

What does “too much government debt” mean in a stock-flow consistent model?

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Introduction

Government debt and deficits are topics that have occupied the minds of economists, commentators, journalists, television news readers and other commentators. It would be impossible to read everything that has been said and written on these topics, or even that written since the global financial crisis. In the popular literature the bulk of the commentary seems to be concern about the size of either the debt or the deficits that “create” the debt. Among the bulk of this material there is a range of concern from mild to hysterical. There is also no shortage of mainstream economists willing to put the concerns into more formal language. The purpose of yet another article on this topic is that there seems to be little by way of a clear exposition of how debt and deficits arise and why they may well be benign. The difference is that here the discussion is explicitly put into the framework of a stock-flow consistent model. This paper critically evaluates the proposition that government debt and deficits are harmful to the economy in the way suggested by mainstream authors such as Reinhart and Rogoff (2009 and 2010). To address the proposition that there will be undesirable consequences as a result of increases in government debt the paper will:

- critically examine the view that too much government debt has the consequences suggested in mainstream analysis, and
- ask what exactly could be meant by too high a level of debt and the market response to that.

It must be stressed that all the discussion here relates to independent economies with sovereignty over their fiscal and monetary systems.

The conventional view

Brad deLong in his criticism of “unfunded tax cuts” which imply deficit increases says:

“Unfunded tax cuts are, in the long run, bad juju. We cannot make policy on the expectation that the U.S. will always be able to borrow at negative real interest rates. And we should make policy aiming for a low debt-to-GDP ratio, because emergencies will arise in which we will want to boost federal spending quickly and substantially to attain important national purposes” (2013).

¹ Thanks to Tony Aspromourgos, Richard Denniss and John King for comments on an earlier version of this paper. The usual disclaimers apply.

In so much discussion people do not feel the need to actually spell out why something might be “bad juju”, and why a higher debt-to-GDP ratio might mean it is harder for governments to do something later and why there should be a balanced budget in the long run. The International Monetary Fund (IMF) has referred to “the need to reduce debt ratios and to address pressures from entitlement spending means that very few countries have long-term fiscal space” (2012) and this clearly reflects the view that too much government debt is bad.

In testimony to the US House of Representatives Committee on the Budget, former Federal Reserve Chair, Ben Bernanke said “the current trajectory of federal debt threatens to crowd out private capital formation and thus reduce productivity growth” (2012). The supposed burden of government debt is usually some variation of the thesis that large debt increases interest rates. To quote Ben Bernanke again:

“Increasing levels of government debt relative to the size of the economy can lead to higher interest rates, which inhibit capital formation and productivity growth – and might even put the current economic recovery at risk” (2010).

He did go on to say that:

“Neither experience nor economic theory clearly indicates the threshold at which government debt begins to endanger prosperity and economic stability.”

The reason why there is a threshold beyond which the “dangers” are evident is not clear. It seems not to occur to many people that such a threshold may well not exist or not in any simple way. Bernanke and others often feel no need to provide more explicit detail. The proposition has been repeated so often that it is now taken to be self-evident. Reinhart and Rogoff (2009) (R&R) did apparently find such a threshold at 90 per cent of GDP but that result was found to be the result of some spreadsheet-errors as revealed by Herndon, Ash and Pollin (2013) which we discuss further below.

A new twist in the threshold notion is introduced with the view that higher debt ratios increase the risk that countries are approaching their thresholds which makes further fiscal activism more dangerous than it would otherwise have been. So even if countries are not concerned about present debt ratios they should want to make room for future contingencies. Hence the problems posed by *The Economist* which says:

“If any of these worries [about the world economic outlook] causes a downturn the world will be in a rotten position to do much about it. Rarely have so many large economies been so ill-equipped to manage a recession, whatever its provenance, as our ‘wriggle-room’ ranking makes clear (see [article](#)). Rich countries’ average debt-to-GDP ratio has risen by about 50% since 2007. In Britain and Spain debt has more than doubled. Nobody knows where the ceiling is, but governments that want to splurge will have to win over jumpy electorates as well as nervous creditors. Countries with only tenuous access to bond markets, as in the euro zone’s periphery, may be unable to launch a big fiscal stimulus” (2015).

An OECD publication has put its concerns in the following terms, which introduces crowding out mechanisms:

“As the volume of government bond issuance fails to abate, doubts have emerged about the ability of the market to absorb this large amount of new paper” (Blommestein et al, 2010 p.15).

“This elevated supply of government debt also poses a challenge for corporates’ ability to tap the debt markets. ... potential crowding out by the public sector might increase the required rate of return to such a point that investments will be delayed. This would dampen overall growth and slow the speed of fiscal consolidation” (Blommestein et al, 2010 p. 21)

This is a clearer exposition than many and hints at the more formal expositions which can be found elsewhere. For example, some years ago James Tobin wanted “to make concrete the vague forebodings about runaway government debt” (1986). His argument can be summed up in the following:

1. government debt is growing as a share of GDP,
2. interest rates increase to equilibrate the demand for government debt with the increased supply, and
3. the capital output ratio is a declining function of the interest rate,
4. per capita income is a function of the capital labour ratio.

With this it is easy to show that the capital stock to GDP ratio gradually declines and the economy becomes poorer, at least relative to the baseline case. That was the substance of the argument and it served a useful service by turning the “vague” into a formal argument that can be better examined.²

The IMF has performed some modelling that purports to show when and how increased government borrowing crowds out other interest sensitive spending (Ostry et al, 2015). The IMF results are actually quite benign and show that for most countries there is ample scope for example to increase spending on infrastructure with benefits for economic growth in subsequent periods. But the importance of this paper is that it sets out the full mathematical argument behind debt concerns using a representative agent that also happens to have an independent government. The latter’s problem is “to maximise the agent’s utility”. Of course, neoclassical economics has to have some constraint against which the agent is assumed to maximise some sort of utility function. So the constraint is written as private consumption, government services, the public and private capital stocks at any time depend on initial capital endowments plus the labour input. The government then maximises the agent’s utility. Despite having both an agent and a government there are no net deficits/surpluses between the two and the significance of this will be highlighted below. Somehow there are bonds in the system but new bond issues are not needed because changes in the capital stock (private or public) are made out of current production (equation 2.2, p. 21). Indeed, equation 2.2 says consumption plus investment (the sum of all left hand items) just exhausts national income (RHS items). Why bonds are included in the formal analysis is not clear. Normally we expect bond issues (or some sort of net financial issue) to come about as a result of government deficits but there is no way our representative agent can have a deficit or surplus in any meaningful sense.

² Other authors have since used similar models though without necessarily citing Tobin.

The accompanying text makes it clear that the creation of debt is poorly understood in the first place. For example, in discussing a “debt shock” in a section of the paper with that title the paper says “the increase [in public debt] is exogenous in the sense that it does not correspond to higher public investment or provision of the public good, but rather results from some extraneous event, such as the fallout from a financial crisis” (p. 10). This is a good example of how most analyses seem to just assume that the agent has an exogenous increase in some asset which gives rise to attempts to get back to some more optimum ratio of that asset relative to all other assets. But at least we are grateful that this particular treatment put everything “out there” in an explicit way.

Of course there can be no such thing as an exogenous appearance of new debt in the sense that government debt can only arise in two ways. First, debt can come into existence if it is created and used in exchange for some claim on the private sector. But in the IMF case there is no net new financial assets created and this is clearly not what the IMF has in mind. Second, there may be an increase in net debt as a result of a government deficit. That deficit may well have arisen out of the bailing out of failed financial institutions during the global financial crisis. In the first case there is no net increase in financial debt so there is nothing to put into the IMF’s equations. In the second case there was presumably a large grant element in the bailing out of the banks which would be treated as an outlay; a government expenditure item. Government may well engage in subsequent borrowing in order to fund the outlay but either way there is an initial increase in government spending which involves an increase in the net payments balance of the rest of the economy.

The attempt by the IMF to put government into a representative agent model does throw up some funny elements. But it does at least illustrate the severe limitation of representative agents as a metaphor for the whole economy. Joe Stiglitz has been campaigning for an overthrow of the macroeconomics that is based on first principles and uses the representative agent to derive those principles (2014). He points out that representative agent models:

“...couldn’t embrace information asymmetries: with a representative agent, these could only arise if the individual suffered from acute schizophrenia, which would in turn be hard to reconcile with their assumptions of all-knowing rationality’. Moreover it is hard to have a robust financial sector in representative agent models: who is lending to whom? Since all risk is borne by the same (representative) agent, financial structure can’t matter. Not surprisingly, banks then play no role. With the financial sector at the centre of this, and many other crises, it is no wonder that these models had little to say—either before or after the crisis” (Stiglitz, 2014 p. 5).

Representative agents also fulfil another role. It also needs to be stressed that models assume the representative agent who has a finite budget and maximises intertemporal utility against that constraint. Without the maximisation-against-constraint the problem of modelling the individual’s behaviour is mathematically intractable. A major problem for theorists is that some entities in a modern economy do not have budget constraints in practice. Stiglitz’s comment about the role of the financial structure is a case in point. Take for example the textbook description of a bank. By the stroke of a pen the bank creates new loans which are in turn spent and reappear as bank deposits elsewhere in the banking system. The fact that they reappear as bank deposits is interesting in showing how elastic are the relevant “budget constraints”.

Problems with the conventional view

Despite the various views on deficits and debt there remain some major empirical anomalies. Countries such as the US and Japan have very high debt to income ratios but seem to be enjoying historically low interest rates and no other obvious side effects of high debt. The influential work of R&R claimed to have empirical evidence that high debt ratios were indeed associated with less satisfactory economic performance especially when debt to GDP ratios exceeded 90 per cent. The influence of R&R is apparent in the 22,800 results using a search in Google Scholar and 298,000 results in a regular Google search.³ However, the R&R results were subsequently found to reflect data errors (Herndon, Ash and Pollin, 2013) and with corrected data the results disappear. Australia should have been interested because there were five years of data missing for Australia in the R&R database, 1946 to 1950 inclusive. Over that particular period economic growth averaged a relatively high 3.8 per cent despite demobilisation after the war. At the same time our debt to GDP ratio was over 90 per cent. R&R did not examine unemployment in Australia but it is worth pointing out that the ABS yearbooks from around the time show unemployment was under two percent at the June 1947 census (ABS, 1951). According to official data unemployment was just 0.4 of one per cent in the year 1950 (Reserve Bank of Australia, 1997).

The failure of the instincts of many economists and others to be reflected in the empirical record should cause us to reflect on the theoretical underpinnings of propositions such as high debt ratios are necessarily bad. Many economists build models in which the volume of loanable funds is fixed or at least fixed in the sense that it is a function of just one variable – the interest rate. Hence attempts by the government to finance a deficit are inevitably frustrated by higher interest rates. A popular textbook by William J. Baumol and Alan S. Blinder (2008) which looks at the role of government deficits explicitly draws a demand and supply curve in loanable funds with the expected slopes. So too does the public finance textbook by Joseph Stiglitz (2000). A government deficit which increases public sector borrowing then shifts the demand curve to the right and so increases the equilibrium interest rate. However the problem with that is that the supply and demand curves are not necessarily independent. Moreover, an increase in the deficit has many other ramifications with implications for many other variables in a fully specified model. Notice the discussion goes from noting the increase in debt (as a share of GDP) on its own and then inserting that into a model of the loanable funds market to determine interest rates and then putting the new interest rates into the growth model via the impact on investment. The assumption is that we can use the increased debt as datum in the model without having to worry about any other factors that might have given rise to the increase in debt. As it turns out this is a rather strong assumption.

Note too in the discussion here all debt is treated equally or, what amounts to much the same thing, it is assumed government and other debt are close substitutes. In that way the analyst is able to model loanable funds as a market in a homogeneous item. That will also suit our purposes below since accounting for different types of debt would unnecessarily complicate the story.

³ Search performed 18 August 2015.

In a modern economy with an independent monetary system a government that wishes to engage in deficit spending can simply spend. It does not first have to raise the funds in the open market. Deficit spending automatically increases government debt since the government spends by creating government liabilities, be they bank notes or interest bearing securities. Now consider an increase in government spending matched by an equal increase in the government deficit and noting that the increase in the government deficit implies an increase in government debt on issue. Keynes taught us that the effect of the additional government spending is to increase the level of unplanned savings in the first instance as new sales are met out of inventories. Subsequently, as entrepreneurs undertake more production the level of income increases until the amount that people save out of the higher income matches the increased government spending/deficit. But of course savings is the act of accumulating financial assets which can be regarded as an increase in the demand for loanable funds. Picturing that in a loanable funds diagram implies that at the initial interest rate the increase in the demand for loanable funds is exactly matched by an increase in the supply of loanable funds. So as the demand for loans schedule shifts to the right so does the supply schedule by an equal amount. This argument can be formalised in the following section.

Interpreting the conventional view in a stock-flow consistent model

To re-cap a bit, in the argument cited earlier Tobin begins with the appearance of a deficit which means that more government debt has to be absorbed by a private sector that is otherwise unchanged. Just how the appearance of a government deficit and additional debt take place when everything else is unchanged is not explained. However, here we attempt to examine what else would change to generate a larger deficit and how all that would fit into a stock-flow consistent analysis of the debt issue. In developing their analysis Godley and Lavoie (2007) remind us, every transaction comes from somewhere and goes somewhere. The appearance of a deficit in the budget sector will in fact fundamentally change things as we see in Table 1 which shows what happens when government spending increases and is funded by the issue of government bonds represented by ΔB .⁴ In this simple model there is only one financial asset, bonds, which may be assumed to pay interest, but we could equally call it money in a one financial asset economy. That asset is also a means of payment.

Table 1

	Rest of the economy	Government sector	Σ
Income	ΔG	$-\Delta G$	0
Balance	$-\Delta B$	ΔB	0
Σ	0	0	0

Note that government spending is the purchase of goods and services from the private sector or the making of transfer payments. In a full account there should be a column representing the central bank but the present column headed “Government sector” can be taken as representing a combination of both the government sector and the central bank. An increase

⁴ Normally spending and the issue of government bonds would involve separate transactions but here we simplify and assume the rest of the economy accepts payment in government bonds to keep things simple.

in government spending that occurs without a similar increase in taxation is shown as the outflow $-\Delta G$ in the government sector column. For the rest of the economy ΔG is a receipt which is shown with a positive sign in the income row. In the meantime in the row labelled “balance” ΔB is shown with a positive sign in the government sector column because it represents a source of funding. However, it appears with a negative sign in the rest of the economy because it is a use of funds on the part of the people who hold the additional income in the form of government bonds.

All the non-zero quantities in the table must be equal to each other to preserve the stock-flow consistencies that always apply. This is an extremely simple account so far but already we can now appreciate what it is missing in some of the economic models that purport to show the adverse consequences of deficits and debt. When government spending increases, that spending is received as additional income. Corresponding to that flow is a stock adjustment through which the government issues more bonds and more bonds are taken up by the rest of the economy. The latter point is critical. The recipients of the additional government spending accept the additional bonds and so increase their holdings of financial assets, at least in the first instance.

Of course what that means is that the “budget constraint” of the rest of the economy has increased by exactly the same amount as the increase in government spending which is equal to the increase in the government deficit. For people who wish to think in terms of the demand and supply of loanable funds the government’s issue of additional bonds can be thought of as a rightward shift in the demand for loanable funds. However, the additional income in the rest of the economy and the simultaneous acquisition of funds on the part of the rest of the economy can be thought of as a rightward movement in the supply of loanable funds. The rightward shift is the same in both schedules which means that the supply and demand remain equal at the same interest rate and of course must have been equal to begin with. In other words, the budget constraint in the private sector automatically adjusts to the increase in the government deficit.

It could instead be suggested that the loanable funds model is illegitimate since it suggests that the demand for and supply of loanable funds can be different magnitudes when the market is in disequilibrium. Over any accounting period expenditure has to be equal to income and, as a consequence in a simple model investment must be equal to savings.⁵ However, investment involves the net issue of financial debt or, what amounts to the same thing, the running down of financial assets on the part of entities making the investment, or a combination of the two. In the meantime savings involves the acquisition of financial assets, the repayment of debt or some combination of the two. Ordinary national accounting and an analysis like that in Table 1 make it clear that savings-equal-investment identities also imply the demand and supply of loanable funds must be equal. Godley and Lavoie (2007) make it clear that this is no more than the implication of Walras’s law. The fact that people did not understand this implication was a big source of frustration to Keynes as I argued some years ago now (Richardson, 1986). It is also clear from Skidelsky’s (1992) biography of Keynes where Skidelsky describes the debates about definitions of ex ante and ex post relationships and Keynes’s frustrations with people putting the view that an increase in savings was needed to finance new expenditures.

⁵ In a more complicated model the sum of “injections” must be equal to the sum of “leakages”.

Of course Table 1 does not necessarily show the end point. Upon receipt of the government expenditure people may well spend the additional income and there may be an open-ended range of possible outcomes, especially in a fully specified model with a production sector, a banking sector, foreign sector and so on. Some of those adjustments may well involve further spending and the generation of additional tax revenues and so forth. Table 2 shows the impact of additional consumption spending induced by the initial budget deficit. Potential changes in tax are not modelled.

Table 2

	Rest of the economy	Government sector	Σ
Income and spending	$\Delta G + \Delta Y_c - \Delta C$	$-\Delta G$	0
Balance	$-\Delta B$	ΔB	0
Σ	0	0	0

Table 2 now includes the additional consumption spending ΔC which must also appear as an additional income item ΔY_c to indicate the additional income as a result of the induced consumption spending.⁶ ΔG in the “rest of the economy” column indicates the income generated by the original increase in government spending. With this simple extension the stock-flow consistency rules still dictate that any government deficit must be matched by an equal surplus in the rest of the economy. That holds true no matter how much the simple model here is extended. Note too that in the extended model it remains the case that the demand for and supply of government bonds remains equal. And it can be confirmed that no matter how complex we build the matrices like Tables 1 and 2 the demand for and supply of bonds remains equal. Moreover, when the government issues a large range of liabilities then the value of the supply of new liabilities exactly matches the value of the demand for new liabilities, although there may well be some composition mismatches which could give rise to further trading in the financial markets and could also produce price changes that cannot be accommodated in simple matrices like Table 2.

For our immediate purposes the important thing to notice is that a deficit in the government sector necessarily involves an equal surplus in the rest of the economy. Yet in the usual discussion, as in the Tobin model, there is no mechanism via which the appearance of a government budget deficit can create an equal surplus in the rest of the economy; nor can the increase in government spending appear as an increase in income elsewhere in the economy. Rather income in the Tobin model is expressed as a function of capital per head so income is constrained to be given by the primary determinants; the technology, the factor endowment and the price incentives facing factors of production. In that model it is impossible for income to vary except when the primary determinants vary. The model effectively rules out any role for demand. The same is true of the IMF model outlined earlier and that is why the IMF assume an exogenous increase in government debt.

In each case the model builders unwittingly start off by assuming a model in which the non-government sector cannot have a surplus and so logically, the stock-flow consistency requirement in macroeconomics means government deficits cannot occur.

⁶ A more complete model would separate the household and the production sector but these extensions will not be necessary here.

We can diverge for a moment to note that the increase in savings brought about by the increase in the deficit reminds one of the Ricardian equivalence proposition⁷ but of course the mechanism is entirely different and has entirely different implications. The Ricardian equivalence result is obtained on the assumption that income is unchanged and that people will attempt to save more to finance the increase in taxes that will be eventually required to finance the repayment of the debt.

We mentioned earlier that in general when the government is in deficit the supply of new government liabilities will be exactly matched by the demand for new liabilities. This result is important. The traditional macroeconomic textbook explains how savings automatically matches investment or in a more general model the sum of leakages (into savings, taxation and imports) must be equal to the sum of injections (investment, government spending and exports). This is the flow equilibrium. What is less often made clear is that the leakage and injection flows involve an acquisition of financial assets and the issuing of financial liabilities and stock consistency ensures that the two are identically equal. We noted earlier that we could think in terms of a demand and supply of loanable funds in which both move rightward by the same amount with the implication that there need be no change to the interest rates ruling in the economy. But it must be stressed that the loanable funds diagram shows traditionally shaped demand and supply curves which assume an equilibrium point but also assume that there can be disequilibria at all other points on the diagram. That of course is stock flow inconsistent in the sense that demand and supply must always be equal in this particular 'market'.

The equal rightward shift in the demand for and supply of loanable funds means there is nothing for the "price" to do and there is nothing in the nature of savings and investment to even get the "price" to move. Adjustments take place in other ways in response to imbalances between planned and actual savings and planned and actual investment. That of course is how the textbook Keynesian mechanism works. Those changes will tend to be in volume adjustments, but in principle it might involve just increases in the prices of investment goods in the short term.

The important point is there is no price mechanism that can conceivably do the job of equilibrating planned and intended magnitudes of savings and investment. Even if one could posit feedback mechanisms from interest rates through to savings and investment intentions it is illogical, or stock-flow inconsistent, to suggest an ordinary market mechanism would achieve the equality between the two. The savings = investment mechanisms also ensure that in every period there is an equality between the new liabilities of investors and the new financial assets of savers. If the supply and demand for savings is to mean anything then it must reflect the issuing of liabilities and the acquisition of financial assets. As can be verified, those two are always equal as a result of the same mechanisms and logic that keeps investment and savings equal. That was true in the simple logic of Table 1 before any adjustments took place as well as in Table 2 where consumption was allowed to increase following the increase in income.

Godley and Lavoie (2007) put the equality of demand and supply of financial assets/liabilities down to the implications of stock flow consistency, and citing Walrus' law of markets, the equality of demand and supply of financial assets is merely a redundant equation implied by

⁷ The modern discussion goes back to Barro (1974). The Ricardian equivalence proposition in its extreme form states that the effects of government deficits are equivalent to financing the expenditures with tax increases.

all the others. But it is precisely the demand and supply of financial assets that the critics of government deficits and debt concentrate on and assume some loanable funds mechanism would be at work.

The problem is that many economists insist that there is a market in savings that acts like any other market. But if actual quantities are always equal then there is nothing, no mechanism that can get a price adjustment going. In a normal market if there is to be a price adjustment it will involve a deliberate act on the part of at least one buyer or seller. For example, a seller may notice that sales are not strong enough and so will set a lower price. In principle an auctioneer may take on the job of equalising supply and demand. But who is there who acts in a similar way on imbalances between the supply and demand for savings? Clearly there is no such mechanism and the analogy between savings and other markets breaks down.

If there is anything in the loanable funds thesis it must mean that at least one person believes they hold too much debt and want to reduce it. We now turn to examine what that might possibly mean.

Too much government debt?

Here we ask what it means to say that there is too much government debt and what that can mean in reality and how people who think they hold too much debt could attempt to reduce their holdings of debt. One possible meaning is that people begin to feel that at the present constellation of interest rates they no longer wish to hold the same proportion of government debt to other financial assets. If that is the case then people would sell government debt and use the proceeds to purchase private debt and, in doing so, tilt the relative price of government debt against private debt. But one certainly gets the impression that we are not just talking about a bit of market imbalance and some shuffling of portfolio assets between different types of debt/financial assets.⁸

Realignment of the relative prices/yields on financial assets is just a normal adjustment that occurs all the time. This does not seem to be what is being said by the government-debt-is-too-high proposition. Among other things it is asserted that government debt will crowd out private debt so that the interest cost on the latter will also rise. The implication is that increases in government debt reduce the demand for all debt. If all asset prices are falling together then we must be talking about too much debt all round and we can trace out the consequences of that. Indeed, the simplest way of thinking about that is to assume the government and private debtors issue identical securities.⁹

If debt holders think their holdings of debt/assets are too high, perhaps relative to their income, they may well try to reduce their debt holdings. Now if some feel they want to reduce their debt to income ratio, or just reduce debt in absolute terms there is really only one way of doing that – they have to exchange part of their financial wealth for either consumption or the accumulation of durable assets (as distinct from financial assets).

⁸ Bohn (2010) points out that there is evidence that the gap between corporate AAA debt and government debt is negatively related to the debt to GDP ratio.

⁹ People who talk as if government debt might crowd out private debt clearly have in mind securities issued by both but which are very close substitutes.

Now we ask what happens when people try to reduce their holdings of financial assets. Generally all consumer spending is treated as consumption even if it relates to purchases of goods that are long lasting. Generally also the only way someone can reduce their wealth is to begin spending more than they earn. In that way they de-accumulate assets and move to a lower financial asset to income ratio. However, if we all did that on average then spending would increase relative to income and, in the case of the government sector, taxable transactions would increase relative to government spending with the consequence that the government deficit would decline. In turn that would mean a reduction in the issue of government debt. However, consider the case where government receipts and spending are unchanged, or the equivalent example where there is no government and ask what happens then as people try to run down their financial assets. Clearly not all desires to reduce outstanding debt can be achieved in this case. In the absence of people actually burning their debt it is impossible for them to collectively dispose of their income by spending more than their income yet that is what is required if people are to take collective actions that involve getting rid of debt.

We could here go through the motions of setting the argument out in a stock flow consistent matrix like Tables 1 and 2. However, this case seems sufficiently simple that the verbal treatment should suffice.

Debt must be repaid?

There is a view that debt must be repaid. According to Allan Meltzer (2012) for example, transfer payments to individuals, what he calls “fairness benefits”, are provided using debt that must be repaid by taxpayers in the future “debt... shifts costs from present to future taxpayers” (p. 60).¹⁰ He complains about people who want to fund benefits “by the issuance of debt to be paid by later generations” (p. 10).

“Either the United States voluntarily adopts fiscal discipline or eventually it will face a crisis with rising interest rates and a falling currency. The crisis solution will impose large costs on holders of dollar denominated debt, but it will force policy adjustment. If a voluntary solution is unlikely, the mystery is when the crisis will occur” (2008).

Meltzer here expresses a common view that debt eventually has to be repaid. Most of the time it is just rolled over when it matures although of course governments retain the option to not roll over the debt. The view that debt has to be repaid also harks back to the household analogy. People who plan to retire often make plans to first pay off their debts. But it is certainly not the case that private corporations or governments have plans to retire in the near future. The representative agent may be an appropriate metaphor for the individual but certainly not for perpetual entities such as corporations and governments.

¹⁰ This quote also illustrates something in common with some earlier quotations. Meltzer is concerned about “fairness benefits”, deLong tax cuts, the IMF “entitlement spending”, *The Economist* refers to government “splurge” and so on. Things like government spending seem to particularly encourage some people to complain about government debt which makes one wonder whether government deficits and debt are the real underlying concern. In this context the author likes to tell anyone who will listen that lots of people are hurt or die due to a lack of health spending, poor social services and other things that governments could fix. The author is unaware of anyone who has been hurt by a government bond.

Nevertheless there is now a view that governments face an intertemporal budget constraint. Clearly the government's intertemporal budget constraint is analogous to the similar constraint imputed to individuals and, through such a device, many important insights into intertemporal decision-making have been generated. Using the same type of thinking the UK Office for Budget Responsibility (2011) puts it that all debt must sooner or later be repaid. It comments:

“Most definitions of fiscal sustainability are built on the concept of solvency – the ability of the government to meet its future obligations. In formal terms the government’s ‘inter-temporal budget constraint’ requires it to raise enough revenue in future to cover all its non-interest spending and also to service and eventually pay off its outstanding debt over an infinite time horizon.”

In this way the government is assumed to face a budget constraint in which the present value of all future surpluses/deficits must sum to zero. Apart from making maximisation problems tractable there is no logical reason why we need think that governments need face such a constraint and indeed governments can issue liabilities without a promise to repay them. Base money is the obvious example. All we can think of to justify thinking in terms of a long run zero budget constraint is that many academic economists need some sort of constraint when thinking in principle about how governments try to attain some optimum spending program. To assist the mathematics it is assumed government faces some constraints against which it can maximise some other variable such as an intertemporal welfare function.

By contrast many of the results of thinking in stock-flow consistent models can be open ended at least in the sense that they do not achieve neat equilibria. So it seems likely that the government budget is not a constraint at all but an open-ended concept. Private equities have no maturity date and, in principle there is no reason why bonds need have maturity dates. Since 1751 the UK government (then the British government) has issued perpetual bonds known as Consols although these are now a very small part of the outstanding UK government debt. But there seems no logical reason why all debt might not be in perpetual bonds and the practice of rolling over bonds as they mature means that, for analytical purposes we might as well treat government debt as perpetual.

Reflections and conclusions

Geoff Harcourt makes that point that the dominant approach to economic modelling gives centre stage to the individual decision-maker attempting to maximise life-time utility as the driving force of the economic machine. Other actors and institutions are “subject to her [the decision-maker’s] whims and desires, especially within a competitive environment” and the use of representative agent models “meant the rejection of any role for the fallacy of composition, a vital strand of the economics of Keynes” (2010, pp. 3, 4 and 6). That thought could be taken further since arguably the fallacy of composition as it applies to savings/investment questions is but a particular example of the consequences of failing to keep within the constraints of stock-flow consistency. The idea that if we each save more national saving will increase is stock-flow inconsistent. Indeed, it could be argued that the savings/investment question is merely flow inconsistent; still logically incorrect but in just one dimension. Questions about government debt for example have to be not only flow consistent but stock consistent as well. The issue of too much government debt is a case in point. Godley and Lavoie (2007) have reminded us not only of the importance of stock flow

consistency but also shown that we can gain an important understanding of the macroeconomy by following the implications of stock-flow consistency.

Another important point to be made is that ensuring stock-flow consistency need not involve complicated and detailed matrices that attempt to describe the economy as a whole. The discussion here was able to show the weakness in the government-debt-is-bad thesis in just a two sector model featuring only the government and non-government sectors. We only need a two-by-two matrix to show how the emergence of government debt involves a process that must be taken into account in modelling if the end result is to be realistic. We are used to having logical constraints to guide our thinking but macroeconomics in particular has to deal with the constraints and implications of basic accounting.

Some economists have been motivated by the natural sciences but they forget that the progress in the natural sciences has developed in the context of a knowledge of the constraints that nature obeys. Nature and any theories about nature have to obey the laws of thermodynamics. Likewise economic phenomena and propositions in economics should obey stock-flow consistency constraints. This paper has tried to show that indeed, many propositions about economic phenomenon fail to obey the stock-flow consistency constraint. That definitely applies to the crude proposition that too much government debt will cause problems such as high interest rates and low investment. It is easy to be thrown off track when analysts fail to take stock-flow consistency into account – just like the mistake people used to make in failing to watch out for the fallacy of composition associated with savings decisions.

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SUGGESTED CITATION:

David R. Richardson, "What does 'too much government debt' mean in a stock-flow consistent model?" *real-world economics review*, issue no. 73, 11 Dec 2015, pp. 2-15,

<http://www.paecon.net/PAEReview/issue73/Richardson73.pdf>

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