Back ing Scotland’s Currency —
Foreign exchange reserves for an
Independent Scotland
Peter Ryan
— June 2017
The case for Scottish independence was never and cannot ever be a tablet of stone – it must be made and re-made constantly as circumstances change.

It seems that, after Brexit, everyone is very conscious of the fact that the case for an independent Scotland is in urgent need of renewal. From Alex Salmond to Joseph Stiglitz, big players in the 2014 referendum accept that there’s aspects of the argument that need updated in light of events.

We are at a conjuncture where some assertive leadership is now needed on the big issues facing Yes supporters: Britain’s exit from the European Union has thrown the prospect of a referendum open again, but polls show Scots to still be at best jittery about the prospect. There’s a confidence deficit in Scots’ belief in independence that needs to be made up in the Yes argument. That won’t be resolved through clever politics or deft diplomacy. We can only properly go back to the people of Scotland with another Yes offer when we have well thought out answers to the questions they didn’t feel were answered adequately last time and new questions that have been raised since.

What currency do we use? How do we deal with the collapse in oil revenue? How do we ensure Scotland has a credible fiscal position? What do we do about Scotland’s border with rUK? What would the division of assets and liabilities be?

These are some of the big structural questions that Common Weal is working on answers to in what we’re calling our White Paper Project.

Our White Paper is not going to be like the Scottish Government’s in 2014, which attempted to amalgamate structural issues with specific policy offers. We won’t be looking at, for example, whether an independent Scotland would raise or lower taxes. As far as feasibly possible, we’re going to try to focus only on the systems and structures in establishing an independent Scotland, not our own policy ideas.

It will be for a future election in an independent Scotland to decide on the specific policies to be pursued. What we want to prove with the White Paper Project is that independence the country can pursue its own path in the world, that means creating the sort of All of Us First society Common Weal advocate.

We are not so foolhardy to believe that a small organisation like Common Weal can come up with all the answers. In some areas, we will simply be hoping to create a methodology that can be built upon in the future. But we think we’ve already proven with our reports on Scottish Currency Options post-Brexit and Claiming Scotland’s Assets that we can look at the historical precedents and come up with answers that can be important strategically in renewing the structural case for Scottish independence.

Our plan is to publish more papers throughout the rest of the year which will be brought together in one White Paper early in 2017.

You can help us: if you have policy expertise in any of the structural areas facing an independent Scotland and would like to volunteer your thoughts or time, get in touch. If you are just very keen to see the White Paper Project be the best it can be then help us improve our limited research capacity by becoming a regular donor to Common Weal. We can’t wait on high for the case for Scottish independence to be renewed – let’s get on with it ourselves.
Author — Peter Ryan has worked in IT for financial services companies since 1990, over half that time as an independent contractor. He started as a programmer in 1990 on stock broking systems in London. Peter is currently working as a Product Manager and has a particular focus on taking legislation and understanding what changes need to be made to computer systems to ensure they comply with legislation. At the moment his focus is on the revised European Payment Services Directive, the roll out of the ISO 20022 message standard and the UK Payments Strategy. He is the author of a previous White Paper Project report, ‘How to make a Currency – a Practical Guide’, which can be found at allofusfirst.org/library.
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Preface

The successful management of an independent country’s currency is often tied to its ability to raise and maintain an adequate level of foreign currency reserves. These reserves would be used to stabilise the currency’s exchange rate, protect against speculative attacks on the currency and service debt obligations, amongst other uses. In the case of Scottish independence, it will be important to show that sufficient reserves can be established quickly enough after the launch of a new currency to ensure its stability. It is the purpose of this paper to demonstrate that this proposal is viable.

Key Points

- The size of a country’s foreign reserves are very much dependant on the policy and history of a country and there is a substantial spread of holdings across countries ranging within the European Union from 5.69% of GDP in the UK, through 11.96% in Sweden, up to more than 40% of GDP for countries like Bulgaria or the Czech Republic.

- For the purposes of this paper, a more typical sum of 20% of GDP shall be demonstrated, which for Scotland is approximately $40 billion (approximately the same value of foreign exchange reserves as Denmark).

- $16.2 billion may be secured through a reasonable division of the UK’s foreign exchange reserves under a debt and asset negotiation.

- £4.462 billion worth of hard Sterling currency is in circulation within Scotland. If half of this is converted into the new Scottish currency and the Sterling held by the Scottish Central Bank, $2.9 billion may be raised for the foreign reserve. An equivalence between the new Scottish Currency and Sterling over the transition period will ensure prices initially stay the same.

- $13 billion would be raised via a foreign exchange swap with the Bank of England to aid the mutual stability of both the economies of Scotland and the rest of the UK.

- €8 billion Euros ($8.8 billion) will be raised via the issue of a Euro bond. Funds raised will be partially converted into other reserve currencies such as Yen and Renmimbi.

- In total, $40.23 billion can be feasibly raised to support an independent Scottish currency.

- The costs of servicing the debt accrued by Scotland for these reserves (approximately £70.2 million per year) will be substantially less than the current annual contribution by Scotland to the UK’s foreign reserves (£500 million per year) which are being built up by the UK government to bail out the City of London in the event of another crash.

- Several scenarios are outlined regarding the ownership of currently nationalised banks such as RBS. Assuming sufficiently regulatory oversight in no case could it be expected that Scotland would bear the full burden of banking losses incurred outside of Scotland.
Introduction

Foreign exchange reserves

Foreign exchange reserves are assets held by a country in a currency of another nation (or group of nations in the case of the Euro) or in a commodity such as gold.

In the United Kingdom they are primarily held in the Exchange Equalisation Account (EEA) which was set-up in 1932 “to provide a fund that could be used, where necessary, to regulate the exchange value of Sterling”, and therefore is the mechanism through which any UK government exchange rate intervention would be conducted. In other words it is a fund held in currencies other than Sterling (such as the US Dollar, Euro and Japanese Yen) that can be used to support the value of Sterling in the event of a market shock that caused a sudden and substantial fall in its value (by for example selling US Dollars held in the reserves and using them to buy Sterling).

However since the establishment of the Exchange Equalisation Account in 1932 the scope of the use of foreign exchange reserves has been extended and any discussion of foreign exchange reserves for Scotland needs to focus on the ability of Scotland to raise the foreign exchange reserves necessary to support these needs.

This report will cover the following areas;

- The reasons foreign exchange reserves are held by various nations.
- What level of foreign currency reserves would be needed by Scotland.
- How a nation builds its foreign exchange reserves.
- How Scotland could raise the foreign exchange reserves it needs.

It should also be noted that the aim of a central bank is to maintain market stability and that all central banks work in concert to reduce the impact of massive shocks to the global economy. Their foreign exchange reserves are a mechanism for allowing them to do this. So while this report will primarily focus on the foreign exchange reserves of an independent Scotland it will need to be bare in mind that it is unlikely that Scotland will act alone to protect its economy against market shocks. For example on 18th March 2011 The Bank of England along with the central banks of other G7 countries (Japan, United States, Canada and the European Central Bank) intervened in the foreign exchange markets in response to movements in the value of Japanese Yen associated with the devastating earthquake and tsunami that Japan experienced in 2011. They did that as substantial movements in exchange rates tend not to help anyone and concerted action to ensure stability is the preferred course of action.

Currency of an Independent Scotland

The currency of an independent Scotland is the starting point for any discussion of foreign exchange reserves. This is because by definition any foreign exchange reserves have to be in a foreign currency to the national currency.

Essentially there are three realistic currency options for an independent Scotland;

- Continued use of Sterling
- Join the Eurozone
- Establish an independent Scottish currency

Both the continued use of Sterling and membership of the Eurozone involve a currency union; either with the United Kingdom (in the case of membership of a Sterling zone) or with the Eurozone countries (if Scotland joined the Euro). The management of foreign exchange reserves and their use will be different in the case of membership of a currency union from the foreign exchange requirements of a country having an independent currency.

A Sterling zone currency union does not exist so the Eurozone is the best example of a currency union in operation. The foreign reserves of the European Central Bank were established from the foreign exchange reserves of the Eurozone National Central Banks when the Euro was established. Operationally the European Central Bank is independent and works in the same way as other central banks but the use of the Foreign exchange reserves held by the European Central Bank (ECB) to intervene in financial markets is done with the agreement of the finance ministers of the 19 Eurozone countries.

Consequently in respect to a discussion on the establishment and use of foreign reserves by an independent Scotland a currency union is a complicating factor. For example the management of the exchange rate of the Euro is conducted centrally (by the European Central Bank) using reserves built up from the 19 Eurozone countries rather than by countries separately using their own foreign currency reserves. If Scotland was part of the Eurozone it would not need to have its own foreign exchange reserves to protect the value of its currency; though they would still be needed for other reasons (countries such as Germany, France and Belgium still have their own independent foreign exchange reserves). So as this report is part of a discussion of an independent Scotland then, for reasons of clarity, it is assumed that Scotland will have its own independent Scottish currency and the foreign exchange reserves will be used by a Scottish Central Bank to protect the Scottish economy from market shocks.

Reasons for Holding Foreign Exchange Reserves

There are a number of reasons for a country to hold foreign exchange reserves, and the reasons will vary from country to country based on the monetary policy of the country. Some of the main reasons for holding foreign exchange reserves are;

- Formal backing for a domestic currency
- To maintain a national currency exchange rate
- Servicing foreign currency liabilities and debt obligations
- Use of foreign exchange reserves to support the banking sector
Defence against emergencies or disasters
Investment Fund

These reasons for holding foreign exchange reserves are discussed below.

**Formal Backing for a Domestic Currency**

Traditionally reserves were held as a formal backing for a domestic currency. For example maintaining reserves of Gold under the Bretton Woods system that was in place until just after the Second World War.

The practice of holding Gold as a backing for a domestic currency is no longer a requirement for fiat currencies and since the start of the 21st century a number of countries have been selling off their gold reserves; most notably the UK and Switzerland. The reason for selling off gold reserves is that while gold is an asset that tends to hold its value in a time of crisis, it is not a particularly liquid asset and so not something that can easily be used to intervene at a time of financial or currency crisis.

**Maintaining a National Currency Exchange Rate**

The traditional use of foreign exchange reserves has been in maintaining an exchange rate. However a central bank will not always intervene to support a currency against market sentiment. For example in the 24 hours following the vote to leave the European Union the value of Sterling fell over 10% against the US Dollar and 7% against the Euro. It was noticeable that the Bank of England chose not to intervene to stop the fall in the value of Sterling.

This was in contrast to "Black Wednesday", 16th September 1992, where the UK Treasury intervened in the currency markets to try to maintain the value of Sterling within the European Union Exchange Rate Mechanism. Sterling had joined the Exchange Rate Mechanism in October 1990 at a rate of £1.00 to 2.95 Deutsche Marks and the rules of the ERM in 1992 meant that the UK government was committed to maintaining the value of Sterling to within 6% of this entry rate; which is £1.00 to 2.773. In September 1992 Sterling had fallen to an exchange rate of 2.773 and then came under sustained attack (primarily from the Quantum Fund managed by George Soros) which forced the Bank of England to intervene to support Sterling until a decision was made to leave the Exchange Rate Mechanism and let the value of Sterling float freely. This defence of the value of Sterling cost the UK Treasury £3.3 Billion based on figures released in a Freedom of Information Act request.

A lesson to be drawn from this is that if markets know how a Central Bank will react to a given situation then they can work against the central bank to make a profit. Consequently the strategy of a central bank tends to be kept secret and not made public.

However even if a central bank strategy can be assumed not every market intervention is unsuccessful. For example the only member of the European exchange rate mechanism is Denmark; which has an opt-out against joining the Euro but maintains an exchange rate between the Danish krone and the Euro within a fixed range. This means that the interest rates of Denmark tend to follow those of the European Central Bank. During the financial crisis of 2008 the Danish Central Bank intervened to support the krone against the Euro and successfully maintained it within the range allowed by the Exchange Rate Mechanism.

Ultimately the value of a country’s currency will be set by the fundamentals of the economy and the best way of protecting a currency is a strong trading position and a productive workforce.

**Servicing foreign currency liabilities and debt obligations**

Most governments will have foreign currency requirements. These can include; maintaining embassies, foreign visits by members of the national government, foreign aid, etc. For these things an amount of foreign currency is required. So where there are foreign currency liabilities as a result of the government activities then the foreign exchange reserves can act as a source of foreign currency to support these activities.

In addition one of the ways a country can build up its foreign reserves is by issuing foreign currency securities (such as in October 2014 when the UK Government issued a 3 Billion Renminbi sovereign bond issue to build up reserves in the Chinese currency). When this is done the central bank will need to keep sufficient foreign reserves in that currency to support any interest and redemption payments that are due in the foreign currency.

**Use of Foreign exchange reserves to Support the Banking Sector**

During the financial crisis of 2007-2008 some countries used their foreign reserves to support the foreign currency obligations of their banks. Indeed the UK Exchange Equalisation Account is still used to support the foreign exchange activities of the state owned Royal Bank of Scotland.

When banks began to fail during the financial crisis an expectation grew that national governments would step in to prevent the failure of the banks. For example the United Kingdom intervened to prevent the collapse of Lloyds Bank and the Royal Bank of Scotland.

In Iceland three major Icelandic Banks failed; Kaupthing, Landsbanki and Glitnir. Initially the Icelandic Central Bank (Seðlabanki Islands) made a direct injection of US Dollars into the smallest of these banks (Glitnir) to provide it with foreign currency liquidity. However, as the foreign reserves of Iceland were insufficient to pay off the foreign currency obligations of all three banks a decision was made to allow the banks to collapse without using all the foreign reserves held by the Icelandic Central Bank. This meant that foreign creditors had to try to pursue their assets through the liquidation process; despite the fact that the Icelandic Central Bank still had substantial US Dollar currency reserves. This contrasted with the treatment of domestic (Icelandic) creditors who had their deposits honoured by the creation of Icelandic króna by the central bank. The result was that the Icelandic banking system became isolated from international markets and capital controls were imposed (which were finally lifted in 2017).
Ireland was similarly affected by the financial crisis of 2007/2008. However in Ireland the government declared full state backing for Irish banks, thereby making it clear that it would use the state's reserves to pay off any obligations of Irish Banks. In contrast to Iceland, as Ireland did not have its own domestic currency then it could not create more currency to compensate deposit holders (either foreign or domestic) and had to seek assistance from the European authorities and Eurozone partners. Based on this Eurozone bailout the creditors of the Irish banks (both foreign and domestic) were paid.

The UK and Ireland were not the only countries that intervened to prevent their banks defaulting. Other countries followed similar policies and other examples include;
- UBS which was supported by Switzerland.
- KBC which was supported by Belgium.
- Commerzbank which was supported by Germany.
- ABN Amro which was supported by Netherlands.

This means that there is an expectation in financial markets that all banks are "too big to fail" and that national governments will ensure that banks are sufficiently capitalised. As a result since 2008 many countries have substantially increased their reserves to demonstrate that they have sufficient reserves to support the foreign currency obligations of their banking sector.

For example since 2010 the UK Government has been increasing the foreign exchange reserves by £6 Billion a year on average paid for by debt issued through the National Loans Fund (though the amount was higher in 2014-2015 when the amount of increase was £11.7 Billion). The reason for this increase has not been specified but it is budgeted to continue until 2020.

Defence against Emergencies and Disasters

While typically not a use for a developed country such as Scotland, some countries build up reserves as a defence against emergencies or disaster; for example where a country's major export has been wiped out by a natural event such as drought or there is substantial damage to a country's infrastructure as a result of an earthquake.

In the event of such an event the reserves of a country can be used as a pool of readily usable funds to provide security or to start the process of rebuilding the country.

Investment Fund

For countries running a budgetary surplus or countries that have a large trade surplus it can make sense to invest the surplus into a Sovereign Investment Fund.

For example China's trade surplus means that the Chinese economy has a surplus of foreign currency. The reason for this is as follows;
- A Chinese exporter will receive US Dollars for manufactured goods exported to the USA.
- These US Dollars will be deposited at a Chinese Bank (such as the People's Bank of China) in exchange for Renminbi which the company can use to pay its staff and pay its domestic (Chinese) bills.
- The People's Bank of China then invests the US Dollars in assets such as long term US Treasury Bills (which are issued by the US government to service its national debt).

The result of the trading surplus is that China has accumulated a massive investment fund around two thirds of which are held in US Dollars (or debt denominated in US Dollars).

However a trading surplus is not the only reason for an Investment Fund. Many commodity based economies (such as oil producers) use an Investment Fund to diversify their economy or to keep inflation down by reducing liquidity. Norway has invested the surplus from its oil revenues into a Global Investment Fund since 1990. Based on the website of the Norges Bank Investment Management the value of this fund in April 2017 is 7,858 Billion Norwegian Krona (approximately 915 Billion US Dollars). If this wealth had been invested directly into the Norwegian economy then this would be likely to trigger inflationary pressures and so the investment in a sovereign wealth fund helps to even out the economy and avoid boom and bust economic policies.

These investments mean that Norway is protected from any substantial drop in the oil price as it has sufficient investments not only to pay for long term social costs but also to generate income from its investments to compensate for any loss of oil revenue.

How to build foreign exchange reserves

There are three main methods that countries use to establish foreign exchange reserves. These are;
- Formally borrow foreign currency (for example through a foreign currency bond issue).
- Purchase foreign currency outright against the domestic currency.
- Borrow foreign currency through a foreign exchange swap against their domestic currency.

Formally Borrow Foreign Currency

One way to establish a foreign currency reserve is to go out onto the financial markets and borrow it. So if the Scottish Central Bank wanted to establish reserves of 100 million Euros then it could issue €100 million worth of sovereign debt bonds repayable after 5 years. As with any debt the Scottish Central bank would need to pay interest on this debt. The interest rate demanded by the financial markets would be dependent on the perceived risk associated with Scotland (so a triple A rated country would pay a lower rate of interest than a B rated country). Assuming a 2.00 % interest rate on the Euro denominated bond then this means that every year 2% interest (or €2 million) would be paid on the borrowed amount.

During the 5 year period the €100 million would form part of the Foreign exchange reserves held by the Central Bank of Scotland. The borrowed Euros would be used to purchase Euro denominated assets (such as the sovereign debt of other European
countries) so while the Scottish Central Bank is making interest payments on the amount of Euros it has borrowed it is also receiving income from the assets it has invested in. Consequently the cost of this borrowing can be netted off with the interest being paid out being equal to the interest received.

So this would work as follows;
- £100 million worth of Euro denominated sovereign bonds would be sold and the £100 million raised deposited within the Foreign exchange reserves of the Scottish Central Bank.
- The £100 million would then be invested in financial securities (remember this money is being held in a reserve, it is not being spent).
- Then each year for five years the Scottish Central Bank would make an interest payment of £2 million to the bondholders.
- Similarly each year the Scottish Central Bank would receive income from the investments it made with the £100 million.
- At the end of the 5 year period it would need to repay the original loan of £100 million which would come from the £100 million sitting in the foreign exchange reserves.

**Purchase of Foreign Currency**

A country that has its own domestic currency can use that currency to build up its foreign exchange reserves. As it has control over its own domestic currency it can always issue additional currency if required. So Scotland could issue a Billion “Scots Pounds” and exchange these for an equivalent amount of Euros or US Dollars. The amount of foreign currency received would then be added to the foreign exchange reserves held by the Scottish Central Bank.

Whilst this ability to “create money” makes the process of building up the Foreign exchange reserves easier it is not without risk. For example the amount of currency issued needs to be balanced against the inflation risk of issuing the currency. So if too much Scottish currency was issued then the value of the currency could fall due to the increased market liquidity. If the value of the Scottish currency fell then this would mean that any Scottish imports would be more expensive and so inflation could increase as a result (though Scottish exports would be cheaper).

**Foreign Exchange Swap**

There is a risk associated with a purchase of foreign currency as it could depreciate in value over time. So instead of an outright purchase of a foreign currency it can make more sense to agree a foreign exchange swap contract.

The difference between a swap contract and an outright purchase of foreign currency is that at the start of the swap there is an agreement to reverse the transaction at a later point in time. So for example if the United Kingdom agreed to purchase a Billion “Scots Pounds” in exchange for an equivalent amount of Sterling then there would be an agreement that 12 months later the Sterling held by Scotland would be exchanged for the Billion “Scots Pounds”. So in effect the “Scots Pounds” would be swapped for Sterling for the 12 month period and then swapped back again. Note; in the illustrative example it can be assumed that the swap will be for an equivalent amount though this need not be the case; especially if the long term exchange rates indicate that one currency will move against the other.

There are two advantages of a swap contract;
- The effect on the foreign exchange markets is reduced as the new “Scots Pounds” are only added to the value of Scottish currency on the international markets for the length of time of the swap contract.
- Long term exchange rate risk is reduced. So if £1.00 Sterling was equivalent to 1.00 Scots in 2020 but by 2023 1.00 Scots is equivalent to £1.05 then the value of any Sterling purchased three years ago will have reduced over the course of the 3 year period. However if the contract was negotiated as a series of one year swap agreements then after 12 months the amounts used in any replacement foreign exchange swap contract can be re-negotiated to take into account the new exchange rates.

**Management of Reserves**

The total value of foreign exchange reserves are recorded in a currency. For example the International Monetary Fund (IMF) denominates foreign exchange reserves in US Dollars whereas the UK Treasury records the value of the Exchange Equalisation Account in Sterling. So according to the IMF the value of the UK’s foreign exchange reserves at the end of March 2017 was $162,952.00 million whereas HM Treasury would quote this as the UK having reserves of around £131,142.00 million. Around 40% of the UK’s foreign exchange reserves are held in US Dollars, so if the US Dollar rose in value against Sterling the IMF value of the UK’s foreign exchange reserves would stay the same but the UK Treasury’s value of the Foreign exchange reserves (in Sterling) would rise.

Additionally rather than holding US Dollars in cash if the US Dollars are held in US Treasury Bonds which are paying interest then those interest payments can be used to further increase the value of the foreign exchange reserves or offset any interest payment obligations as a result of borrowing foreign currency.

As a result active management of the reserves is required to ensure not only do the Foreign exchange reserves not fall in value (as a result of hold currencies that are depreciating in value) but the reserves being held are making a reasonable return without exposing the foreign exchange reserves to unacceptable risk.

So once an independent Scotland has established their reserves (using any or all of the three methods described above) the reserves will need to be managed. This management of the Scottish reserves would look to increase the value by investing the reserves in such a way that there is a return generated on them. However, the rate of return would need to be balanced against any risk from financial trading; such as investing in newly floated companies or high yield, high risk hedge funds. For these reasons the Scottish Central Bank will need to set-up a portfolio management department within the central bank. Having a group of people within the bank that not only understand international financial markets but are experienced in trading on them means that in the event of a financial crisis that requires intervention by the Scottish Central Bank there are a group of people experienced enough in financial markets to make that intervention.

To mitigate the risk of maximising profits based on the investment of the foreign exchange reserves a central bank will issue a benchmark for the reserves. This benchmark will include
The White Paper Project Backing Scotland’s Currency

How Much Foreign Exchange Reserves will Scotland need?

Calculation of Sufficient Reserves

Traditionally there was a rule of thumb that a country would need reserves of around three months’ worth of imports or to cover all short term debt. Based on 2017 HMRC figures for regional imports and exports; three months imports to Scotland comes to approximately £6.0 Billion.

However over the last 20 years the scope of the use of foreign exchange reserves has increased; from the narrow scope of “checking undue fluctuations in the exchange value” (the original reason for setting up the Exchange Equalisation Account) to “intervene in support of its monetary policy objective” (the scope required by chancellor Gordon Brown in the 1997 letter which gave independence to the Bank).

Indeed since the 2008 crash there has been no agreed formula to calculate what amounts to sufficient reserves for a country because of the policy of some countries to support their banks. It is similar to a discussion about how much money will someone need for retirement. Without knowing what future inflation rates will be or how long someone will live no-one can be sure. All that can be said for certain is that having a larger retirement pot is better than having a smaller one.

Comparison with Other Economies

Thus if there is no formula to calculate the value of reserves required by an independent Scotland perhaps a comparison with other nations can give an indicative figure.

<table>
<thead>
<tr>
<th>Country</th>
<th>Value of Reserves</th>
<th>Notes</th>
<th>% of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>24,318.42</td>
<td>Planning to join the Euro when conversion conditions allow</td>
<td>48.44 %</td>
</tr>
<tr>
<td>Croatia</td>
<td>14,306.75</td>
<td>Joined the European Union in 2013</td>
<td>29.36 %</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>74,786.89</td>
<td>No target date to adopt the Euro</td>
<td>40.39 %</td>
</tr>
<tr>
<td>Denmark</td>
<td>44,443.53</td>
<td>Part of European Exchange Rate Mechanism</td>
<td>14.75 %</td>
</tr>
<tr>
<td>Hungary</td>
<td>31,306.81</td>
<td>No target date to adopt the Euro</td>
<td>25.77 %</td>
</tr>
<tr>
<td>Poland</td>
<td>100,530.72</td>
<td>Planning to join the Euro when conversion conditions allow</td>
<td>21.07 %</td>
</tr>
<tr>
<td>Romania</td>
<td>40,146.26</td>
<td>Planning to join the Euro in 2019</td>
<td>22.66 %</td>
</tr>
<tr>
<td>Sweden</td>
<td>56,287.00</td>
<td>European Union member not eligible to join the Euro</td>
<td>11.96 %</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>162,952.00</td>
<td>IMF Reserve Currency</td>
<td>5.89 %</td>
</tr>
</tbody>
</table>

The Asset Reserves of a number of countries are shown in the tables below. The numbers shown are for March 2017 and the source is the IMF Official Assets Database. The figure shown is the Official Reserve Assets figure as reported by the Central Bank of the country concerned and the value of the reserves is shown in millions of US Dollars.

As this paper is written on the basis that an independent Scotland would have its own independent currency and the European Union referendum result suggests that a majority of Scots would like to be members of the European Union then the best comparison would be with EU countries that do not have the Euro as their national currency. These countries are shown in the table below;

As can be seen from the figures in the table not only is there a large range of values of the foreign exchange reserves and there is also a range of percentages of reserves against GDP.

As a comparison with the above the table below shows selected foreign exchange reserves for other worldwide nations. Again there is a wide range of foreign exchange reserves percentages.

<table>
<thead>
<tr>
<th>Country</th>
<th>Value of Reserves</th>
<th>Notes</th>
<th>% of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>49,264.62</td>
<td></td>
<td>3.67 %</td>
</tr>
<tr>
<td>Canada</td>
<td>83,922.00</td>
<td></td>
<td>5.40 %</td>
</tr>
<tr>
<td>China</td>
<td>3,017,671.00</td>
<td>Size as a result of its national trading surplus</td>
<td>22.27 %</td>
</tr>
<tr>
<td>New Zealand</td>
<td>16,769.79</td>
<td></td>
<td>9.65 %</td>
</tr>
<tr>
<td>United States</td>
<td>118,244.80</td>
<td></td>
<td>0.64 %</td>
</tr>
</tbody>
</table>

Clearly the size of the reserves very much depends on the policy and history of the country. The huge size of China’s Foreign exchange reserves is due to its policy of using its manufacturing base to generate a trading surplus (particularly with the United States). As mentioned previously; the profits from this surplus are deposited with the Chinese Central Bank and then converted into Foreign exchange reserves (for example US Treasury Bills).
Whereas the US has a relatively small foreign exchange reserve relative to its GDP because the US Dollar is the most important reserve currency in the world (and as a result most countries hold US Dollars as part of their foreign exchange reserves and so consequently it is not in the interests of countries holding US Dollars to let the value of the currency fall).

**Target Figure for Scottish Reserves**

Based on figures from the Scottish Government the estimated GDP of Scotland for 2016 was £159 Billion (which is a US Dollar equivalent of around $200 Billion based on the 2016 end of year Sterling / US Dollar exchange rate).

Based on the most recent figures from Eurostat Scotland’s GDP per head is the same as the European Union average. So using the figures for the nine European countries shown in the table their total GDP is $4,721 Billion and the foreign exchange reserves held by them is $552 million. This gives a percentage figure of 11.69%. Obviously this figure has been reduced due to the larger UK GDP figure ($2,861,091 million) and its relatively low percentage value of its foreign exchange reserves. So if I use a figure of 20% for an ideal figure of Scottish foreign exchange reserves relative to its GDP then using the GDP figure of $200,000 million this gives a target value for the foreign exchange reserves for Scotland of $40,000 million.

**Reserved Currencies**

A figure for the amount of foreign exchange reserves required by Scotland has been identified, but it is still necessary to establish what currencies these reserves should be held in. Typically the foreign exchange reserves of a central bank are held in a Reserve Currency. A Reserve Currency can be any freely convertible foreign currency asset held by UK Banks which would then be re-valued into the new currency. So the amount of outstanding debt on Scottish mortgages would be a foreign currency asset held by UK Banks which would then be re-valued into the new currency.

**Support for Banks**

In the 2014 Scottish Independence referendum both RBS and Lloyds Bank reported that they would move their headquarters to London in the event of the people of Scotland voting for independence.

This will have two effects on Bank of England policy;

- It would be in the Bank of England’s interest for the Scottish currency to maintain its value.
- The Bank of England would need to keep some of its reserves in a diverse set of currencies.

Based on figures from the Council of Mortgage Lenders in a briefing to MSPs in 2015 there were around 700,000 mortgages in Scotland. The average outstanding amount on a Scottish mortgage is £90,000 which gives an outstanding mortgage figure of £63,000 million as the outstanding debt on Scottish mortgages.

Based on the UK Exchange Equalisation Account annual report the UK Foreign exchange reserves have a benchmark where they should be held in the following;

- US Dollars – 40%
- Euro – 40%
- Japanese Yen 20%

However due to the low interest rates of the Eurozone there is a switch away from holding foreign exchange reserves in Euro and instead holding them in Renminbi (such as the UK Government issuing a Renminbi denominated bond in 2014).

**In 2015 Scotland’s exports had the following breakdown:**

- 63% UK
- 16% European Union
- 21% Rest of the world

So while this does not mean that 63% of the foreign exchange reserves need to be held in Sterling it will mean that a good part of Scotland’s foreign exchange reserves should be held in Sterling – as for example they could be needed to support the exchange rate between Sterling and the Scottish currency. However to reduce risk it makes sense to hold the foreign exchange reserves in a diverse set of currencies. Therefore for the purposes of this paper the following benchmark breakdown is proposed for the foreign exchange reserves for Scotland;

- 40% Sterling
- 25% US Dollars
- 20% Euro
- 10% Renminbi
- 5% Yen
in this scenario; a 10% drop in the value of the Scottish currency would see £4 Billion wiped off the balance sheets of UK banks. Of course this was just mortgages and does not take into account personal loans, business loans or sundry items such as the value of property (such as bank branches) held by UK banks.

This is actually a good illustration of why central banks work together to maintain the value of one another’s currency as a sudden drop in the value of a currency will have impact beyond the borders of that country.

In addition if the major UK banks continued to be UK banks (rather than Scottish banks) following independence then the Scottish Central Bank would not have to maintain a level of foreign exchange reserves to support the foreign currency obligations of these banks. However the lender of last resort for these UK banks would continue to be the Bank of England. So in the event of a financial crisis similar to the 2007 / 2008 crisis the international obligations of these banks would be met by the UK taxpayer rather than the Scottish one. As a result, unless the UK was prepared to follow the Icelandic solution to a banking crisis by imposing currency controls and refusing to support the foreign currency obligations of UK banks (which would effectively destroy London as an international banking centre) then the Bank of England will need to maintain a portion of its foreign currency reserve in the new Scottish currency.

Scotland has roughly 10% of the population of the United Kingdom so any settlement would see roughly 10% of the foreign exchange reserves become Scottish foreign exchange reserves which is a starting figure of $16,200 million. Based on published benchmarks this will be made up as follows;

- $6,480 million in US Dollars.
- $6,480 million in Euro.

When the Scottish currency is introduced the Scottish Central Bank will issue new physical currency to replace the existing Sterling in circulation in Scotland. Based on figures from the Bank of England on 29th February 2016 the three authorised banks in Scotland (Clydesdale Bank, Bank of Scotland and RBS) had a total of £4,462 million worth of notes in circulation. Of course there will be some people who will want to keep hold of their Sterling (for example if they make regular trips into England) but at least some of this figure will be deposited at the Scottish Central Bank as a result of the introduction of the Scottish currency. Assuming that half of the Sterling physical currency in Scotland is deposited with the Scottish Central Bank in exchange for the new Scottish currency then this will give a figure of £2,230 million which based on an exchange rate of 1.30 (roughly the average US Dollar exchange rate for the last 12 months at the time of writing) gives a figure of $2,899 million of foreign exchange reserves in Sterling.

The Bank of England will have an interest in a stable Scottish currency to ensure stability in the UK banking sector. Additionally, the Bank of England will need to maintain a reserve of the Scottish currency. Based on this, it’s likely the Bank of England and the Scottish Central Bank would negotiate a foreign exchange swap between the national currencies of Scotland and the United Kingdom. This would likely be a Foreign Exchange Swap rather than a direct purchase of currency as this would allow both central banks to reduce the value of the swap going forward if for example the value of Scottish loans taken out with UK banks reduce because of the emergence of an independent Scottish banking sector. A foreign exchange swap would also allow the exchange rate of the swap to reflect the actual exchange rate between the two currencies if the swap was negotiated in the future.

So for the purposes of this exercise it is reasonable to suggest that a £10 Billion 12 month foreign exchange swap would be taken out between the Bank of England and the Scottish Central Bank as part of the independence settlement. This would give the Bank of England sufficient Scottish currency to fulfil the foreign currency obligations of its banking sector without being tied into a long term agreement that could harm the value of the UK foreign exchange reserves. Similarly if the economic dependency of Scotland on the UK as its primary export market reduced in the years following independence; then the Scottish Central Bank could negotiate a lower value of swap in subsequent years.

As the contribution of the Scottish Central Bank would be in Scottish currency then no borrowing would be required to pay for this foreign exchange swap. Similarly as the purpose of this foreign exchange swap was the mutually beneficial stabilisation of the exchange rate between the two countries following Scottish independence then an agreement could be put in place that the currency issued in the swap would not be used in market transactions to reduce the inflation risk of the issue of currency.
Converting this £10 Billion to US Dollars at an exchange rate of 1.30 would give a value of $13,000 million dollars.

At this point the foreign exchange reserves of Scotland would be $31,430 million made up of the following currencies;
- $15,230 million in Sterling – 48.4%.
- $6,480 million in US Dollars – 20.6%.
- $6,480 million in Euro – 20.6%.
- $3,240 million in Yen – 10.3%.

It can be expected that some of Scotland's trading partners will also want to take positions in the new Scottish currency as part of their foreign exchange reserves, though for the purposes of this exercise it is better to assume it is zero so as not to start making unreasonable assumptions to make the numbers balance.

The next step is for the Scottish Central Bank to issue a series of Euro denominated central bank securities. These will be based on the following range of maturities;
- €2 Billion with a 1 year maturity.
- €2 Billion with a 2 year maturity.
- €2 Billion with a 5 year maturity.
- €2 Billion with a 10 year maturity.

They should be issued in Euro rather than currencies like Renminbi or US Dollars as the current return on Euro denominated securities is low (with short term bonds issued by countries like Germany, Belgium and Netherlands having negative yields). This means that a country without a long term credit rating like a newly independent Scotland issuing central bank securities with a positive interest rate in Euro should find a ready market of investors eager to maintain a Euro denominated investment without a negative return. Based on this €8,000 million Euros would be raised. Half of these could then be invested into US Dollar denominated securities to maintain a return, and another €2,000 in Renminbi retaining the final €2,000 million in Euro. Based on a US Dollar / Euro exchange rate of 1.11 this would raise the following foreign exchange reserves for Scotland;
- $ 4,400 million US Dollars.
- $ 2,200 million Renminbi.
- $ 2,200 million Euro.

The issue of central bank securities would not be cost free. As the initial credit rating of Scotland may be lower than some comparable economies, the interest rate offered by Scotland may be slightly higher, but this would not increase the debt of Scotland as the borrowed money would be invested in the foreign exchange reserves of Scotland. So when the central bank securities matured they would be paid back from the foreign exchange reserves and a new central bank security issued if required.

So what would the cost be? If Scotland had to pay a premium of 1% above the return it would get by investing the reserves raised then this would equate to €80 million a year (£70.2 million at a Sterling / Euro exchange rate of 1.14). This is substantially less than the £500 million which Scotland is currently contributing annually to the build-up of UK foreign exchange reserves to provide a safety net for the City of London.

Finally, $1,200 of the Japanese Yen held in the Scottish Foreign exchange reserves should be exchanged into Chinese Renminbi to increase the value of Renminbi held to a figure closer to the 10% benchmark.

Given this exercise the final foreign exchange reserves of an independent Scotland would be:

<table>
<thead>
<tr>
<th>Currency</th>
<th>Value of Reserves</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterling</td>
<td>$15,230 million</td>
<td>3.67%</td>
</tr>
<tr>
<td>US Dollars</td>
<td>$10,900 million</td>
<td>5.40%</td>
</tr>
<tr>
<td>Euro</td>
<td>$8,680 million</td>
<td>27.27%</td>
</tr>
<tr>
<td>Yen</td>
<td>$2,040 million</td>
<td>9.65%</td>
</tr>
<tr>
<td>Renminbi</td>
<td>$3,400 million</td>
<td>0.64%</td>
</tr>
</tbody>
</table>

This gives a final figure of the foreign exchange reserves of $40,230 million which is roughly the foreign exchange reserve figure required by an independent Scotland within the European Union with a national currency. While the percentages are not exactly matching the benchmark set earlier in this report they are in line with the benchmark and it is likely to be brought closer to the benchmark with active management of the foreign exchange reserves.

**Alternative Scenarios**

So far, assumptions in this report have been based on statements made by the UK banks at the time of the last referendum on Scottish independence. There are many other scenarios that could play out based on the negotiated independence settlement.

So let us consider some alternative scenarios.

For example let's consider the scenario that instead of RBS becoming a UK bank, the bank was split between the UK and Scotland (in the same way Fortis Bank was split between Belgium and Netherlands when it was bailed out). In this case the Scottish portion of RBS would be a Scottish bank headquartered in Scotland and the UK portion (probably renamed NatWest) would be a UK bank headquartered in London. For the RBS Scottish Bank to operate it would need to hold an amount of capital to satisfy the capital adequacy requirements of the Scottish Central Bank. In all likelihood such a scenario would see the Scottish Bank primarily being a Scottish domestic retail bank with the main business of the bank being retail and corporate banking for Scottish citizens and Scottish companies. Consequently its capital reserve would need to be in the Scottish currency as it would need to cover loans and deposits denominated in the Scottish currency.

In its 2016 results it had total assets of £798,656 million and a Risk Weighted Assets figure of £228,200 million. Assuming RBS is split between the UK and Scotland then a portion of those assets would be deposited with the Central Bank of Scotland to support the capital adequacy of the Scottish portion of RBS. If the figure deposited was £22 Billion (10% of the Risk Weighted Assets of the UK bank) then £22 Billion would be deposited with the Central Bank of Scotland. As this capital would be to support loans and deposits in the new Scottish currency then this £22 Billion...
Sterling would be converted to 22 Billion of Scottish currency giving the Central Bank of Scotland £22 Billion Sterling to add to its foreign exchange reserves.

In such a scenario the Bank of England would see a reduction in the risk to the UK economy from a fall in the value of the Scottish currency and so in all probability look to reduce the value of the Sterling / Scottish currency foreign exchange swap to £6 Billion. However, as the Central Bank of Scotland had an increase in the amount of Sterling deposits then this would not be a problem with respect to raising sufficient foreign exchange reserves to support the new Scottish currency. As the net gain would be £18 Billion it would no longer need to issue Central Bank Securities in Euro as it could convert a portion of the Sterling raised into Euro and use this to purchase Euro denominated sovereign debt to satisfy the Euro portion of the foreign exchange reserves.

In such a scenario larger foreign exchange reserves would be required by Scotland as it would be needed to underwrite the foreign currency obligations of the Scottish part of RBS, but given the gain in foreign exchange reserves as a result of converting the Sterling assets held by RBS into Scottish currency and the consequential gain in foreign exchange reserves, the final foreign exchange reserves total would be £61,000 million, which would be enough to support the activities of the RBS Scottish Bank.

Another scenario would be that the whole of RBS (or another large UK bank) would be a Scottish Bank following independence. In this scenario while there would be an increase in the foreign exchange reserves of the order mentioned in the previous scenario (approximately $20,000 million) it would actually be more important that the capital reserves of the bank were held in currencies that reflected the market risk to the bank. For example based on its 2016 Annual Report RBS has a number of non-Sterling operations such as:

- Ulster Bank – Republic of Ireland; £ 20.1 Billion loans denominated in Euro.
- RBS International has customer deposits of £25.2 Billion held in various currencies.
- NatWest Markets – the investment banking arm of RBS has £100.9 Billion funded assets and operates in the world's major currencies.

Rather than the Central Bank of Scotland fully underwriting all this activity, the supervision regime of the Central Bank of Scotland should ensure that the mixture of assets held in its capital adequacy reserve matched the currencies it was doing business in. The reason for doing this it that it is unlikely that the people of Scotland would support another banking bailout. Instead it should be the responsibility of the bank to ensure it is sufficiently funded and the foreign exchange reserves should be held to support the whole of the Scottish economy rather than being there solely to support the financial services sector. As a result the Central Bank of Scotland should have a supervisory regime in place that obviates the need for another banking bailout rather than ensuring it has sufficient foreign exchange reserves to be able to afford one.

**Cost of Holding Reserves**

While having an independent Scottish currency means that the Central Bank of Scotland would have the ability to issue currency to help it build foreign exchange reserves, those reserves should not be looked on as having no cost. Not only is there an inflation risk from issuing too much of an independent currency there is also the cost of what that money could be used for if it was not sitting in a foreign exchange reserve.

As discussed earlier in this report, since 2010 the UK Government has been investing £6 Billion a year in its foreign exchange reserves. However since that time there have been real reduction in government spending in areas such as education and social welfare leading to reductions in social mobility and the relatively low productivity in the UK (as UK workers miss out on training and investment in skills). Increasing spending in areas such as education, skills and training will lead to long term increases in productivity and a stronger economy as a result. If that £6 Billion a year was invested in, for instance, education to improve skills and productivity then this would strengthen the UK economy and there would be less reliance on foreign exchange reserves to maintain the value of the currency.

A stronger national economy will, in the longer term, result in an increase in value of the national currency which will in turn will mean it is worth more against the global reserve currencies and as a result make it easier to accumulate foreign exchange reserves. Similarly, as can be seen in examples such as China and Germany, changing the economy to produce a trading surplus will also increase the foreign exchange reserves of a nation. This will not happen unless the investment is made to improve the productivity of a country’s workers.

So while it has been demonstrated that an independent Scotland has the capacity to build up sufficient foreign exchange reserves, solely focussing on short term creation of reserves may not be the best way of securing reserves in the longer term as improving the health of the economy is a better method of ensuring healthy reserves.

**Conclusion**

It is not possible to say with any certainty what the economic conditions will be at the time of independence and how these will impact the launch of a Scottish currency or what the final independence settlement would be. This report is premised on the information available today and forecasts are made on that basis.

Using this approach, this report has demonstrated how it is possible for Scotland to raise sufficient foreign exchange reserves to ensure a stable launch of its own independent currency and to maintain a stable exchange rate with the currencies of its principle trading partners. This has been done by calculating a benchmark figure for the value of foreign exchange reserves necessary for Scotland and demonstrated how this benchmark figure can be met using standard foreign exchange reserve methodology.

No convenient short cuts have been taken; by for example assuming all physical Sterling currency in circulation in Scotland today would be exchanged for physical Scottish currency when the new currency has been introduced, or assuming that all electronic Sterling in Scotland could be converted into the new Scottish currency and the Sterling so raised could be used as
foreign exchange reserves. Indeed, in the primary independence scenario discussed the ability of Scotland to raise the necessary foreign exchange reserves rests on three main assumptions:

- Lloyds Banking Group and the Royal Bank of Scotland will continue to be UK banks after Scottish independence.
- The UK Government will support the foreign currency obligations of the UK Banking Sector.
- The UK Government will divide the foreign exchange reserves between the remaining UK and Scotland as part of the Scottish independence settlement.

The first assumption is based on statements made by these banks during the 2014 Scottish independence referendum campaign. The second assumption has clearly been UK Government policy since 2008 and indeed the UK Government was critical of Iceland’s refusal to compensate foreign account holders when the Icelandic financial system collapsed.

The third assumption is based on the fact that it is in the UK’s interest for Scotland and its currency to be stable because of the negative impact on the UK banking sector from a fall in the value of the Scottish currency.

As part of independence negotiations, the Bank of England would engage with the new Scottish Central Bank to make an agreement to stabilise the exchange rate between these currencies. This would be done through a foreign exchange swap between the central banks. This would initially be to peg the value of Sterling and the new Scottish currency and then, as the economies began to diverge, to agree a percentage range of value between the two (for example the value should not differ by greater or less than 5%).

Longer term it would be important for the Scottish Government to put policies in place that reduces the dependence of the Scottish economy on the UK, as until this happens the value of Scotland’s currency is going to be linked to the value of Sterling. So if the value of Sterling falls the value of the Scottish currency will fall as well because over 60% of Scotland’s exports goes to that one market.

While the future economy of Scotland is beyond the scope of this report it is possible to draw parallels with historical experience to demonstrate how this may work. In the late 1980s Finland’s largest export market was the Soviet Union. In particular, Finland agreed a series of five year plans with the Soviet Union which gave stability to the Finnish economy. When the Soviet Union collapsed in 1990 / 1991 these exports were disrupted and the Finnish economy went into recession. This was due to the dominant nature of the economic relationship between Finland and the Soviet Union. Since then Finland has joined the European Union and has diversified its trade with a range of different countries (the two largest countries by value of Finnish exports are Germany at 14% and Sweden at 9.1%). This has reduced the risk to the Finnish economy by being too closely linked to any one country. Finland still has substantial trade links with Russia but it is no longer dependent on them and the relationship between the two countries is healthier for this being the case. So Scotland can raise sufficient foreign exchange reserves at the time of independence; what the foreign exchange reserves of Scotland will look like and what value will be required is then dependent on what Scotland does next.
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