



### 1. Introduction

The argument for Scottish independence has repeatedly foundered on the question of currency. Since the Chancellor, George Osborne, ruled out the prospect of formal currency union between an independent Scotland and the rest of the UK (rUK) in early 2014, a move that was backed by the other major Westminster parties, the question has become central to the referendum debate: Without an agreement that gave Scotland a right to use the pound sterling (GBP) as its national currency, would an independent Scotland be stillborn?

A number of alternative currency arrangements have been mentioned, including membership of the euro; a freely-floating Scottish pound (Stott 2014); a Scottish pound pegged to the pound sterling through a currency board (Constable 2014); and unilateral use of GBP without formal currency union, which this paper will refer to as 'sterlingization' (Bowman 2014). In this paper I will argue for the last of these.

As well as sterlingization, changes to the regulatory environment for Scottish banks would be advisable, including the removal of reserve ratio requirements, capital adequacy regulations (eg, the Basel accords), the reform of deposit insurance laws, and the reduction of barriers to entry for new banks. Coupled with these regulatory reforms, sterlingization could give Scotland a stable monetary arrangement that, paradoxically, made Scotland's economy more stable than rUK's.

Scotland is almost uniquely placed to be able to implement the reforms outlined in this paper, because they largely represent a return to the Scottish 'free banking' era of the 18th and 19th Centuries. As this paper will show, this was an era of remarkable economic and financial stability which only ended when large banks successfully lobbied Westminster for government protections from competition. The continued practice of individual bank issuance of banknotes, a hangover from this period, would make a transition to the arrangements advocated in this paper extremely simple compared to almost any other country.

In considering the viability of sterlingization, the paper will consider international examples of countries that unilaterally use a foreign currency - the 'dollarized' economies of Ecuador,

El Salvador and Panama. Panama, in particular, is a noteworthy example because it is relatively politically stable and wealthy, and has implemented, with considerable success, financial regulatory reforms similar to those that I suggest Scotland makes.

Finally, the paper will outline the mechanics of how a sterlingized Scottish system could work and explain why this system would offer greater financial and macroeconomic stability than any of the alternatives. I will present two options for sterlingization: one relatively conservative path that would nevertheless be a significant improvement on Scotland's current arrangements, and one relatively bold path that would include broad-based reform of the Scottish financial regulatory regime to improve standards and competitiveness in banking while significantly reducing the prospect of bank panics that would lead to financial crises. I refer to this latter, preferred path as 'adaptive sterlingization', because it emphasises the flexible nature of the regime.

This paper takes no position on the Scottish independence debate overall. The purpose of this paper is to answer one question in the debate, and outline how an independent Scotland - and many other countries, for that matter - could flourish by unilaterally adopting the GBP without formal currency union with the rest of the UK. Under this arrangement, Britain's obstinacy could be Scotland's opportunity.

### 2. The Scottish Free Banking Era, 1716-1844

Between 1716 and 1844, Scotland had one of the world's most stable and robust banking systems. It had no central bank, no government-backed lender of last resort, and no bank bailouts. (White 1984: p. 21) When banks did fail, it was shareholders who were liable for paying back depositors, not taxpayers. The economy flourished: in 1750, Scottish GDP per capita was less than half of England's; by the end of the era in 1845 it was nearly the same (and this during the beginning of the Industrial Revolution in England). This was the era of the Scottish Enlightenment - the flowering of the modern Anglo-Saxon intellectual tradition, based on the thought of scholars like David Hume, Adam Ferguson, Robert Burns, and Adam Smith. It was a Golden Age.

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Lawrence H. White's *Free Banking in Great Britain* (1984) surveys this period in impressive detail; this section gives a brief summary of the most relevant parts of White's monograph, which deserves to be read in full for a more comprehensive history of the period and a theoretical treatment of the 'free banking' system. In addition to White's work, Henry Meulen's *Free Banking: An Outline of a Policy of Individualism* (1934); Vera C. Smith's *The Rationale of Central Banking and the Free Banking Alternative* (1990) and Dowd's *The State and the Monetary System* (1989) have all studied this period.

During this period, private banks would issue their own 'banknotes' to borrowers, branded individually, which were, strictly speaking, promissory notes redeemable for specie (gold or silver) on demand. Since redemption rates were low, banks could lend out more than they had in reserve, on the presumption that not all note holders would try to redeem their notes for specie at the same time. This allowed banks to lend out more than they had in reserve, and to increase and decrease the quantity of money in circulation according to customers' demand for cash holdings. If a bank could reliably present the bearer of one of its notes with the specie indicated on the note, the note's value would be approximately equal to its redeemable specie value.

The biggest danger in this system was overissuance: a bank lending out more than it could, leading to a bank run by noteholders worried that the bank's reserves would be exhausted by other noteholders. However, this kind of run would only take place spontaneously if noteholders believed that a bank was insolvent (and so unable to meet its liabilities in the long run), rather than simply illiquid (unable to meet its liabilities in the short run).

The exception to this would be if another bank intentionally tried to cause a run on a rival. This was exactly what happened when the RBS tried to provoke a run on the BoS on the day it opened by swapping its own notes for BoS notes and redeeming the BoS notes for coin, leading to the BoS temporarily suspending payments, calling in loans, closing its doors temporarily and imposing a 10% call on its shareholders. (White 1984: p. 24)

However, over time a stable system emerged, including provisions against runs of this kind (in this case, achieved by including 'options clauses' on banknotes that gave the bank's directors the option to pay the bearer at a later date with 5% interest) and the establishment of private clearing houses that allowed banks to provide and access short-term loans to avoid short-term liquidity issues.

One striking characteristic of the early free banking period is that it was a discovery process – as banks encountered new problems, such as determining the optimal ratio of specie reserves to issued banknotes, they slowly learned how cope with them through a process of trial and error. This led to the invention of the 'cash credit account', a form of overdraft that effectively allowed people to borrow against their expected future earnings, or human capital. (White 1984: p. 24)

Competitive forces drove down bank profits: from an average of 15.5 percent between 1696 and 1728, dividends averaged

just 5 percent between 1729 and 1743. Over time, new banking firms entered the market, including the British Linen Company (later the British Linen Bank), which began as a trade association for the linen industry, grew to provide banking services to members of the linen industry, and eventually opened its operations to the public at large.

This was the first bank in the world to succeed at branch banking, and as White notes it illustrates just how open the Scottish system was to new entrants, which was necessary to prevent oligopolistic dominance by established firms. Between 1740 and 1769 the number of banks operating in Scotland rose from five to thirty two.

The largest bank failure of this period, that of the note-issuing Ayr Bank, took place in 1772. The Ayr Bank appears to have been badly mismanaged, and its collapse did bring down a number of smaller institutions, though not any note-issuing banks. Remarkably, the Ayr bank's two biggest rivals, the Bank of Scotland and the Royal Bank of Scotland, immediately accepted Ayr banknotes in exchange for their own, preventing more widespread panic across the banking system in general.

The reason for this was that the Ayr Bank's shareholders were subject to unlimited liability, allowing Ayr's creditors to avoid any losses at all – all losses were borne by Ayr's shareholders. (White 1984: p. 29) As White notes, the salient lesson was how robust the Scottish system was to Ayr's collapse.

By 1844,

*"There were many competing banks; most of which were well capitalised by a large number of shareholders; no single bank was disproportionately large or dominant; all but a few of the banks were extensively branched. Each bank issued notes for £1 and above; most banks' notes passed easily through the greater part of the country. All of the banks of issue participated in an effective note-exchange system. All offered a narrow spread between their deposit and discount (loan) rates of interest."* (White, 1984: p. 32)

Though economies of scale led to the rise of nationwide branched banks,

*"[Economies of scale] were always limited ... the Bank of Scotland had been forced to abandon some of its branch offices due to competition by local banks. No one bank could serve the entire market so cheaply, by virtue of its greater size, as to exclude others. Scottish experience offers no reason to suppose that there exists a 'natural monopoly' in the production of redeemable currency."* (White, 1984: p. 32)

The Scottish free banking era came to an end in 1844-45, with the passage of Peel's 1844 Bank Charter Act, which introduced significant regulatory barriers to entry for new banks, and the Scottish Bank Act 1845, which imposed restrictions on note issuance powers for Scottish banks. The number of note-issuing Scottish banks declined to three – the Bank of Scotland, the Royal Bank of Scotland, and the Clydesdale Bank. (White 1992: p. 172)

Today, these three banks still issue their own promissory notes, exchangeable with GBP. Indeed these banks actually hold GBP reserves at the Bank of England to back their issued notes, in the form of £1 million notes ('giants') and £100 million notes ('titans'). (Bank of England 2014) As I argue below, this quirk could prove to be convenient for a Scottish economy in transition to a sterlingized system.

The Scottish free banking era was not perfect. Banks failed and disruption occurred. However, it was entirely free of systemic bank panics that plagued many other countries' financial systems at the time. When banks did fail – even very large ones, such as the Ayr Bank – the Scottish system of unlimited shareholder liability maintained their de facto solvency and hence the value of their banknotes.

That this period was one of extraordinary economic advancement is clear, and White cites Adam Smith as attributing much of Scotland's economic success during this period to its unique banking system:

*That the trade and industry of Scotland, however, have increased very considerably during this period, and that the banks have contributed a good deal to this increase, cannot be doubted. (Smith, 1776: II.2.41)*

Some may question whether we can draw any lessons about the present from an experience two centuries old. Today, it is a commonplace that banks need a government-backed lender of last resort to operate with any stability at all. In the next section we turn to the Latin American case and consider the experience of dollarization in the modern world.

### 3. Lessons from dollarized Latin America

A dollarized (or sterlingized, or euroized, etc) country treats the US dollar (or pound sterling, or euro, etc) as its own currency:

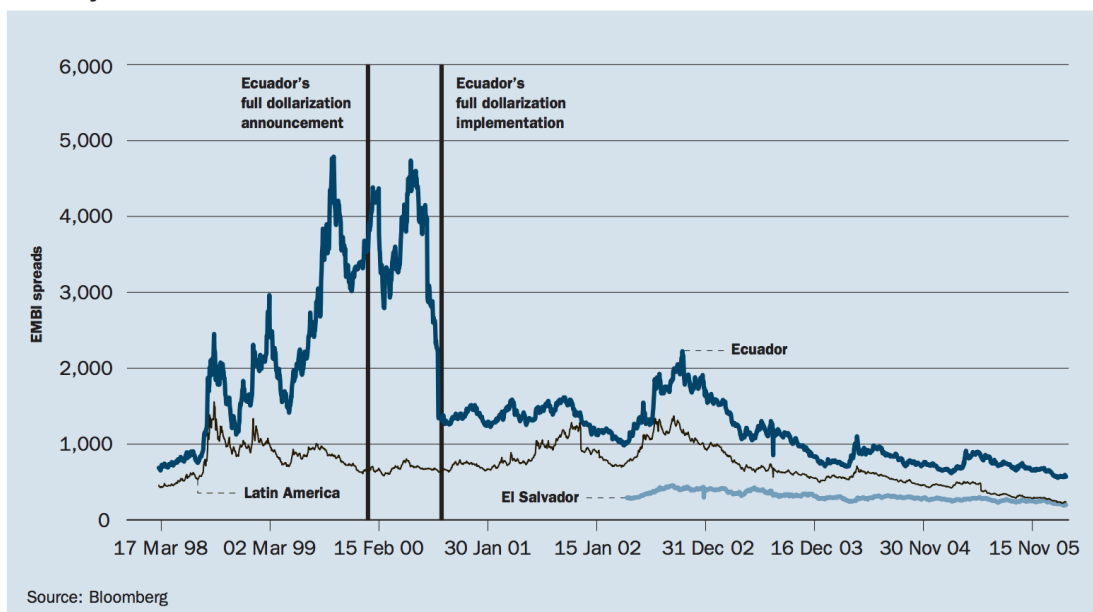
the USD becomes legal tender and is the official unit of account for government spending and revenue collection. The country loses the ability to print money and must acquire foreign currency from international markets. The main difference between dollarization and the establishment of a currency board required to maintain a fixed exchange rate with a specific foreign currency is that dollarization is not reversible in times of crisis. (Selgin 2005: p. 141) This restriction of the dollarized country's ability to devalue its currency can be both a blessing and a curse, as the local currency is immune from speculative currency attacks but cannot profit from seigniorage.

No country can really stop another from using its currency. Jersey uses GBP informally (ie, without a formal agreement with the United Kingdom); a number of south Pacific island states use the Australian or New Zealand dollars; many countries use the US Dollar alongside their own currency; and some use the US Dollar or the Euro as legal tender (sometimes alongside domestically-issued notes and coins that are interchangeable and pegged 1:1 with the foreign currency). Of this last group, El Salvador (which dollarized in 2001), Ecuador (2000) and Panama (1904) are the most notable.

Since these countries lack the ability to print money, they also lack the ability to establish a central bank that can act as a lender of last resort (LOLR) with unlimited lending capacities – a function that is often seen as vital to the stability of a modern market economy. Without access to an unlimited LOLR, bank panics may become common, and illiquid banks may collapse, leading to more frequent financial crises.

However, the experience of the Latin American dollarized economies seems to undermine this hypothesis. A 2006 Federal Reserve Bank of Atlanta report by Myriam Quispe-Agnoli and Elena Whisler looked at Ecuador and El Salvador, concluding that their banking systems are actually remarkably stable compared to their neighbours. They concluded that the absence of a powerful LOLR removes an element of

Figure 1  
Country Risk and Full Dollarization



moral hazard from the system – in other words, it reduces the incentive for banks to act imprudently in the knowledge that they will be able to access funds from the LOLR. They cite Gale and Vives (2002: p. 476) as showing that “dollarization provides a credible commitment not to help banks in trouble even though it would be ex ante optimal to do so”.

In short, dollarization has forced banks in these countries to be far more prudent and cautious than most of their neighbours, by keeping higher reserves and maintaining external lines of credit with banks from abroad. Figure 1 shows the impact of dollarization on Ecuador’s country risk. (Quispe-Agnoli and Whisler 2006: p. 56-8)

Ecuador and El Salvador have both established mandatory LOLR mechanisms, funded by mandatory contributions from banks operating in those countries. In Ecuador, dollarization followed a banking crisis; the move helped to stabilise the country’s economy and contributed to a reasonably healthy recovery during the 2000s. In El Salvador the environment was more benign, but dollarization reduced banks’ intermediation margins and improved the banking sector’s international competitiveness.

Quispe-Agnoli and Whisler conclude that in both Ecuador and El Salvador, “official dollarization has played a significant role in improving bank liquidity and asset quality”, helping both countries stabilise and improve the quality of their banking systems.

The best current-day case study for Scottish sterlingization is probably Panama. This was the scene of an ill-fated Scottish attempt at New World colonization in the late 17th Century, which bankrupted the country, contributing to the 1707 Act of Union with England. Today Panama may offer a more appealing lesson: that of how a small open economy can thrive without its own central bank, using the currency of a much larger trading partner without a formal currency union.

Panama, which has been dollarized for over a century, has a strikingly open and stable financial system. (The Panaman balboa, the country’s domestic currency, is fixed 1:1 with the US dollar, but the USD is legal tender in Panama and circulates alongside the balboa.) It has no official bank reserve requirement rules or deposit insurance, no restrictions on investment or entry by foreigners, no capital controls and, since it has no central bank, interest rates are entirely determined by the market. The financial system is internationally integrated, with significant foreign presence in the country. (Moreno-Villalaz 2005: p. 128)

According to Juan Luis Moreno-Villalaz, an economist at Panaman Ministry of Economy and Finance,

*“The system’s low volatility and efficient adjustment works by reducing the likelihood of occurrence and the intensity of negative outcomes, as well as strengthening the response to perturbations, so that the system tends to be resilient to external shocks. For example, stability of export prices tends to preempt terms-of-trade shocks; the unified currency system removes any exchange risk, transfer risk, or currency*

*mismatch associated with devaluation. No financial or banking crises take place because of financial integration with world-connected banking. Domestic inflation or fiscal crises have not occurred because the government cannot monetize its deficits. ... In addition, Panama’s market-determined money supply enhances overall macroeconomic efficiency, based on dollarization and full financial integration.” (2005: p.132)*

Moreno-Villalaz concludes that the Panaman experience suggests that under dollarization there is no trade-off between relatively deregulated financial markets, which may be good at generating optimal institutional arrangements, and macroeconomic stability. (2005: p. 138)

This view is supported by some international economic agencies too. A 2012 IMF report said that:

*“By not having a central bank, Panama lacks both a traditional lender of last resort and a mechanism to mitigate systemic liquidity shortages. The authorities emphasized that these features had contributed to the strength and resilience of the system, which relies on banks holding high levels of liquidity beyond the prudential requirement of 30 percent of short-term deposits.” (p. 12)*

The country’s financial system is strikingly well-developed for a middle-income country: the World Economic Forum’s 2013/14 Global Competitiveness Report ranks Panama seventh in the world for the soundness of its banks, seventh for affordability of financial services, eighth for ease of access to loans, and strongly across the board for most other financial market development indicators. (Schwab, 2013: p. 309)

The experience of the dollarized Latin American countries suggests that adoption of a stable foreign currency without a formal currency union can lead to significant macroeconomic gains. Currency attacks are not possible, and the absence of an unlimited lender of last resort appears to be, on net, a positive force for financial stability.

### **3. An independent currency for an independent Scotland**

There are several policy lessons that we can draw from the Scottish free banking period and the Latin American dollarized economies:

1. Giving banks the freedom to issue their own promissory notes, redeemable on demand for some kind of valuable reserve (gold or silver, in the Scottish case), can produce a functioning currency system without the need for central bank management.
2. Use of a larger trading partner’s currency as legal tender without a formal currency union does not seem to carry significant drawbacks; indeed the protection from currency attacks it provides may be valuable.
3. The absence of a central bank lender of last resort may impact financial stability negatively (since highly illiquid banks may be unable to access other lines of credit) or positively (by reducing banks’ appetite for risk). The Panaman experience appears to suggest that the effect

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may be a net positive.

4. The Scottish experience with the Ayr Bank suggests that 'bail-in'-like laws that make shareholders liable for bank losses may ensure the credibility of promissory notes even from failing banks.

Three Scottish banks currently issue their own banknotes – Clydesdale Bank, the Bank of Scotland, and the Royal Bank of Scotland. These are promissory notes that entitle the bearer to GBP notes on a 1:1 basis, and they are “fully backed at all times by ring-fenced backing assets partly held in Bank of England notes and UK coin and partly as balances on accounts maintained by the issuing banks at the Bank of England.” (Association of Commercial Banknote Issuers 2014: p. 1) These banknotes are universally accepted in Scotland and almost universally accepted in England and Wales.

Scotland's current system is therefore mostly an economically insignificant curiosity. However, as outlined in part 2, above, during the free banking era Scottish banks issued their own banknotes as promissory notes on specie (gold or silver) held in reserve, and could increase or decrease the supply of these notes according to their customers' money demand.

If this system was replicated today, with GBP used as reserves instead of specie, Scotland could continue to use the pound without disruption and without formal currency union with the rest of the UK. BoE pounds, in other words, would be the 'base money' that Scottish banks use to back their own private currencies, in the same way gold was used during the last Scottish free banking era.

A banknote from a Scottish bank would be, in effect, a promissory note redeemable on demand in BoE-issued pound sterling. To the Scottish consumer, nothing would change: they would continue to use a variety of different banknotes, each of which would be exchangeable on demand for an equivalent amount of GBP.

Scottish banks, using the GBP as their reserve currency, could guarantee the value of their notes while still adjusting their supply to market demand. Although it is likely that GBP would be used as the reserve currency in this way given the existing network for GBP payments, there should be nothing stopping banks from issuing notes redeemable in something else, like US Dollars, gold, stock market index funds, or even 'alternative' currencies like Bitcoin. This would allow for some degree of competition in currency, theoretically allowing Scottish banks and consumers to switch away from the GBP should the Bank of England begin to seriously mismanage the currency.

Since the Bank of England would presumably not be prepared to act as a lender of last resort to Scottish banks (or at least to protect the Scottish operations of multinational banks), Scottish banks would have to arrange private clearing houses, as they did in the last free banking era, to provide loans to illiquid banks, or they could follow Panama in simply maintaining high reserves and borrowing from international banks during periods of illiquidity (Moreno-Villalaz, 2005: p. 133). Alternatively, as in Ecuador, the Scottish government could establish a mandatory LOLR fund, paid for by banks themselves. This may create

similar moral hazard problems, however, and there is ample evidence from history that banks could – and would – create private arrangements.

No banks should have monopoly privileges: any 'bank' could issue notes and it would be up to consumers and firms to decide whether to accept them as money or not. This would act as a disciplinary measure against note-issuing banks, preventing them from abusing their position (say, by issuing too many notes – that is, expanding their loan books – more than their reserves could reasonably bear). In this vein, prohibitions on foreign bank branch operations in Scotland should be removed, in order to open up banking to as much competition as possible and reduce opportunities for collusion.

Banks free to issue their own notes will set their reserve ratios according to people's demand for money, stabilising their nominal spending. As George Selgin points out,

*“To the extent that commercial banks are able to “capture” the market for paper currency, the public’s preferred “currency ratio” (that is, it’s preferred mix of currency to bank deposit balances) ceases to influence the money multiplier, that is, the relationship between the stock of base money (B) and that of broad money (M). In the limit the multiplier, instead of having its usual, textbook formula of  $[(1 + c)/(r + c)]$ , where  $r$  is the system reserve ratio and  $c$  is the currency ratio, becomes simply  $1/r$ , making  $M = B(1/r)$ ; while the quantity of bank reserves,  $R$ , becomes equal to the stock of base money.*

*“The reserve ratio, in turn, will rise in proportion (though not necessarily in strict proportion) to the volume of gross bank clearings, that is, of payments, which will themselves depend on the velocity of money. As total payments increase, so does the demand for bank reserves. It follows that, for any given  $B$  (or, equivalently, any given nominal quantity of bank reserves) there will be a unique volume of payments consistent with equilibrium in the reserve market. Changes in  $V$  will tend, therefore, to give rise to such changes in  $r$  as will keep  $MV$  relatively stable.” (Selgin, 2013)*

This system provides some degree of monetary stability by reducing the likelihood of a disequilibrium between people's desired cash balances and the total stock of money (which may result in a recession – see Yeager, 1986).

Yeager (1986) refers to this as 'monetary disequilibrium', which occurs when there is a discrepancy between the total supply of money (or nominal gross domestic product, NGDP) and people's desired money holdings in a sticky wage and price environment. If the level of people's desired cash balance rises relative to available money, transactions will slow down, leading to a fall in production and employment until prices and wages fall commensurately until the market clears again. Since this downward adjustment takes time, in the the intervening period an output gap occurs and unemployment rises – in other words, a recession.

This situation took place on a large scale in 2008 when market inflation expectations fell dramatically in response to implicit

monetary tightening by the US Federal Reserve and other central banks around the world. (Hetzel, 2012) Because banks were both heavily leveraged and bound by strict government capital requirements, they did not have the freedom to expand their lending to meet people's new money demand.

However, this scenario is avoidable under a system where banks can issue their own banknotes, since any increase in the demand for money can be immediately and automatically met by an increase in the supply of money. Given the freedom to expand and contract their balance sheets, limited by their capital holdings and reserves, but not by government capital requirements, note-issuing banks should be expected to provide a relatively stable macroeconomic environment. This is what would make this method of sterlingization 'adaptive' and robust to demand shocks in a way that most of the world's existing banking systems are not.

As illustrated in this paper, the widely-held belief that bank regulation prevents banking crises may well be wrong. Selgin (1994) takes a long view, showing that bank panics were more frequent in 'unfree' banking systems (ie, systems with two or more major regulatory restrictions, such as a central bank LOLR and deposit insurance) than in 'free' banking systems in the nine countries surveyed. (See Appendix for comparison tables.) Of the forty-eight crises that took place in the period 1793-1933, all but seven took place in unfree systems, and half took place in systems with a central LOLR.

Dowd and Hutchinson (2014) argue that the root of modern financial instability is that, in seeking to avoid systemic crises, financial regulation (including the existence of central LOLRs) has "not only kicked away most of the constraints against excessive risk taking but positively incentivizes systemic risk taking in all manner of highly destructive ways", including encouragement of excessive risk-taking by greatly expanded LOLR functions and the perverse incentives created by capital regulation that encourage bad investments. Friedman (2009) points out that even regulation designed to encourage prudence, such as the Basel accords, may be harmful by imposing a single decision about what is prudent across an entire system – if that decision turns out to be wrong, as Basel's incentivising of banks to hold mortgage debt did in 2008, a system-wide crisis is almost inevitable.

No Scottish public authority should be invested with any power to bail out insolvent banks under any circumstances; similarly, if deposit insurance exists, the costs should be borne by the depositor so that consumers have an incentive to choose safer banks. In order that banks keep the optimal level of reserves for a given point in the business cycle, reserve requirements must be abandoned, as well as implicit and explicit government bail-outs. This will ensure that banks are neither incentivised to leverage too much nor too little. Instead, debt-to-equity swaps for depositors and extended liability on shareholders should be introduced in the event of bank collapses to allow banks to fulfil their financial obligations.

Critics will point out that Scotland's banking system is too large for this system to work: that it, essentially, relies on implicit government bailouts to function as it does. This may be true,

but it is unclear how much of the 'Scottish' banking system really is Scottish at all. For example, though headquartered in Edinburgh, most of RBS's and Lloyds's depositors are English and most of their business is with English firms. As EU law requires banks to be domiciled in the country where they conduct most of their business, a move to the City of London seems likely in any case. (Donovan *et al*, 2014: p. 6) Note that moving legal domiciles does not necessarily mean moving jobs (both RBS and Lloyds already have sizeable operations in the City), and deposit guarantees are based on the deposit's location, not a bank's domicile. How much of an impact this would have on the Scottish economy is beyond the remit of this paper: what is important is that the currency arrangements seem to be irrelevant to this decision.

In summary:

1. Scottish banks should be free to expand and contract their loan books according to demand. Reserve requirements should hence be abolished.
2. Since the pound sterling is Scotland's current de facto money, Scottish banks will likely continue to issue banknotes as promissory notes on their sterling reserves. GBP will serve the same role that specie did during the old Scottish free banking era.
3. Since no central bank LOLR will exist, Scottish banks can be expected to arrange private clearing houses to provide funds to illiquid banks.
4. No government bail-outs of insolvent banks should be permitted. Bail-ins that penalise shareholders and replace debt with bank equity are preferable.
5. Regulatory barriers to entry for new banks should be reduced significantly to increase competition in the sector. Any institution should be free to issue its own notes, with the market deciding which are used and which are rejected.
6. Limited liability laws should be reformed so that bank shareholders bear more risk when banks fail, shifting the risk from depositors to shareholders.

#### 4. Conclusion

There is ample evidence from history and economic theory that an independent Scotland would not suffer from being outside a currency union with the rest of the United Kingdom. But it would be best if it was done alongside a programme of financial reforms that did not give any bank or group of banks monopoly powers on note-issuance and allowed the market to decide what money to use.

This 'adaptive sterlingization' would allow private banks to issue their own promissory notes, backed by reserves of GBP (or anything else – if private citizens wish to conduct their business in USD, gold or index fund shares, we should let them). This system would be adaptive to the changes in money demand which are typically the cause of demand-side recessions in modern economies, helping Scotland to avoid some of the major macroeconomic disruptions that central banks have failed to prevent in recent years (or indeed have created themselves, unintentionally).

The reform programme outlined in this paper may be a break

with recent practice, but Scotland once thrived without a central bank, and some countries continue to do so today. Private clearinghouses once provided funds to illiquid, but solvent, banks; there is no reason that similar institutions could not do so today. Insolvent banks would be a bigger problem, but a bail-in system that extended liability to shareholders before depositors and bondholders would likely remove most of the moral hazard present in the banking system.

Scottish independence is a complex issue with strong arguments on both sides. On the question of currency, however, Scots may find that their own history shows how a financial and monetary system can flourish if banks and the state are both stripped of their monopoly powers. 'Adaptive sterlingization' may prove to be a model for how a country can thrive when its financial system is stable, competitive and free.

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## Appendix: Banking panics in unfree and free banking systems

Banking panics, 1793-1933: "Unfree" banking systems. **x** = banking panic. **■** = central LOLR established.

Year of panic	United States	England	France	Germany	Italy
1793	x	x	—	—	—
1799	x	x	—	—	—
1810	x	x	—	—	—
1815	x		—	—	—
1819	x		—	—	—
1825	x	x	—	—	—
1833	x		—	—	—
1837	x	x	—	—	—
1839	x		—	—	—
1847	x	x	x	—	—
1848			■	—	—
1857	x	x	x	x	—
1864			x		—
1866		x			—
1873	x			x	—
1875				■	—
1882			x (a)		—
1884					—
1889			x		—
1890					—
1891					x
1893	x				x
1894					■
1901				x	
1907	x				
1913				x	
1914	x ■				x
1921					x
1930	x		x		
1931	x			x	
1933	x				

(a) Large bank failure

Source: Selgin (1994)



Banking panics, 1793-1933: "Free" banking systems. x = banking panic. ■ = restrictions on note issuance introduced.

Year of panic	Canada	Scotland	Sweden	Australia	China	South Africa
1793	—		—	—	—	—
1797	—	x (a)	—	—	—	—
1810	—		—	—	—	—
1815	—		—	—	—	—
1819			—		—	—
1825			— (b)		—	—
1833					—	— (c)
1837	x				—	
1839					—	
1845		■			—	
1847					—	
1857					—	
1864					—	
1866					—	
1873					—	
1882					—	
1884					—	
1889					—	
1890					—	
1891						
1893				x		
1901			■			
1907			x			
1911				■		
1914	x (d) ■					
1920						x (e) ■
1923	x (f)					
1930						
1931						
1933						

(a) Restriction of payments

(b) Swedish free banking era begins

(c) South African free banking era begins

(d) Minor runs caused by binding capital requirements for note issuance

(e) Inflation follows abandonment of gold standard during World War I

(f) Major bank failure accompanied by minor runs on other banks

Source: Selgin (1994)