these flows, and the fact that they played a non-trivial role in Britain's capacity to issue debt at the time (see also Wilson 1941, and in particular pp. 158-66 on the importance of Dutch investment). Additionally, note that this measure of international investment in British government debt has no obvious bearing on the measure of short-term flows in the form of bills of exchange and specie.

[34] For the yield curve to be inverted, it must be the case that investors anticipate difficulty rolling over their short-term loans at the current rate, and likely expect a future decline in the short-term rate.

had to have a long-term view, where they were focusing not on short-term losses, but on the possibility that short-term rates would not remain at such a high level for long. They may also have been relying on money market borrowings to engage in other activities, such as trade with the Continent.

This may also reflect the adjustment of long-term financiers to the reality of the convertibility of their debt. It was better to accept a moderate rate today that the government will have weaker incentive to refinance in the future, than to earn a high rate over a short horizon and find that as soon as the War ended the government would promptly refinance to a very low rate.

Between 1760 and 1761 the British found a way to overcome the problem of crowding out by apparently relying on the broader European bill market and rising interest rates to draw funds into Britain; this was the mechanism that led to crowding in. Gold reserves stabilized, while lending to both the government and the private sector increased.

The market rate on prime bills in London remained elevated, near 5 per cent, through the end of the Seven Years' War. Not until January 1764 did the market rate drop to 4 per cent. In each of 1761 and 1762, the government raised almost £9.6 million on its long-term loan, almost twice the amount raised in 1758.[35] This reduced the need for short-term financing and Bank advances on Exchequer Bills decline from £6.4 million in 1760 to £5.3 million in 1762.[36] An increase in private sector lending by the Bank more than offset the decline in the Bank's government lending from 1761 to 1762. This is clear evidence of a financial system that managed to crowd in, not crowd out, in terms of the quantity of debt financed – even as it used the technique of raising interest rates incrementally to draw external funding in order to support this remarkable system of debt, and to keep the Bank's gold reserves from falling too low.

Indeed, the evidence points to the likelihood that after 1760 the Bank began to deliberately diversify, seeking out exposure to the private sector as a complement to the business it was doing funding the government. Such a policy could easily have been a response to the government's actions in the previous decade and a half: in 1748–49 the Bank had been pushed to reduce the rate paid by the government on its long-term debt to 3 per cent and in 1760 the Bank's short-term financing of the government had been shifted to a largely unfunded basis. Under the circumstances, the Bank may have determined that lending to the government was likely to be less profitable over the long run compared to lending to the private sector where the Bank could set the terms and didn't need to deal with hard-nosed government negotiators. Through the years of the War the Bank steadily increased its private sector discounts, and as Fig. 1a makes clear it was only when the market interest rate on prime bills fell well below the Bank Rate that the Bank saw its private sector business decline.

In fact, just when the market interest rate began to decline, the Bank took active measures to increase its private sector lending. On October 20, 1763, the Bank asked the Committee of Treasury to find a new method for discounting notes that improved upon the policy set on November 7, 1723, that each note needs to be considered by the whole Court. On April 12, 1764, the Bank adopted a policy that the Committee in Waiting plus either the Governor or Deputy Governor (or in their absence, a member of the Committee of Treasury) would consider the notes on Wednesday and divide them into those that are approved and those that are 'deem[ed] dubious' and submitted for consideration to the Court.

This shift in policy successfully reversed the 18 per cent decline in private sector discounts that took place from 1763 to 1764. By February 1767 the Bank's amount of private sector securities were just as high as it had been in August 1763 – even though Bank Rate was almost 2 per cent higher than the market rate on prime bills.[37] By shifting its business towards notes (that undoubtedly even on the market carried higher rates than bills) the bank was able to keep its income from discounts from falling dramatically.

Another policy that illustrates the Bank's desire to take on exposure to the private sector, diversifying away from government, is seen in August 1763, six months after the Peace of Paris, when the Bank advanced funds on the payments due on the (long-term) Loan for 1763.

The end of the Seven Years' War marked a turning point in government finance. Prior to the War, peacetime borrowing by the government was mostly from the Bank in the form of Exchequer Bills. After the War, the government began to issue lotteries every year during both peace and war (Richards 1934). In this new system, the Bank began to play an important role: it advanced the payments on the government's annual lottery to the individuals who subscribed to it. The same system of Bank advances would be used for more substantial long-term loans when they were issued. The Bank then held the long-term bonds under the names of the Governor, Deputy Governor, and a Director, until such time as the private individual had made all of the payments on the debt. Only at this point was the bond transferred to the purchaser.

This financing of lotteries helped put an end to the awkward position in which the Bank had found itself in 1760. When the government came to the Bank for funds, the Bank could offer to support the government in the issue of lotteries. The government got the funds immediately, but the Bank was protected by the obligation of third parties – that is, the individual subscribers. In the meanwhile, if for some reason these individuals fail to pay, the Bank was holding the government's obligation. This helped the Bank avoid steady increases in the circulation of Exchequer Bills. By 1809, only £1.5 million were funded in this way (from a peak of £3.5 million during the later years of the eighteenth century).

4. Conclusion

In this paper we have argued that the Seven Years' War (1756–1763) led to crowding in: higher government spending led to lower private interest rates via additional economic growth and investment. The Bank of England kept the exchange rate from falling by raising short-term interest rates and drawing in foreign funds to London. It raised rates on government debt, but less than for short-term interest rates, so the state was funded and sustained over the long run. There was a symbiotic relationship between the Bank of England, the City of London, and the state (O'Brien and Palma 2023). The Bank of England funded short-term government debt as a backstop, but not on a steadily growing basis. Short-term government debt earned the same rate as long-term debt but was not necessarily funded.

A consequence of the above policies was a massive increase in government debt that was sustainable. What made it possible was the fact that taxes could be raised to pay the interest on the debt (O'Brien, 1988; Cox 2016). This allowed for continued finance of private sector commercial activity, but at a relatively high interest rate (5 per cent instead of 3 per cent) when government needs were high – especially during wartime. Ultimately, a large increase in the Bank's financing of the private sector resulted as well: from an average of less than £500,000 in 1751–55 to more than five times that amount by 1766–70. This

[35] Debt issues in this era are complicated. This figure comes from relying on Roseveare's (1991, p. 65) statement that the £12 million in debt was issued at a 20% discount. The actual issue of debt was at 3% but with a 'bonus' of an equivalent amount of stock paying 1% (Browning 1971, p. 354). The latter was a 99-year irredeemable bond (Browning 1971, p. 356). Note that the yield on the 1762 loan was 4.8% apparently due to additional factors (Browning 1971, p. 353).

[36] While much of the decline is accounted for by a decline from 1760 to 1761, it appears that the consequences of this shift in lending had not appeared on the balance sheet in August 1761, but was only visible on the balance sheet in August 1762.

[37] Note, however, that the Bank's discount rate on foreign bills remained at 4%.

happened when interest rates were similar, 3 per cent, and during a stable inflationary framework (Broadberry et al. 2015). These incremental changes in the symbiotic relationship between the Bank, the City, and the state would culminate by the end of the century in the Bank's pivotal role in the financing not just of the British war effort against Napoleon, but also of private sector British economic activity which was flourishing through most of the war years (Sissoko 2022a; O'Brien and Palma 2023).

CRediT authorship contribution statement

Nuno Palma: Conceptualization, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing. **Carolyn Sissoko:** Conceptualization, Data curation, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing, Visualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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