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# ASSETS AND LIABILITIES AND SCOTTISH INDEPENDENCE<sup>1</sup>

<sup>1</sup> This Discussion Paper is an updated and revised version of a paper accepted to the Oxford Review of Economic Policy to reflect the subsequent data releases.

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Scottish independence implies an economic future that is different from remaining in the United Kingdom. The economic debate largely comes down to whether this would leave Scots better or worse off. By most measures, Scotland's current economic standing is very similar to that of an average UK region. Output per head, income and unemployment are almost all exactly the same as the average UK region. This is not surprising given the economic and social integration and shared institutions, and is consistent with the idea of conditional convergence. This suggests that after controlling for differences in institutions and other characteristics (so-called 'initial conditions'), countries tend to converge to similar levels of income.<sup>1</sup> However, if Scotland becomes an independent nation, some of the shared UK assets, liabilities and institutions would need to be divided-up. This would change the 'initial conditions' for Scotland and the rest of the UK and therefore we would be likely to see a different economic future for both regions.

The aim of this paper is to consider how some of the economically important assets, liabilities and institutions in the UK could be divided if Scotland becomes an independent nation. We show this has important implications for both Scotland and the UK. We make two important legal assumptions. First, we follow Tierny (2013) and assume that if Scotland becomes an independent nation then England, Wales and Northern Ireland would be the continuing UK and all existing acts and agreements of the UK Parliament would continue to be valid unless it chooses otherwise. This means that current UK institutions would remain, even if Scotland becomes independent. Second, we assume that an independent Scotland would join the European Union during the negotiation period between the referendum and before independence would be effective in March 2016.

We conclude that on the basis of any reasonable division of existing assets and liabilities, Scotland would begin its independence with a substantial debt burden and less scope for risk-sharing. The continuing UK would also see its debt burden rise substantially (above Scotland's burden) which is likely to attract the attention of credit rating agencies. An independent Scotland is likely to require a more restrictive fiscal stance than proposed by the coalition government for many years. We illustrate a plausible adjustment by a quantitative exercise to show the policies which would be required to achieve a specific debt to GDP ratio ten years after independence. We estimate that Scotland would need to run primary surpluses of 3.1% annually order to achieve a Maastricht defined debt to GDP ratio of 60% after 10 years of independence.<sup>2</sup> This would be more restrictive than the fiscal tightening over the last four years.

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<sup>1</sup> See Barro and Sala-i-Martin, 1991

<sup>2</sup> Note that the Maastricht public debt figure for UK public debt is significantly higher than the UK public sector net debt figure.

## **1. GUIDELINES FOR SEPARATION**

In the event of Scottish independence, most public sector assets and liabilities of the existing UK would be divided between the two sovereign states. This would involve negotiations held between the referendum date and March 2016 which, under the Edinburgh Agreement, are to be in the best interests of the people of Scotland and the rest of the United Kingdom.<sup>3</sup> Two critical issues likely to emerge are: (a) the basis for the division; and (b) the assets and liabilities to be divided. Despite the fluidity of international borders, history offers surprisingly few precedents to address these issues. Most new sovereign states offer a poor basis for comparison as they have emerged in contentious circumstances rather than as the result of a cordial separation.<sup>4</sup> Two recent examples of ‘friendly’ separations which offer some guidance are the separation of Czechoslovakia in 1993 and the ultimately failed campaign for Quebec independence from Canada in 1995.

The division of Czechoslovakia into the Czech Republic and Slovakia in 1993 is often called the ‘velvet divorce’ and had a spirit of mutual agreement similar to that which is expected to arise if the Scottish electorate chooses independence. The Czech Republic was the larger state with the central bank and capital markets located in Prague while Slovakia had more natural resource reserves and had a leftist government. The general principle agreed between negotiators from both countries was that property and natural resources should belong to the state in which they were situated, while non-physical assets and liabilities were divided 2:1 in favour of the Czech Republic, in line with the relative population size. While the division of the assets and debt was amicable, having the monetary system located in one country proved to be a major flaw as savings immediately began to flow from Slovakia to the Czech Republic, resulting in a break-down of the mutual monetary agreement.

A second, but incomplete, example of a consensual division of a state is the Quebec referendum in 1995 on the province seceding from Canada. According to Chant (1991), prior to the referendum four alternative ways of separating the Federal debt were discussed. Two measures were on the basis of population (25%) and income (25%). The Belanger-Campeau formula (21%) was based on the government’s acquisition of assets, future tax liabilities and pension obligations, while a fourth measure was based on an estimate of the historical benefits from the Confederation (30%).<sup>5</sup> The low estimate is reported to have been a negotiating ploy by the separatist movement. Since the vote for separation was rejected by 50.6% which measure of debt would have been agreed is unknown.

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<sup>3</sup> The Edinburgh Agreement was signed by the UK and Scottish Governments in October 2012.

<sup>4</sup> Over the last sixty years the number of sovereign states has increased from 76 to 206. Yet these have mostly arisen from war and the end of colonialism and communism rather than cordial agreement.

<sup>5</sup> The figures in brackets are Quebec’s proposed share of the Federal debt.

So far as general principles can be drawn from these two recent examples, fixed assets are divided on the basis of physical location while non-physical assets and liabilities are separated on some basis of ‘fairness’ of which two leading contenders are a population and income basis.

## **2. WHOLE GOVERNMENT ACCOUNTS**

No single set of accounts provides a complete register of all public sector assets and liabilities. The best starting point is the public sector Whole Government Accounts (WGA) which is broader than the cash basis treatment of Public Sector Finances in the National Accounts. The WGA is based on commercial principles and represents the consolidated accounts of all audited public sector entities, meaning that inter-government claims (for example, holdings of assets from quantitative easing) cancel out. It includes claims on onshore physical assets, off-balance sheet exposures (e.g. the cost of financial sector interventions and Private Finance Initiative contracts), accruals arising from past activities (such as public sector pensions) and certain provisions and contingent liabilities.<sup>6</sup> Natural resources and future revenues and expenses based on current policies are excluded.

A summary of the WGA is presented in table 1 below. The total asset figure of £1,268bn (the sum of physical assets plus other assets and equity investments) is quoted throughout the Scottish Government (2013a) White Paper as the ‘net’ assets to be shared if Scotland becomes independent.<sup>7</sup> As a consolidation of all government departments, this includes the tangible assets of the Bank of England. This is the broadest measure of public sector assets available (if a little dated) and shows the Scottish Government’s basis for negotiation.

Table 1: UK Whole Government Accounts 2011-12 (£bn)

Liabilities		Assets	
Net public service pensions	1,008	Physical assets	745
Government financing	966	Other assets and equity investments	523
Other liabilities and provisions	641	Net liability	1,347
Total	2,615	Total	2,615

Source: HM Treasury (2013).

The biggest differences between the WGA and the Public Sector Finances in the National Accounts are the inclusion of non-current (physical) assets and public sector pension provisions. Physical assets include £348bn of land and buildings (schools and hospitals etc), £269bn of infrastructure (roads and the Scottish water network) £39bn of PFI funded assets and £35bn of military

<sup>6</sup> Provisions are defined as more than 50% chance of occurring and contingent liabilities are defined as less than 50% chance of occurring.

<sup>7</sup> Scottish Government (2013a) pp 30, 341 and 554. ‘Net’ refers to net of depreciation.

equipment.<sup>8</sup> Other assets and equity investments include tax debtors, intellectual property and deposits in banks, gold reserves and claims on banks from financial sector interventions. Public sector pensions are those entitlements which have accrued but are not yet paid to NHS staff, civil servants, teachers, police and the armed forces etc. Other liabilities include commercial banks' reserves at the Bank of England (part of which were created under quantitative easing), and provisions and contingent liabilities including for financial sector interventions and the quantitative easing programme.<sup>9, 10</sup>

If fixed assets are divided-up based on location, the Net Asset Register published by HM Government (2007) provides a rough guide to the geographical location of the assets and therefore how much would be allocated to an independent Scotland. This is an audited account of the fixed assets of nineteen government departments and their physical location. It includes a vast list of buildings, say from the National Galleries of Scotland to the court house in Wick. The latest Register was published in 2007 based on valuations in 2005 showing net assets of £337bn. If Scotland were to receive a simple per capita share this would be worth £28bn. However, Scottish department buildings alone are valued at £23bn (this includes the Scottish Executive, its Agencies, public corporations, the NHS buildings etc.).

Government financing refers to the stock of gilt-edge securities, Treasury bills and NS&I products outstanding (of which £224bn falls due within one year). While the stock of outstanding government debt instruments is £966bn this excludes a large amount of current financial liabilities. Other financial liabilities of £373bn (or £126.4bn net of financial assets) include banks' reserves held at the Bank of England, many of which were created for the purchase of government debt securities under quantitative easing. Net financial liabilities include government debt securities outstanding plus other net financial liabilities of £1,092bn. This is similar to the public sector net debt of £1,096bn in financial year 2011-12.<sup>11</sup> The net liabilities of £1,347bn in the WGA is the broadest measure of net indebtedness of the public sector. It is the counterpart to the public sector net debt where the approximate difference between the two figures is that the former includes public sector pensions as liabilities and public sector fixed assets.

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<sup>8</sup> HM Treasury (2013) p15 reports that infrastructure is likely to be understated by at least £200bn due to accounting procedures at local authorities.

<sup>9</sup> Government bonds held by the Asset Purchase Scheme (a subsidiary of the Bank of England) are netted-off the bonds issued. However, the increase in bank reserves and the Bank of England mostly used to pay for the purchase of the bonds is included in liabilities. Hence in aggregate there is little overall impact of the APS on the WGA although there is a large difference in the composition of liabilities.

<sup>10</sup> The balance sheets of the publicly owned banks (Northern Rock Asset Management and Bradford and Bingley) will only be included in the WGA from 2013.

<sup>11</sup> Note, this is less than the stock of gilts outstanding of £1,164bn and NS&I instruments of around £100bn due to a deduction of liquid financial assets such as government deposits.

### **3. OIL AND THE BANK OF ENGLAND**

The WGA cover public sector agencies and onshore constructed physical assets and therefore they cannot be considered a complete register of all national assets. They exclude natural resources, some of which provide enormous non-pecuniary benefits to citizens and visitors such as enjoying the unspoilt countryside. Other natural resources yield enormous financial benefits, in particular the remaining North Sea oil and gas fields, and will be keenly contested in negotiations in the event of Scottish independence. Under current accounting conventions the North Sea oil and gas is sold onto world markets and the tax revenues collected by HM Revenue and Customs as part of the UK's overall tax revenue. If Scotland becomes independent, the fields would be divided between Scotland and the continuing UK and the tax revenues would accrue to the respective governments.

Maritime experts expect that if Scotland becomes independent the oil and gas fields will be allocated by location with the median line the most likely boundary.<sup>12</sup> On this basis, an independent Scotland could receive up to 84% of tax revenues from the remaining UK hydrocarbon reserves.<sup>13</sup> According to the Scottish Government, there may be 15-24 billion barrels of oil and gas equivalent still be recovered with a potential market value of up to £1.5tn.<sup>14</sup> Since most of the energy is immediately sold on world markets, the important issue is the tax revenue arising from the sales. This is highly uncertain and disputed, but according to the Office of Budget Responsibility's central forecast the total tax yield between 2018-19 and 2040-41 is estimated at £56bn. If an independent is awarded a geographic share of the oil and gas fields, the tax yield would be £47bn in cash terms (i.e. not discounted).<sup>15</sup> This benefit to Scotland is mirrored by a tax loss to the continuing UK.

The amounts involved are certainly large. Over the past five years the average tax revenue from oil and gas has been £9bn.<sup>16</sup> This is equal to only 1.6% of onshore tax revenues over the same period for the whole of the UK. If a geographic share of the tax revenues had been awarded to Scotland this would have accounted for 18% of Scottish onshore tax revenues. Due to lower production levels the OBR (2014) has lowered its short term tax forecast from North Sea activities to £4.7bn in 2013-14 and only £3.2bn in 2016-17, the year that independence could take effect.<sup>17</sup>

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<sup>12</sup> The median line is equidistant from the two closest coast lines. It was used to divide the North Sea into UK and Norwegian territories and to demarcate fishing boundaries between Scotland and the rest of the UK.

<sup>13</sup> See Scottish Government (2013b). HM Revenue and Customs estimate a geographic share of tax receipts to be equivalent to 79% of total revenues.

<sup>14</sup> Scottish Government (2013c).

<sup>15</sup> The OBR's range of estimates for the remaining tax revenues based on a high and low scenarios for prices of £82bn to £43bn and production £73bn to £40bn.

<sup>16</sup> Scottish Government (2013b), Table 4.1.

<sup>17</sup> The revenue forecasts are the sum of offshore corporation tax and petroleum tax revenues published in OBR (2014).

The volatility of the revenues is an important issue for fiscal planning purposes. For example, the difference between the past five year average figure of £9bn and the £3.2bn revenue projection would be equivalent to a 3.5% deterioration in tax revenue as a share of GDP for an independent Scotland. If the government is to stick to its budget, this would mean either an estimated 3.5% of GDP in increased tax revenues or lower spending – a substantial additional fiscal tightening above the tightening already proposed by the Westminster government.<sup>18</sup>

Another set of assets which are not included in the WGA are those which have incomplete property rights. Economists have long recognised the importance of limits on contractual enforcement. In particular, Hart and Moore (1994) show how limits on contractual enforcement can lead to lower levels of debt issuance which can in turn inhibit efficient investment. The most obvious asset which is subject to an incomplete contract is human capital. It is often said that the greatest asset of a nation is its people. As well as providing labour for the nation's production process, people also create the institutions by which society is organised and supply the invention and creativity to generate advancements. But since the end of servitude, a state cannot command citizens to use their human capital (it is inalienable and hence subject to an 'incomplete contract') and hence in an accounting sense, human capital cannot be included in national accounts as a state asset.<sup>19</sup>

The value of sterling as an asset is similarly based on an incomplete contract, which cannot be transferred from one government to another even if there were a desire to do so. Given the importance of the choice of currency to the economics of independence, this is a critical issue. The Scottish Government's (2013a) White Paper and statements from the First Minister make it clear that sterling and the Bank of England are assets to be shared in the event of independence.<sup>20</sup> Yet the Bank of England's balance sheet (which includes sterling notes and coins) is already consolidated in the WGA and therefore part of the 'net' asset figure referred to above. Based on its balance sheet in 2012, the net worth (the difference between assets and liabilities) of the Bank was only £340mn.<sup>21</sup> While the Bank of England would continue to be a UK institution constituted under Acts of the UK Parliament, as with rest of the WGA balance sheet an independent Scotland could certainly have some claim for compensation for its share of the net worth. Based on a population share, this may be worth up to £29mn, less the share of buildings obviously located in London.

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<sup>18</sup> The implications of the volatility of hydrocarbons based tax revenues for the optimal choice of currency is considered in Armstrong and Ebell (2014).

<sup>19</sup> An ONS experimental data series shows the value of human capital for the UK to be £17.90tn in 2012. Taking a simple population share of this estimate, human capital in an independent Scotland would be around £1.5tn. While this is important to potential economic growth, it is not clear that it can be considered as a state asset.

<sup>20</sup> Scottish Government (2013e) p7. The First Minister stated during the launch of the White Paper that the bank of England and sterling are as much Scotland's asset as London's asset.

<sup>21</sup> Strictly speaking, currencies are simply government IOUs and therefore liabilities of the state.

The real value of sterling derives not from the net worth of the Bank of England. Rather, sterling's value comes from being a widely accepted as a store of value. As with all currencies, sterling's value over the long term depends on controlling its supply which can only be assured if the issuing state controls its finances and honours its commitment to pay its debts. In the case of sterling, governments since Charles II have never defaulted on debt or even eroded the real value through excessive and unexpected inflation.<sup>22</sup> This track record of the governments of England and Wales and later the UK in honouring its commitments over this time period is unique. Sterling is perceived as a hard currency with a negligible probability that the issuing government will default. This is an extremely valuable asset which leads to a very low default premium and lowers the cost of borrowing for the UK.

The Scottish Government rightly sees this property as being valuable, especially to a new state. Yet the value comes from the support, commitment and reputation of successive governments over the past three and a half centuries. It is inalienable to the UK government in the sense that it is part of its history and depends upon the ongoing support of the UK government. Reputations are incomplete contracts because they can be partly shared but they cannot be transferred. It is simply not possible for the continuing UK government to transfer part of this reputational value to another government even if it were inclined to do so. The continuing UK government may choose to share sterling's reputational value and its tax payers commitment by extending the powers of the Bank of England to operate in the interests of an independent Scotland. However, the statements by the Chancellor, Shadow Chancellor and Financial Secretary have ruled this out as they do not believe that this would be in the interests of the citizens of the continuing UK.

#### **4. DIVISION OF EXISTING UK DEBT**

Since the Union was created, all citizens of the UK have benefited to a greater or lesser extent from the services and investments provided by the state. Much of this spending has been financed by borrowing from private citizens and all citizens and companies are required to pay their due taxes to service and repay the national debt. If Scotland becomes independent, the new Scottish state would be required to compensate the continuing UK state for being relieved of (i.e. no longer obliged to pay) its share of outstanding UK public debt at the time of independence. This would be a reversal of

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<sup>22</sup> Some scholars such as Reinhart and Rogoff (2009) p 111 suggest that the conversion of loan stock in 1932 was debt forgiveness and therefore a default. Capie and Wood (2012) p 170 describe how the stock had a final redemption date of 1947 with an option to repay anytime after 1st June 1929. This is similar to the option in many government and agency bonds today.

the payment (called ‘the Equivalent’) made to Scotland upon joining the Union.<sup>23</sup> This compensation is not straightforward and raises at least three important questions.

- Which measure of existing UK public debt is appropriate?
- How would the public sector debt be divided?
- How would an independent Scotland compensate the UK?

The amount of debt to be shared depends on the definition of debt. The WGA net liability measure includes fixed assets and known future obligations and therefore is conceptually the most coherent measure of the UK's obligations. This does not mean that the UK must issue this amount of debt on financial markets; many of the liabilities are not due to be paid until some date in the future. Yet when deciding at which price to buy government bonds, broader exposures such as pension liabilities and contingent claims are likely to be considered.

The amount of market debt that an independent Scotland would be likely to assume is some share of the outstanding government financing. The most common measure is the Public Sector Net Debt (PSND) used by past and the present governments in framing fiscal rules. This is a narrow measure of total financial liabilities (government bills and gilts and National Savings debt) minus liquid assets (foreign exchange reserves and cash deposits) measured on a cash basis (so without accruals). A broader measure more often used internationally is Gross Debt or Maastricht defined debt which does not allow for the netting-off of liquid assets or the exclusion of debts issued by other public bodies. In our fiscal stabilisation simulation we use the Maastricht measure of debt because it is most widely accepted internationally and it is a conservative measure. Table 2 shows all three measures of indebtedness in absolute amounts and as a share of GDP using the OBR projections.

Table 2: Alternative measures of UK public sector debt

	2011-12		2013-14		2015-16	
	£bn	% GDP	£bn	% GDP	£bn	% GDP
WGA (Net liabilities)	1,347	87	NA	NA	NA	NA
PSND	1,104	72	1,258	75	1,439	79
Maastricht definition	1,312	85	1,512	90	1,701	93

Source: OBR (2014) and HM Treasury (2013)

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<sup>23</sup> At the creation of the Union in 1707 the Equivalent was a payment made to Scotland allegedly to compensate for becoming party to England and Wales's unfunded public debt. However, the majority went to the few shareholders of the bankrupt Company of Scotland after the ill-fated Darien Scheme.

The division of the UK's debt and assets is likely to be keenly negotiated. The general principle from the split of Czechoslovakia and possible independence of Quebec was that debt was divided in line with the relative population size. The First Minister acknowledged that this would be a 'fair' basis for the division in 2012.<sup>24</sup> Another viable option is on the basis of 'ability to pay'; since an independent Scotland would have a higher per-capita share of GDP including North Sea oil, it would take on a greater share of public debt than on a population basis. On a population basis, an independent Scotland would become responsible for 8.4% of the outstanding debt. The resulting gross and net debt burdens for Scotland are summarized in Table 3 below. Scotland's initial gross debt to GDP ratio would be 86%, while the PSND measure would be 73%. On the Maastricht definition of gross debt, if a population share is allocated to an independent Scotland this would be equivalent to £143bn.

The Scottish Government has proposed an alternative approach based on what they describe as a 'historic' share.<sup>25</sup> This is the sum of borrowing assuming that a geographic share of tax revenues from North Sea oil and gas had been allocated to Scotland less debt repayments since 1980. The Scottish Government (2013a) uses it to calculate a 'historic' debt share of £100bn at independence. Using this 'historic' basis and assuming a geographical split of hydrocarbons, Scotland's net debt burden would fall to 60% from 73% of GDP based on a population share.<sup>26</sup> The key issue is whether starting in 1980 when oil tax revenue began is reasonable, and whether an ex post calculation is justified. Precedents suggest population is the most likely basis for the division of debt.

Table 3: Hypothetical debt burdens for an independent Scotland 2015/16

	<b>Measure</b>	<b>Total debt</b>	<b>Independent Scotland</b>	
		<b>£bn</b>	<b>£bn</b>	<b>Debt/GDP%</b>
<b>Baseline</b>	<b>Maastricht</b>	1,701	143	86%
	<b>PSND</b>	1,439	121	73%
<b>Historic</b>	<b>Maastricht</b>	1,701	115	69%
	<b>PSND</b>	1,439	100	60%

Source: OBR (2014) and authors' own calculations

<sup>24</sup> Interview with Jon Snow, January 11<sup>th</sup> 2012 available on Youtube.

<sup>25</sup> See Scottish Government (2013a).

<sup>26</sup> Projected 2015/16 Scottish GDP including a geographic share of oil as of March 2014 is £166bn, so that the debt to GDP ratio is £100bn/£166bn = 60%. In its White Paper, the Scottish Government sets the 'historic' debt of £100bn against its projections for 2016/17 GDP and obtains a debt burden of 55%. The implied underlying forecast for 2016/17 GDP must be about £182bn.

Although it seems a technical detail, the precise means of transferring the debt is of great importance. In a technical note, HM Treasury (2014) the UK Government re-iterated that it is, and will continue to be, fully responsible for the issued stock of UK government debt. This measure ruled-out somehow sharing out the outstanding debt directly which would be a change of terms and constitute a technical default. This leaves two alternatives for the Scottish Government to compensate the rest of the UK for its share of the existing public debt. The first option is where an independent Scotland pays the full amount of its share of UK debt at independence, which is a ‘clean break’ option. Of course, one would need to take the maturity of the debt into account; after all, owing £100 in 10 years time is less burdensome than owing it today. A simple back of the envelope calculation, taking the duration of UK public debt at 8.5 and the 4.1% as the discount factor (the average yield on 10 year UK gilts since 2000) reduces the population share of gross debt from £143bn to £102bn. This means that the Scottish government makes a cash payment to the UK government of £102bn in 2016/17.

The second option, alluded to throughout the White Paper, is that while the UK government remains liable for the entirety of the current UK debt an independent Scottish government would commit to paying its share of interest and principal payments as and when they fall due.<sup>27</sup> This is an ‘IOU’ option. This proposal was first suggested by the Fiscal Commission Working Group (2013) which suggested that the payments are made in line with the current UK yield curve. For example, if the UK’s debt stock included £1bn in five year gilts, and Scotland were responsible for 8.4% of the UK’s debt, then Scotland would pay the semi-annual interest on the £84mn of five year gilts and repay the £84mn of principal at the end of the five years.

The impact of both options on the UK’s gross and net debt measures is summarized in Table 4 below. The first line shows the debt burden ratios for the UK projected by the OBR (2014). In the remainder of the table the continuing UK GDP is reduced by the deduction of Scotland’s output and oil and gas output allocated on a geographical basis. This raises the gross debt burden ratio under all repayment options by nine percentage points to 102% of GDP. However, the repayment options differ markedly in their impact on the PSND. Under the ‘clean break’ option the UK would receive a cash payment of £102bn which would leave the net debt or PSND one percentage point higher at 80% of GDP as the moneys are placed in a liquid asset. Under the ‘IOU’ option there is no up-front cash payment as the UK receives a commitment from the Scottish Government but this would not constitute a liquid asset. Again the amount of gross debt rises to 102% of GDP, but this time the net debt or PSND rises by eight percentage points to 87% of GDP. The Scottish Government report that a

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<sup>27</sup> Scottish Government (2013a) pp 73 and 76.

historic share of the debt would be equal to £100bn at independence, which discounted using the duration and average interest rate above is equivalent to £71 bn. The difference in the means of payment is less pronounced due to the smaller amount being received.

Table 4: Hypothetical debt burdens for the UK in 2015/16

		Public Sector Net Debt		Gross 'Maastricht' Debt	
		£bn	Debt/GDP%	£bn	Debt/GDP%
<b>Union</b>	<b>None</b>	1,439	79%	1,701	93%
<b>Population</b>	Clean Break	1,337	80%	1,701	102%
	IOU	1,439	87%	1,701	102%
<b>Historic</b>	Clean Break	1,368	82%	1,701	102%
	IOU	1,439	87%	1,701	102%

Source: OBR (2014) and authors' own calculations

The 'clean break' option is preferable from the perspective of the UK, as it would free the UK taxpayer from any continuing liability for Scottish debt, and the cash payment would be subtracted off to obtain a lower net debt figure. Indeed, even though the net debt figure rises, the cash payment could in theory be put on deposit leaving the rest of the rest of the UK economically unaffected. However, under the 'IOU' option the UK bears the risk that Scotland might defer or, in extreme conditions, even not repay its obligation. This is obviously not in the interest of UK taxpayers, and would surely attract the attention of the credit rating agencies.

According to the WGA £224bn of the UK market debt is dues within one year. Assuming that an independent Scotland would assume responsibility for a population share of this debt this implies first year payment to the rest of the UK of around £23bn (repayment plus interest). The total amount of debt that an independent Scotland would be required to issue would be £23bn plus the size of the fiscal deficit.

## 5. FISCAL SUSTAINABILITY

Throughout this paper it is assumed that an independent Scotland would be a member of the EU which would require some commitment to joining the euro in future and conditional on meeting the Maastricht criteria (see Box 2.2 in Armstrong and Ebell (3013)). The most challenging targets are the ceiling of 60% government debt to GDP ratio and 3% on the deficit to GDP ratio. These criteria were

conceived of as targets that would ensure that fiscal plans were consistent with sustainable debt levels over longer horizons.<sup>28</sup> For a newly independent country, this provides a reasonable objective for consolidation to create some fiscal slack as insurance against an unforeseen shock (such as a sharp fall in oil prices or new recession) which would worsen the deficit and debt burdens and possibly even raise solvency concerns. An adjustment to a lower debt ratio over a ten year horizon is a moderate consolidation plan.

This framework enables us to consider some future debt burden targets and, given the estimated interest rate spreads, to back-out what this implies for a fiscal adjustment. If the degree of adjustment is considered to be unachievable, or the Government fails to produce a credible plan for delivering this broad adjustment, then investors and citizens might doubt whether there will in fact be any meaningful reduction in the debt burden. If there were to be no reduction, this would leave the currency regime vulnerable in the event of an adverse shock.

We carry out two thought experiments. We first assume that an independent Scotland must reach the Maastricht target debt level of 60% within 10 years. We further assume that the existing UK public debt is divided on a per capita basis. We follow the Scottish government's convention of looking at fiscal accounts on the basis of a geographic and population share of hydrocarbons. This matters for two reasons. First, Scotland's initial debt burden is substantially lower if calculated as a ratio of GDP including a geographic share of oil: 81% versus 96% of GDP. Second, while it is reasonable to disagree about how quickly output of hydrocarbons will decline, there is clearly a finite amount of reserves. As a result, the growth of GDP including a geographic share of oil will be lower than GDP including a population share of oil. Another way to put this is to achieve the same rate of headline GDP growth requires the non-oil GDP to grow faster.

To pin-down the degree of fiscal adjustment we assume that inflation is 2% in line with the Bank of England's target and the initial interest rate is 4.8% based on the estimates for Scotland's sovereign spread over Germany reported in Armstrong and Ebell (2013). As the fiscal consolidation is underway the interest rate spread narrows resulting in lower borrowing costs. Although these lower borrowing costs do not reduce the debt service on Scotland's initial debt levels, they do reduce the rate at which Scotland would be able to borrow in times of stress. Table 5 shows the primary fiscal balances necessary to reach the target of a 60% debt ratio.

Table 5: Primary Surpluses to Achieve 60% Debt-GDP Ratio

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<sup>28</sup> Note that the debt burdens of the Scandinavian economies are around half the Maastricht criteria levels.

	Real GDP Growth Rates					
Horizon	-2%	-1%	0	1%	2%	3%
4 years	10.1%	9.3 %	8.5 %	7.7 %	7.0 %	6.2 %
6 years	7.9 %	7.1 %	6.3 %	5.6 %	4.8 %	4.1 %
8 years	6.8 %	6.0 %	5.3 %	4.5 %	3.7 %	3.0 %
10 years	6.2 %	5.4 %	4.6 %	3.9 %	3.1 %	2.4 %

Source: Armstrong and Ebell (2013)

Assuming that economic growth is a constant 2% per year and the consolidation is over ten years, the average primary fiscal surplus (including oil) must be 3.1% each year. This implies a substantial fiscal tightening. Scotland's primary deficit in the fiscal year 2011-12 was 2.3% of GDP when oil tax revenues are divided on a geographic basis implying a fiscal tightening of 5.4% of GDP.<sup>29</sup> According to the OBR, under present UK Government policies the primary deficit will fall to only 0.5% of GDP in 2016-17 from 5.1% of GDP in 2011-12, implying a fiscal tightening of 4.6%. Assuming the percentage point current difference between the UK and the estimated Scottish deficit (based on geographic oil) is constant, a newly independent Scotland would need to engage in an additional 0.8% of fiscal tightening over and above what the UK Government is already proposing.

We emphasize that our results should be seen as lower bounds on the amount of fiscal tightening required to fulfil the 60% debt target. The reason is that fiscal consolidation tends to have a negative impact on real GDP growth, at least in the short run.<sup>30</sup> Assuming a 2.0% rate of real GDP growth against a backdrop of an immediate and permanent fiscal tightening of 5.4% may be optimistic. If instead growth were at a still fairly robust 1.0% annually, then the primary surplus required in the geographic share of oil case would rise to 3.9%, for a total fiscal tightening of 6.2%. Moreover, we assume that the contribution of oil and gas to Scottish GDP would be maintained at its 2000-2012 average level, rather than decreasing as expected by the OBR. In order to achieve a 2% growth rate with a declining oil and gas sector, the non-oil economy would actually have to grow at more than 2% annually. Finally, we are also assuming that the required tightening would be immediate, rather

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<sup>29</sup> Own calculations based on Scottish Government (2013a).

<sup>30</sup> Blanchard, Olivier and Daniel Leigh (2013) "Growth Forecast Errors and Fiscal Multipliers," IMF Working Paper WP/13/1.

than being spread out over multiple years in relatively small steps. The slower the adjustment to the required surplus, the greater the total amount of tightening required.

Another way to reduce the scale of the required stabilization is to sell assets and use the proceeds to pay down the government debt. The Scottish Government (2013a) raises this possibility. While selling an asset to repay debt would result in no change in a net asset position (assuming the assets are fairly priced), the sale of volatile assets can lead to a net improvement in an independent Scotland's net asset position. It is the removal of the uncertainty of the income stream and the highly non-linear nature of credit risk which would lead to the reward. In Armstrong and Ebell (2013) we raised the possibility of Scotland selling its oil and gas rights in a bid to enter independence with a lower stock of debt. At a stroke the debt burden facing an independent Scotland would be greatly reduced (perhaps by one-third). The fiscal deficit would of course be much higher, but without running down natural resources this is a clearer reflection of the amount of adjustment an independent Scotland with a credible fiscal plan must achieve over time.

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