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David Comerford

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Department of Economics
University of Strathclyde, Glasgow

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David Comerford*

Abstract

This paper examines the apportionment of UK public debt in a hypothetical Scottish independence scenario, making 4 contributions: It (1) explains why central bank reserves are a distinct type of liability; (2) shows that by remunerating all reserves at the policy rate, the UK is making a particularly fiscally costly policy choice, and posits that one rationale for this may be to inflate the debt burden Scotland would bear under independence; (3) proposes criteria for a fair division of assets and liabilities; (4) illustrates how Scotland's and rUK's post-independence balance sheets could be structured, highlighting implications for monetary–fiscal coordination.

Keywords: Quantitative Easing; Scottish Independence; Monetary Policy; Government Debt.

JEL Codes: E52, H63, E58.

*Corresponding author. Strathclyde Business School, Department of Economics, 199 Cathedral Street, Glasgow, G4 0QH, UK. Email: David.Comerford@strath.ac.uk

1 Introduction

The question of how to allocate the United Kingdom's public debt in the event of Scottish independence has long been contentious. In the 2014 referendum campaign, the UK Government asserted it would be the continuing state, HM Government (2013), implying it would retain ownership of all UK assets and responsibility for all UK liabilities – in other words, the rest of the UK (rUK) would honour all UK Government debt then outstanding. This was intended to reassure bondholders and avoid any risk premium on UK gilts before the referendum. However, the UK also indicated that an independent Scotland would be expected to reimburse rUK for a fair share of that debt, by means of a financial transfer or assumption of new debt obligations. At the same time, UK ministers ruled out a formal currency union, meaning an independent Scotland would likely need to issue any new debt in its own currency or otherwise persuade investors of repayment in sterling. During the 2014 debate, Scottish leaders acknowledged responsibility for a population-share of liabilities conditioned on also receiving a population-share of assets (and cooperation on currency) – raising the prospect that if no agreement on currency or assets was reached, Scotland might refuse to service any portion of UK debt. Ultimately, with no deal struck, the UK's position was that it would service all existing debt, while Scotland's notional share would be settled separately in negotiations. These issues underscore that the treatment of debt and currency arrangements are deeply intertwined in any independence scenario.

Since 2014, two major developments have altered the debt landscape. First, the UK's public debt has grown substantially – net public debt stands around £2.375 trillion ($\approx 88\%$ of GDP) in 2023. Since Scotland's population is about 8% of the total UK, a simple per-capita share of debt would be on the order of £190 billion. Second, the Bank of England's massive QE programs (after the 2008–09 financial crisis and during 2020–22's pandemic response) have led the BoE to hold roughly £750 billion of UK Government bonds as assets, financed by creating an equivalent amount of bank reserves as liabilities. This means a large fraction of UK Government debt is effectively owed from one part of the public sector (Treasury) to another (BoE). From a consolidated view, those internal holdings cancel out, but they leave in their wake a large stock of interest-bearing central bank liabilities (the reserves). This new form of public liability – central bank reserves – carries different risks and fiscal implications than traditional bonds, especially as interest rates have risen sharply.

Against this backdrop, our analysis revisits how a "fair" debt split could be achieved if Scotland becomes independent with its own currency from day one. A key consideration is the character of liabilities: which obligations are linked to QE operations and central bank balance sheets, and how should those be accounted for or shared? We argue that fairness should be defined such that each successor state (rUK and Scotland) inherits a comparable

debt burden relative to its economic size, and no windfall gain or loss is created by the act of independence itself. In practical terms, fairness implies that Scottish residents' per capita share of public debt (as a percentage of GDP) remains roughly the same after independence as before. Implementing this is non-trivial given the non-transferability of BoE reserves (which are, and can only be, liabilities of the BoE), and when an independent Scotland would be creating a new currency and central bank.

The remainder of this paper is structured as follows. Section 2 provides background on modern monetary policy in the post-QE era, explaining why interest-bearing central bank reserves function as near-substitutes for government debt, Cochrane (2017) and outlining the institutional practices of inflation targeting central banks. Section 3 examines the issue of central bank losses and balance sheet insolvency: what happens when central banks incur large accounting losses (as is now happening in the UK, US, and Switzerland) and why such losses do not necessarily impair monetary policy effectiveness, Bell et al. (2023). Section 4 compares the UK's monetary policy implementation with that of other jurisdictions, highlighting that the BoE's choice to remunerate all QE-created reserves at full Bank Rate has imposed exceptionally high costs on the public finances. We discuss alternative approaches (such as reserve tiering) and suggest that one motive for the UK's costly regime may be to maximise Scotland's apparent debt burden in any independence settlement. Section 5 then proposes criteria for dividing UK assets and liabilities fairly under independence and applies them in an illustrative scenario where Scotland launches the Scottish pound. We present the balance sheets of rUK and Scotland post-independence, showing that if designed properly, both could maintain roughly equal net debt-to-GDP ratios ($\approx 60\%$) and that cross-holdings between the BoE and SCB would create incentives for monetary cooperation and currency stability. Section 6 concludes with reflections on monetary-fiscal coordination in an independent Scotland and the importance of policy choices in determining the fiscal costs of independence.

2 Monetary Policy in the Post-QE Age

Modern monetary policy has evolved significantly over recent decades. Most advanced-economy central banks now operate under an inflation targeting regime, Bernanke et al. (2001). This framework commits the central bank to a low, stable inflation rate (around 2% annually for many countries) as the primary goal of monetary policy. The main features of inflation targeting, as summarised by IMF economists, are: (i) a public commitment to a specific numerical inflation target (either point or range); (ii) use of inflation forecasts as the de facto intermediate target of policy; and (iii) a high degree of transparency, accountability, and communication with the public about policy intentions. In practice, an inflation-targeting central bank adjusts a short-term interest rate (the policy rate) to influence economic conditions in a way that is expected to bring future inflation in

line with the target. Transparency – via regular reports, press conferences, and sometimes explicit policy rules – is intended to anchor the private sector's inflation expectations and enhance the credibility of the regime.

While short-term interest rates remain the primary tool, central banks in the 21st century have also deployed unconventional policies. Chief among these is quantitative easing (QE) – large-scale purchases of assets (usually government bonds) financed by creating central bank liabilities (bank reserves). QE became widespread after short-term rates hit near-zero in the 2008–09 crisis and again during the COVID-19 pandemic. A related tool is quantitative tightening (QT), essentially the reverse – shrinking the central bank's balance sheet by letting assets mature or selling them. A notable feature of the post-2008 environment is that many central banks now pay interest on reserve balances held by commercial banks. Paying interest on reserves makes those reserves nearly equivalent to short-term government debt. In effect, QE changes the composition of the public's holdings of government liabilities: when a central bank buys, say, a 10-year government bond from the market, the public receives (in aggregate) an increase in reserves (an overnight liability of the central bank) in place of the bond. The consolidated public sector (treasury + central bank) still owes the money, but now in the form of a deposit that pays overnight interest instead of a bond that paid a fixed coupon.

One important implication is that QE has transformed the maturity profile of public debt. In a QE scenario, the government's long-term debt is absorbed by the central bank, and in exchange the central bank issues short-term liabilities (reserves). This can be seen as swapping long-duration government bonds for overnight debt. As long as the central bank's policy rate (and thus the interest on reserves) stays very low, this can reduce government financing costs (indeed, during years of near-zero rates, the BoE remitted substantial profits to HM Treasury from its Asset Purchase Facility holdings). However, once interest rates rise above the coupons on the purchased bonds, the trade turns costly for the public sector: the central bank pays out more on reserves than it earns on the bonds, creating losses that ultimately hit the fiscal accounts. In the UK and many other countries, the reserves created by QE do earn interest at the policy rate. Thus, QE has effectively converted a portion of government debt from fixed-rate long-term bonds into floating-rate overnight debt. The public finance implications are significant – it increases the state's exposure to interest rate rises. In other words, whereas pre-QE the government's interest costs on most debt wouldn't jump until old bonds rolled over, under QE a rate hike by the central bank immediately increases interest expense on the huge stock of reserves.

Central banks have tools to manage the transition out of QE. When policy tightening begins, they can choose between raising interest rates, engaging in QT, or both. Most have treated interest rate increases as the primary lever for combating inflation, with QT as a gradual, secondary process. For example, the U.S. Federal Reserve started QT in 2017

and again in 2022 by allowing a capped amount of bonds to mature each month, avoiding abrupt sales. The BoE in 2022 similarly began QT by stopping reinvestment of maturing gilts and later conducting limited bond sales, while explicitly aiming to "normalise" its balance sheet over years rather than quickly fine-tune monetary conditions. The rationale is to shrink the balance sheet to a more neutral size without disrupting bond markets or liquidity. Under an interest-on-reserves framework, even after QT shrinks reserves somewhat, the policy rate remains the main day-to-day instrument. QT mainly works by steepening the yield curve at the longer end (as central bank demand for long bonds is removed), and by incrementally reducing excess liquidity in the banking system. There is ongoing debate about the optimal future size of central bank balance sheets post-QE. Some analysts argue that a permanently large balance sheet (and ample reserves) can improve financial stability and ensure effective monetary control in a "floor" system. Others – such as former BoE Deputy Governor Paul Tucker – argue that an overly large balance sheet blurs the line between monetary and fiscal policy, and they advocate actively shrinking reserves or not fully remunerating them, Tucker (2022). Indeed, Tucker has argued the BoE should consider whether to adopt a tiered reserve remuneration system (paying interest on only a portion of banks' reserve balances, and zero or lower interest on the rest) to reduce fiscal costs without impairing monetary control, Tucker (2022).

It should be noted that the payment of interest on reserves alters some traditional intuitions about monetary tightening. In a pre-2008 framework, raising the policy rate was unequivocally contractionary: it directly raised borrowing costs and usually increased the government's interest bill only gradually (as old bonds rolled over at higher rates), while reducing bond prices (hurting holders via a wealth effect). In today's framework, raising rates still cools credit demand, but it also has the side effect of immediately paying more interest to banks (on their reserve balances). That is effectively a transfer of income to the financial sector when rates rise, which could be stimulative at the margin (since banks or their shareholders earn more). This does not negate the overall tightening effect of raising rates – which primarily works via credit conditions and expectations – but it illustrates that modern central banking involves more fiscal-monetary interlinkages than in the past.

3 Central Bank Losses and "Insolvency"

As we have seen in the previous section, central bank reserves are indeed assets of the commercial banks and regulated financial institutions that hold them, and therefore they are liabilities of the central bank who has issued them. But this "base money" can only be used within the closed network of accounts created by the central bank to ensure that commercial banks can always pay each other – which means that, in aggregate, the commercial banks cannot freely use this money: this liability of the central bank can

never be called in. In such a case, does the solvency of the central bank matter? This is what we explore in this section.

Large-scale asset purchases and the shift to an interest-bearing reserves system have exposed central banks to greater interest rate risk and potential balance sheet losses. As policy rates have risen sharply from their pandemic-era lows, many central banks (including the BoE, U.S. Federal Reserve, European Central Bank, Swiss National Bank, and others) are now incurring substantial operating losses. For example, the BoE's QE bond portfolio has dropped in market value as gilt yields rose, and more importantly the BoE must now pay a higher Bank Rate on an enormous stock of reserves, while earning fixed, low coupons on the bonds. The result is an operating loss borne by the BoE (and ultimately by HM Treasury under the indemnity for QE). Similarly, the U.S. Federal Reserve in late 2022 halted its regular remittances of profits to the U.S. Treasury and began accumulating a deferred asset (an accounting representation of future losses to be repaid by future profits) – effectively the Fed has negative earnings now because the interest it pays on reserves and reverse repos exceeds what it earns on its bond holdings, Faria-e-Castro and Jordan-Wood (2023). The Federal Reserve's running losses are on the order of $100+ billion annually, and its cumulative deferred loss was about $116.9 billion by late 2023 (and growing). The Swiss National Bank (SNB), which holds large foreign currency investments, reported a record loss of $143 billion in 2022 ($\approx$ 18% of Swiss GDP) due to interest rate increases and valuation losses on foreign exchange reserves, Honohan (2023). Many euro-area national central banks are also recording losses as the ECB's negative-rate policy has given way to positive rates paid on trillions of euros of reserves.

Do these central bank losses matter economically? In a narrow accounting sense, a central bank can operate with losses and even negative equity for a prolonged period without losing its ability to function or achieve its policy targets. Central banks are not normal commercial banks – they cannot be forced into liquidation by creditors as long as their liabilities are in a currency they alone issue. A central bank can always create the currency needed to meet its obligations coming due (an ability a commercial bank does not have). The Bank for International Settlements (BIS) recently reiterated that "losses and negative equity do not directly affect the ability of central banks to operate effectively", Bell et al. (2023). History provides several examples of central banks operating successfully with negative capital. The central banks of Chile, Czechia, Israel, Mexico, and others have at times had negative equity for years, yet were able to meet their price stability mandates throughout. In the early 2000s, for instance, the Czech National Bank carried negative equity for a period due to losses from stabilising its exchange rate, but this did not prevent it from controlling inflation. Academic analyses likewise support the view that a central bank's capital is largely irrelevant to its ability to conduct policy, so long as the fiscal authority ultimately stands behind it. The central bank can carry on with negative equity if it is confident that future seigniorage (profits from money issuance) or an

eventual fiscal transfer will fill the hole. Empirical studies conclude that a "strong capital position is neither necessary nor sufficient for preserving trust in money", provided the government's finances are sustainable and the public expects the government to support the central bank if needed. The key point is that as long as the private sector believes the central bank will honour its liabilities in full (in nominal terms), the credibility of the currency can be maintained.

From a consolidated government perspective, central bank losses do have a real fiscal impact – they are essentially a redistribution between the central bank and the treasury. In normal times, a profitable central bank remits dividends to the government, which count as budget revenue. If instead the central bank incurs losses, it will cease remittances; it may even require an injection of capital from the government if losses persist. Either way, the government's budget is worse off than it would have been without the losses (through lost income or an explicit recapitalisation expense). In the UK, this dynamic is playing out now: during the 2010s, the BoE's QE operations actually generated tens of billions of pounds for HM Treasury (because the BoE earned higher coupons on the bonds than the 0.5% it paid on reserves). Now the situation has reversed – with Bank Rate at 5% and most QE gilts yielding much less, the BoE is paying out far more to banks than it receives, and the Treasury must cover the shortfall. Recent estimates suggest this reversal will cost the Treasury on the order of £30–45 billion per year in the next couple of years (roughly 1.3–1.6% of GDP). Patrick Honohan of the Peterson Institute for International Economics notes that while these central bank losses "matter a bit", Honohan (2023) – in that they worsen public finances and can generate political criticism – they are not a fundamental threat to monetary policy in countries with otherwise sound institutions. The losses can be viewed as the mirror image of the gains during the QE period: the public sector reaped savings when rates were low and is now paying the price as rates are higher. Importantly, these losses in themselves do not impede the central bank's ability to raise rates to fight inflation; they simply mean the treasury must find the resources to absorb the interest costs (by issuing more debt or raising taxes). In other words, central bank losses do not cause runaway inflation or loss of control – unless the government refuses to honour them and forces the central bank to cover the losses by printing money permanently, which could undermine price stability.

Where could central bank losses become more problematic? In theory, if the central bank lacks credible fiscal backing – say, the government is insolvent or politically unable to support the bank – then large losses could lead to a situation where the central bank might have to monetise those losses (i.e. print money in excess) to avoid insolvency, potentially fuelling inflation. Del Negro and Sims (2015) argue that a central bank with a huge balance sheet of long-duration bonds should be willing to ask for fiscal support to maintain effective inflation control; otherwise, if markets expect the central bank to "go it alone" and simply create money to plug holes, those expectations themselves can

drive inflation higher, Del Negro and Sims (2015). This is part of the fiscal theory of the price level: the idea that if the public doubts a government's solvency, they will also doubt the value of its money. In extreme cases, typically in emerging markets with histories of fiscal dominance, large central bank losses coupled with weak government finances have led to a loss of confidence in the currency. Hyperinflationary episodes often involved central banks effectively financing government deficits with money. However, in advanced economies with stable fiscal frameworks, such outcomes are highly unlikely. The historical evidence shows no clear link between episodes of negative central bank equity and inflation in major economies – what matters is the overall credibility of fiscal policy and the commitment to low inflation. For example, the SNB's huge 2022 loss (18% of GDP) did not unanchor the Swiss franc or the SNB's policy, because investors remain confident in Switzerland's fiscal strength and the SNB's mandate. Likewise, several euro-area central banks have run negative equity without issue, as long as their governments' fiscal positions were sustainable.

In summary, the economic significance of central bank balance sheet losses is that they represent a transfer between the central bank and treasury (and ultimately taxpayers and banks), not a collapse of monetary control. A central bank cannot "go bankrupt" in the normal sense as long as its own government backs it and the currency is credible. The real cost of central bank losses is borne by the public finances (taxpayers will shoulder a higher debt or lower revenue), and these losses highlight the close connection between monetary and fiscal policy. Indeed, the QE experiment was never "free money" – if a central bank buys government debt and then interest rates rise, the cost comes back to the sovereign eventually. This is why commentators like Tucker (2022) have emphasised better coordination of debt management with monetary policy, and why critics of QE point to the large interest costs now accruing as a quasi-fiscal expense. Still, the consensus among institutions like the BIS and IMF is that these losses are manageable and worth the macroeconomic benefits QE delivered, so long as governments uphold the central bank's independence and sound fiscal policies. The bottom line: a central bank's negative equity is not catastrophic per se; what matters is the solvency of the consolidated public sector and the credibility of its nominal anchor, not the accounting capital of the central bank in isolation.

4 The Fiscal Costs of the UK's Policy Choices

The United Kingdom's implementation of monetary policy in the post-2009 period has been notable for how it amplified the fiscal exposure to rising interest rates. In particular, the BoE's decision (backed by HM Treasury) to pay Bank Rate on 100% of the reserve balances created by QE – rather than, say, imposing a lower rate or zero rate on a portion of those reserves – made the UK public finances highly sensitive to Bank Rate increases.

By 2023, the BoE had roughly £1 trillion of reserves outstanding to commercial banks (up from virtually zero pre-2008). This enormous liability base was a direct result of £838 billion of QE asset purchases (mostly gilts) that have not yet been unwound. When Bank Rate was 0.1%, the interest paid on reserves was trivial; but with Bank Rate now in the 4–5% range, the annual interest on £1 trillion of reserves is on the order of £40–50 billion. This shift single-handedly turned the BoE from a profit-maker for the Exchequer (remitting cash each year) into a source of large losses to be covered by the Exchequer.

By contrast, other central banks have taken approaches that reduce the fiscal cost of large balance sheets. The European Central Bank (ECB), during years of negative interest rates, implemented a two-tier system that exempted a portion of bank reserves from the most negative rates (to avoid over-penalising banks), but conversely this meant when rates eventually rose above zero, not all reserves were immediately paid the full rate. The ECB phased out its tiering as it exited negative rates, but euro-area governments benefited for years from paying negative or zero rates on a chunk of reserves. The Bank of Japan (BoJ) likewise has a tiered system: under its policy, different tranches of bank reserves earn +0.1%, 0%, or –0.1%, meaning the BoJ effectively does not pay the full policy rate on the majority of reserves. In the BoJ's case, even though it has a huge balance sheet (with asset purchases over 130% of GDP), its short-term rate is still negative and the effective interest it pays on reserves is very low. The upshot is that Japan's government is not facing large interest expenses from its central bank's liabilities – in fact the BoJ still remits profits. The U.S. Federal Reserve, like the BoE, pays interest on all reserves, but there are some mitigating factors: a portion of the Fed's liabilities are in non-interest-bearing cash (which has also grown) and the Fed's profits and losses are effectively absorbed by the Treasury over time (through the deferred asset mechanism). Moreover, U.S. public debt has a longer average maturity than UK debt, so the U.S. Treasury is less immediately sensitive to rate hikes on the portion of debt still held by the public.

In the UK case, the combination of (a) a relatively short average debt maturity and (b) full remuneration of a very large reserve base made the fiscal hit from rate rises especially acute. By one estimate, maintaining the current system will cost UK taxpayers around £30–45 billion extra in each of the next two years if Bank Rate follows market expectations (peaking around 5%). This amounts to roughly 1.3–1.6% of GDP per year – a sizable expense that adds to government deficits. It is reasonable to ask: was it necessary to incur such a large cost? The BoE has defended full reserve remuneration on the grounds that it simplifies monetary policy implementation – banks have little incentive to circumvent the central bank's control of interest rates if all reserves earn the policy rate. BoE officials argue that this "floor" system (where Bank Rate is the floor for interbank lending because no bank would lend reserves at a lower rate than it can get from the BoE) is effective and was essential for QE to work as intended. They also express caution that changing rules (for example, suddenly not paying interest on some reserves) could be seen as a tax on

banks or could disrupt the transmission of monetary policy.

However, others have pointed out that there are viable alternatives. Tucker (2022), among others, suggests that remunerating all reserves at full rate is a policy choice that leans unnecessarily in favour of banks' interests and against taxpayers' interests. A tiered remuneration regime – for instance, paying full interest on only, say, £100 billion of reserves (an amount sufficient for monetary policy needs) and paying zero on the rest – could likely achieve the same interest rate control for the economy, while saving tens of billions for the public sector. Indeed, Tucker estimated that if the BoE paid interest on just about £100 billion of reserves and not on the remaining £847 billion, it could save on the order of £30–45 billion per year in interest costs at current rates. This would, of course, reduce banks' profits (since banks currently receive those interest payments), which is one reason it is controversial.

Critics of the BoE's current approach suggest that the central bank and Treasury have effectively decided to subsidise commercial banks (by paying interest on excess reserves) and then pass the bill to taxpayers, rather than imposing more of the burden on banks. Perhaps political economy considerations play a role: the financial sector in London is influential, and imposing a reserve remuneration penalty might face pushback. Indeed, as Richard Tice, chairman of the Reform UK party (a right-wing party that styles itself as anti-elite and anti-establishment), described it: "real cash, your money, being used to enrich the City of London" via the BoE's payments to banks, Reuters (2024). Tice and Reform UK have proposed to stop paying interest on QE reserves altogether, calling it "gross negligence" that the BoE is handing banks tens of billions funded by taxpayers.

5 You're so vain, you probably think this [policy] is about you!

For the purposes of this paper, an intriguing hypothesis is that the UK Government might be content with the appearance of a large debt burden in any potential Scottish independence scenario. By maximising the interest costs and transferring BoE losses to the Treasury, the headline measure of public debt (and deficit) is higher than it otherwise could be. Therefore, an independent Scotland's proportional share – if calculated from those headline figures – would also look larger, potentially bolstering the argument that independence is financially prohibitive.

Furthermore, by making BoE reserves as fiscally expensive as the net UK Government debt issues (those gilts issued and not in the hands of the BoE), it is essentially the gross UK Government debt liability (irrespective of whether it is owned by the private sector or by the BoE) that needs to split. Were the fiscal cost of central bank reserves to be much lower than that of gilts owned by the private sector, it would be clear that the two

forms of debt burden should be split separately.

To be clear, this is speculative and not necessarily a deliberate policy aim; the primary reason for full reserve remuneration is likely the BoE's orthodox view of how to implement monetary policy. Yet it is worth noting that had the BoE and Treasury chosen a different path (say, a tiered reserves system or other measures to recapitalise the BoE with a non-interest-bearing instrument), the "debt" that would be apportioned to Scotland might appear smaller.

In any case, an independent Scotland would not be obliged to replicate the UK's policy choices. A Scottish central bank could operate with a leaner balance sheet or could choose not to pay interest on certain liabilities (for example, it could issue some non-interest-bearing currency or require banks to hold some reserves as unremunerated). In essence, the fiscal costs we now see in the UK are partly the result of discretionary policy decisions, not an unchangeable economic fact. This underscores that the division of debt at independence, and its burden, will depend not only on the nominal amounts but also on the form of these debt liabilities.

6 Scottish Independence: A Fair Debt Split with a New Currency

We now turn to the scenario of Scottish independence with the introduction of a new Scottish currency (S£) from the outset. We outline a fair division of the liabilities of the UK, highlighting particularly the distinction between government bonds and central bank reserves. This is contrary to HM Treasury (2014) which does not consider whether the counterparty to government bonds is the central bank, and does not consider central bank reserves at all.

The guiding principle for a fair division of assets and liabilities is that no citizen – whether in rUK or in Scotland – should be materially better or worse off in terms of public debt burden because of independence alone. In practical terms, this means each country's debt-to-GDP ratio post-independence should be approximately the same as the UK's was pre-independence (absent any negotiated adjustments for the division of public assets). We assume, for simplicity, that Scotland's GDP per capita is about the same as the UK average (in fact, Scotland is very near the UK mean in GDP per capita, and is in this sense the most average region of the UK). Scotland has roughly 8% of the UK's population, so we will use an 8% share as the fair proportion for Scotland. These assumptions set the stage for a straightforward calculation: the newly independent Scottish public realm (consisting of an independent Scottish Government, and a Scottish Central Bank) inherits 8% of the UK's public debt, this debt being in the form of the net UK Government gilt issues (gilts held by entities other than the BoE) and the BoE reserves backed on its

balance by UK Government gilts.

Let's use round figures approximately equal to the actual figures at the end of 2023, which we assemble from Office for Budget Responsibility (2025) and HM Treasury (2025), to mark the putative point of independence. UK GDP is about £2.7 trillion, and UK public sector net debt is about £2.375 trillion. The consolidated BoE balance sheet size is roughly £1 trillion (mainly the £750 billion in UK gilts from QE plus other assets like foreign exchange reserves and gold, balanced by £1 trillion in liabilities: banknotes, reserves, and the BoE's capital). Pre-independence, the UK's gross debt-to-GDP was 88% (2375/2700), while its net debt-to-GDP was 60% ((2375-750)/2700). Our fairness criterion implies both rUK and iScot should target a debt ratio of 88% post-independence, but that this should be in proportion 60:28 government debt:central bank reserves.

We assume rUK is the legal successor state (continuing the UK's international personality) as is their stated desire. This means rUK keeps the UK's currency (the British pound sterling) and remains the issuer of all existing UK Government bonds (gilts). Bondholders see no change – their bonds remain obligations of the UK Government in its continuing rUK form. Scotland, by launching its own currency, will not be continuing the use of sterling in official transactions. Any debt that Scotland issues will be denominated in Scottish pounds (S£). The practical way to implement Scotland's share of debt is akin to the plan hinted at in 2014: rUK retains liability for all UK gilts, but Scotland issues new debt (in S£) to rUK for the amount of debt it is agreeing to shoulder. In effect, rUK ends up holding Scottish Government bonds as assets, and the Scottish Government therefore owes that amount to the rUK Government. This arrangement has the benefit of not disturbing the gilt market (no need to split gilts or assign them to Scotland) and aligns with the UK's commitment to honour all its existing debt. Politically, it would represent Scotland acknowledging its share of the debt in a new form.

Since the Scottish Government is issuing new debt in the new Scottish currency, we need to discuss the value of this currency. In the new Scottish state, (at the very least) the wage contracts of Scottish public sector employees will be redenominated into the new currency. The ideal situation for the success of the new Scottish state is that the vast majority of all wage contracts, plus mortgage debt, etc, will be redenominated. And of course individuals will have the option to redenominate assets such as bank balances etc. For this to seem "fair" to people, exchange rate stability over the first few years of independence, while the majority of their asset and liability positions transition to a S£ denomination, is paramount. Exchange rate stability is also required for the debt transfer between the iScot and rUK nations. Fortunately, the debt transfer itself promotes exchange rate stability, as we shall see. The actual value of S£1 is arbitrary, what matters is its stability. For convenience we shall suppose that S£1 = £1, and indeed this seems likely to be the actual opening value of any new Scottish pound.

Taking 8% of £2.375 trillion gives Scottish Government debt of about £190 billion.

However, recall that the BoE holds £750 billion of those gilts. One could argue that since those are intra-public-sector, the net debt (excluding BoE-held gilts) is lower (approximately £1.625 trillion). If we consider the net debt excluding QE as the relevant quantity to split (on grounds that the BoE's QE holdings are an asset that will remain with rUK's central bank), then 8% of £1.625 trillion is about £130 billion. Indeed, a reasonable interpretation – consistent with fairness and the 2014 UK Treasury stance – is that Scotland would take on a share of net debt after accounting for the BoE's gilt holdings, because those holdings remain an asset of rUK's BoE. We will adopt this approach: Scotland issues S£130 billion in bonds to the rUK Government. This S£130 billion represents Scotland's public sector debt obligation (in S£) to rUK, and corresponds to 8% of the UK's debt held by the public (i.e. excluding what the BoE owns). The remaining UK gilts (92% plus the BoE-held portion) stay with rUK.

Now, what about the BoE's balance sheet and the SCB? The BoE has assets (gold, foreign exchange, loans, etc.) and liabilities (mainly currency and reserves). Fairness suggests that Scotland should receive a share of the UK's public sector assets, including reserves held by the central bank or gold. An independent Scotland establishing the SCB would likely negotiate to receive a portion of the BoE's official reserves (gold and foreign currency) equal to its population share. Let's assume the BoE's "real" assets (gold, FX reserves, etc., not counting UK gilts) are about £250 billion. An 8% share of that is £20 billion. So the SCB would start with roughly S£20 billion of such assets on its balance sheet (we can imagine this includes gold and perhaps some reserve assets like US Treasuries or euro assets transferred from the BoE). In return, the SCB would credit the BoE with a claim of S£20 billion – effectively, the BoE would hold an account at the SCB denominated in S£, reflecting the assets handed over. This gives BoE an S£20b asset (claim on SCB), and SCB a S£20b liability (owed to BoE), balancing the transfer of reserve assets.

However, the BoE's largest asset was the £750 billion of UK gilts from QE. We assume those gilts remain with the BoE (rUK's central bank). Scotland is not taking on a share of those directly (since it is only issuing bonds for S£130bn to rUK, which only covers its share of net debt). What about the liabilities that financed those gilts: the bank reserves? Pre-independence, the BoE had issued about £750 billion of reserves backed by those gilts (out of £1000 billion total liabilities). On Scottish independence, 8% of those reserve liabilities (around £60bn) should also be in some way "transferred" to the Scottish Central Bank. But in practice, how can reserves be transferred? One way is that the SCB could create S£60bn reserves to be owned by the BoE.

This means SCB would assume 8% of BoE assets (the £20bn of real assets we already noted), while creating Scottish Central Bank reserves totalling S£80bn, all to be owned as assets of the BoE. So, the SCB starts with negative equity of S£60bn. The BoE's balance sheet would have expanded by £60bn, with £60bn of (positive) equity added on

the liability side, counterbalancing the £20bn of real assets lost, and the S£80bn of SCB reserve assets (worth £80bn) gained. M0 (physical cash and central bank reserves) in rUK is unchanged (for the moment).

Let's work through the numbers that result (illustrated in Figure 1 below). We have:

- **UK Government prior to Scottish independence:** Liabilities = £2375 billion (in outstanding bonds). Assets = assume £0 for convenience. Therefore Asset-Liability position = -£2375bn. UK GDP = £2700bn, so debt:GDP = 88%.

- **Bank of England prior to Scottish independence:** Assets = £1000 billion, made up of £750 billion (UK gilts), plus £250 billion (other real assets). Liabilities = its banknotes, reserves, and equity, totalling £1000 billion. Therefore Asset-Liability position, assuming equity as a liability, is tautologically zero. For convenience however, we will assume this equity is exactly zero, if it is not, then the newly independent SCB would be entitled to its 8% share of this value, it being the overall value of the BoE. This is however a reasonable assumption since we may assume that any positive equity value had already been remitted to the UK Government (as used to offset QT losses).

Post independence:

- **Scottish Government:** Liabilities = S£130 billion (in bonds owed to rUK). Assets = assume S£0 likewise for convenience (assuming any population share of UK public assets is accounted elsewhere or offset). Therefore Asset-Liability position = -S£130 billion. Given Scottish GDP of S£216 billion, debt:GDP = 60%.

- **Scottish Central Bank (SCB):** Assets = S£20 billion (foreign reserves/gold from BoE). Liabilities = S£80 billion (newly issued S£ reserves). Therefore Asset-Liability position = -S£60 billion i.e. the SCB is operating with negative equity equivalent to 28% of Scottish GDP, though this is not market debt, it's an internal accounting loss.

- **Bank of England (rUK central bank):** Assets = £750 billion (UK gilts), £230 billion (remaining real assets after giving £20bn to SCB), plus it gains an asset of S£80 billion (a claim on SCB) worth £80 billion. So BoE assets total £230bn + £750bn + £80bn = £1060bn. Liabilities, in the form of banknotes and reserves, remain £1000bn. When all is settled, the BoE ends up with a net positive equity of around £60bn (which it may remit to rUK Government if it so chooses).

- **rUK Government:** Assets = £130 billion (the Scottish bond it now holds). Liabilities = £2.375 trillion (all the original UK gilts remain its liability). So rUK Government's net debt = £2.375tr – £130b = £2.245tr. However, recall that BoE

has £750b of those gilts as assets; consolidated rUK (government + BoE) net debt would subtract BoE's new equity as well.

To clarify, it may be easier to check the net debt/GDP ratios:

- **Scotland:** GDP ≈ S£216 billion (8% of 2700). Government debt S£130b + SCB negative equity S£60b = S£190b of total obligations. That is 88% of GDP (190/216 ≈ 0.88), matching the UK ratio. The Scottish government's formal debt is 60% of GDP (130/216 0.60), and the SCB's negative equity of 28% of GDP (60/216 ≈ 0.28) accounts for the rest.

- **rUK:** GDP ≈ £2484 billion (92% of 2700). rUK Government gross debt £2.375tr, but it holds a Scottish bond asset of £130b, so its net debt is £2.245tr. The BoE's accounts now show a positive equity of ∼£60b (from the S£ claim on SCB). If we consolidate the BoE and government for rUK, the BoE's equity cancels out an equivalent portion of government debt. Thus consolidated rUK net debt is ∼£2.185tr. And indeed, £2.185tr on £2484bn GDP = 88%. In effect, rUK's debt ratio also remains ∼ 88%. Each side shoulders a proportionate burden.

In this outcome, the Scottish Government has a debt of S£130b owed to rUK, and the Scottish Central Bank has a negative equity of S£60b. What does it mean for SCB to start with negative equity? It means that if one were to consolidate the Scottish state's balance sheet, there is an extra S£60b liability unbacked by assets – effectively part of Scotland's share of UK's debt has been channelled through the central bank. The SCB's negative equity arises because the BoE's QE operations left behind a pile of sterling reserves (a liability) which Scotland is taking its share of (though without accepting currency mismatch risk), without taking an equivalent share of the gilts (since those stayed with rUK's BoE, Scotland instead took on the IOU to rUK). As discussed in Section 3, a central bank can function with negative equity. The SCB will not be insolvent in any operational sense – it can create money denominated in its own S£ to meet its obligations as needed. Over time, the SCB might earn profits (seigniorage from issuing banknotes, interest margin on its assets, etc.) that could offset this negative equity. Or the Scottish Government could decide at some point to recapitalise the SCB by issuing more debt and transferring funds (though this would just shift the liability explicitly back to the government). Crucially, the negative equity does not represent debt owed to the private sector; it is essentially an internal accounting between the SCB and BoE (and by extension between Scotland and rUK). The BoE holds a claim of S£60b on the SCB – likely in the form of a deposit or similar – and this is matched by the SCB's negative equity.

The balance sheets described in Table 1 do not represent the end point for the disentanglement of Scotland and the rest of the UK. Quite clearly, the stock of base money

	UK (before independence)	rUK (after)	Scotland (after)
GDP	£2700 billion	£2484 billion (92% of UK)	S£216 billion (8% of UK)
Government debt (bonds)	£2375 billion (gross) *(£1625b net of BoE-held)*	£2375 billion (100% in £) *(liability of rUK Treasury)*	S£130 billion (new S£ bonds owed to rUK) (60% of GDP)
Central bank assets:	£1000 billion (BoE assets) – of which £750b UK gilts, £250b other (gold, FX, loans)	£1060 billion (BoE assets post-split) – £750b UK gilts, ~£230b other, +S£80b claim on SCB	S£20 billion (SCB assets) – (gold/FX received from BoE)
Central bank liabilities:	£1000 billion (BoE liabilities) – mainly reserves, plus banknotes in issue	£1000 billion (BoE liabilities) – mainly reserves, plus banknotes in issue	S£80 billion (SCB liabilities) – S£ reserves
Central bank net equity:	£0 billion (BoE pre-independence net worth)	+£60 billion (BoE net equity)	–S£60 billion (SCB negative net equity)
Net public debt (govt + CB)	£2375 billion (88% of GDP)	£2185 billion (88% of GDP)	S£190 billion (88% of GDP)

Figure 1: Illustrative Balance Sheets Pre- and Post-Independence
Source: Author's Calculations

in existence in both countries, expressed as a share of GDP, is not the same, and its ownership is not distributed similarly. Based on Table 1, M0 as a share of GDP in the UK prior to independence was 37% (1000/27000), with banknotes in existence and owned across the economy, and reserves owned by financial institutions including the commercial banks. Post Scottish independence, M0 as a share of GDP in rUK is 40% (1000/2484), with the rise in this ratio possibly being inflationary (the BoE perhaps wants to shrink its balance sheet). In iScot, M0 as a share of GDP is 37% (80/216), but there are as yet no banknotes, and all the reserves are owned by the BoE.

As economic agents in Scotland decide to exchange their sterling assets (such as deposit account balance) for the equivalent in S£, they will in fact be dealing with the BoE, not the SCB! They, via their commercial bank, could approach the SCB to exchange £s for newly created S£s. However, dealing with the SCB does nothing to reduce the excess supply of £s in circulation, and there is also the possibility of dealing with the BoE. There is no need to create new S£ reserves, the BoE already owns S£80 and can sell these (reducing its assets) in return for £ reserves, which it can then cancel (reducing its liabilities). Then, with commercial banks now able to offer S£ denominated accounts, given the backing of their S£ central bank reserves, customers may want to withdraw hard currency. The SCB can create these banknotes etc, and sell them to commercial banks in return for some of their S£ reserves.

If the overall demand for S£ matches the per capita demand for Sterling prior to independence, then the full S£80bn of the BoE's holdings of SCB reserves will be sold on. This seems unlikely however, and Sterling is likely to be accepted in Scotland for a long time after independence, reducing demand for S£ somewhat (conversely, S£ are unlikely to be used much or at all in the rest of the UK). This lack of demand does not imply currency depreciation however. The BoE and the rUK Government have an incentive to support the value of the S£ so that they receive the real value of the S£ denominated assets they hold as at independence.

This beneficial alignment of incentives stabilises the exchange rate between S£ and £ following independence. rUK (through BoE and the Treasury) holds financial claims on iScot denominated in S£ (the Scottish bond of S£130b and the SCB deposit of S£80b), which means it resists any decline in the value of S£ relative to the £. And even if we assumed that the two central banks did allow the currencies to float freely relative to each other, and if we assume that relative exchange rate movements follow relative economic performance, then this cross holding means that rUK shares in the performance of the Scottish economy:

- Scottish outperformance means that the iScot Government ends up paying more than it should have as it repays the bonds held by the rUK Government, while the BoE makes a profit on currency transactions as it unwinds the SCB reserve asset; so rUK shares in the Scottish success.

- Scottish underperformance means that the iScot Government ends up paying less than it should have as it repays the bonds held by the rUK Government, while the BoE makes a loss on currency transactions as it unwinds the SCB reserve asset; so rUK shares in the Scottish losses.

Both parties thus have reason to avoid extreme fluctuations and could be expected to cooperate – at least initially – to maintain a stable value for the S£ over the early years of independence. Over time, the exchange rate might move based on economic fundamentals, but the existence of these cross-holdings creates a kind of mutual stake: it's in neither side's interest to have the new currency crash immediately. This could encourage an orderly management of the currency transition, possibly with coordinated interventions if needed.

The scenario described shows that by allocating debt in proportion to GDP and carefully dividing central bank balance sheet items, an independent Scotland could emerge with a debt burden comparable to rUK's in relative terms. The Scottish Government's 60% debt-to-GDP ratio would not be especially high by international standards. This addresses one of the common concerns about independence – that Scotland would inherit an overwhelming debt. Here, we see that under reasonable assumptions, Scotland inherits a proportional share.

Finally, it is important to highlight that the fiscal burden of the negative equity held by the SCB (an additional 28% of GDP in liabilities) is a function of the economic policy of an independent Scotland. If the SCB were to pay interest on its S£60bn liability, that would create a fiscal drain (since the SCB would then likely need to be reimbursed by Scottish fiscal authorities for losses). The details of such an economic policy are a matter for the post-independence Scottish Government.

7 Conclusion

This paper has examined how an independent Scotland could take on a fair share of the UK's public debt, accounting for the complex legacy of quantitative easing. By adopting a new currency (the Scottish pound) from the start, Scotland would issue its own debt to rUK rather than formally assuming UK sterling bonds. Our analysis indicates that if done properly, Scotland's debt burden need not exceed what it bore implicitly as part of the UK. In our illustrative scenario, both Scotland and rUK end up with debt of roughly 88% of GDP. Crucially, we decomposed the debt into conventional government bonds and the less-conventional central bank liabilities created by QE. Scotland would inherit a portion of the QE legacy (in the form of the SCB's negative equity), but as we discussed, this is a different kind of obligation than a bond – it can be managed over time and does not represent debt owed to external creditors.

One key insight is that the fiscal cost Scotland would bear is highly sensitive to policy choices. The UK's decision to remunerate all QE-created reserves at Bank Rate effectively inflated the size of the debt-like liabilities. If instead the UK (or Scotland in the future) chooses not to fully remunerate reserves or uses other tools, the effective burden can be reduced. In short, independence doesn't lock Scotland into the UK's current policy framework – Scotland could design its monetary-fiscal coordination in a way that suits its needs (for example, a smaller central bank balance sheet relative to GDP, different operating procedures, etc.). This underscores that the oft-cited headline figures of debt are not immutable; they depend on how monetary policy is carried out. An independent Scotland could, for instance, decide that its central bank will not pay interest on a portion of reserves, thereby sparing Scottish taxpayers some of the costs that UK taxpayers are now incurring.

Our exploration also highlights the importance of monetary-fiscal cooperation between Scotland and rUK at the point of independence. The existence of cross-border holdings – rUK holding Scottish debt, and the BoE holding SCB reserve assets – would tie the two countries' financial fortunes together, at least initially. This could be beneficial: it incentivises both central banks to maintain stability. The BoE would have reason to support (or at least not undermine) the new Scottish currency's value, and the Scottish authorities would have reason to maintain sound policies to honour the debt to rUK. Over time, these ties could be reduced as debts are paid down or restructured. But in the transition, cooperation (for instance, agreements on exchange rate management or lender-of-last-resort facilities during the early days of the S£) would make the split far smoother and build confidence in the Scottish economy.

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