On the Sustainability of Budget Deficits and Public Debts with Reference to the UK

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Abstract

The purpose of this contribution is to look into the fiscal and debt policies in the UK and also discuss the future prospects of them. In doing so we begin with a discussion of the sustainability of deficits and debt, along with what precisely sustainability is, followed by a focused discussion of issues that relate to debt and growth, which in its turn requires a comprehensive analysis of the inter-temporal budget constraint thesis. Two further, relevant and important issues are subsequently addressed. These are, first, the relationship between the inter-temporal budget constraint thesis and sustainability, and, second, its consistency with household behaviour. The sustainability of deficits and 'functional finance', structural budgets and the impossibility of balanced structural budget are then discussed. Finally, the future of UK fiscal policy is addressed before we summarise and conclude.

Keywords: fiscal and debt policies, sustainability, 'functional finance', structural budgets
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1. Introduction

This paper focuses on a range of issues related to the sustainability of budget deficits and public debt. Issues of sustainability of deficits and debts are often raised as arguments for fiscal austerity. We find these as applied to sustainability to be misplaced and do not constitute arguments for fiscal austerity in the face of inadequate private demand. At the end of the paper some of the considerations are applied in the UK context. The general issues which are addressed include the meaning and importance of sustainability, the extent of the budget deficit creating unsustainable public debt and being detrimental to growth, the importance and the extent of the inter-temporal budge constraint holding and the extent that it is consistent with household behaviour. 'Functional finance' and structural budgets, the measurement of potential output, the impossibility of balanced structural budgets are all important issues, which are discussed before more focused attention is given to the UK fiscal policy aspects.

We begin with a brief discussion of the sustainability of deficits and debt in section 2. We continue by looking at the issue of debt and growth in section 3, followed in section 4 by a comprehensive analysis of the inter-temporal budget constraint thesis. Section 5 is concerned with the sustainability of deficits and 'functional finance'. Section 6 deals with structural budgets and the impossibility of balanced structural budgets. Section 7 focuses on our view of the UK fiscal and debt policies and their future. Finally, section 8 summarises and concludes.

2. Sustainability of Deficits and Debt

In this section we address first the question of what is to be understood by sustainability in the context of deficits and debts. We then consider, specifically in the context of government finances, what would be the relevant deficit on which attention should be focused. It is argued that the sustainability of the government budget position cannot be fully evaluated without proper consideration of the macroeconomy. We begin by discussing the notion of sustainability.

2.1 What is Sustainability?

It is helpful to begin the discussion with the case of a single individual with regard to deficit and debt. Let the income of individual in time t be y(t) and expenditure on goods and services (but excluding any interest payments on past debt) be e(t), then the individual's primary budget position (excluding interest payments) is: b(t) = y(t) - e(t), with the change in asset/liability position of the individual being b'(t) = y(t) - e(t) - i.d(t), where i stands for the rate of interest and d(t) for the debt position of the individual. The maintenance of a primary

budget position (relative to income) would lead to the liability/asset position tending towards a/(g – i) where a is the ratio of budget position (a positive implies deficit), g growth rate and i interest rate (both measured in nominal terms). When the primary budget position is one of deficit, then the debt to income ratio would continually rise if g> i. However, when the overall budget position (b' above) is a constant proportion of income, then the liability/asset position would tend to a'/g where a' is the ratio of total deficit to income. This would involve within the total deficit, a primary budget surplus if g > i.

For the individual, the ability to run a deficit depends on being able to secure loans (or other means to cover deficit). This is often perceived to depend on providers of credit (e.g. banks) that practice some form of credit rationing (here in the limited sense of not providing loans on request). But from a macroeconomic perspective one person's deficit requires the sum of others budget position to be in surplus. A more general question is what the nature of the constraint is, which an individual faces and which is in effect imposed by capital markets (in the sense of the collective of borrowers). When an individual faces an inter-temporal budget constraint over the life-time, then the deficit for the individual is not possible to be sustained over time and there is clearly a requirement that over the life time the individual runs surpluses in some periods to balance the deficits in others.

In the case of the government, a relevant basic equation, which influences a great deal of the discussion here, is:

(1) $S + T + Q = I + G + X + NI$

where *S* is private savings, *T* tax revenues (net of transfers), *Q* imports of goods and services, *I* private investment, *G* government expenditure (which can be decomposed into *Gc*, government consumption, *Gi*, government investment, and *i.B*, interest on government bonds), *X* exports and *NI* net income from abroad.

This can be re-written as:

(2) $G - T = S - I + FA$

where *FA* is financial account flows and it is equal to current account deficit (= $Q - X - NI$).

It is well-known that these equations can be viewed as involving *ex post* terms and as such can be described as national income account identities. In *ex ante* terms, these equations can be viewed as equilibrium conditions, and equation (1) as the equality between intended leakages and intended injections into the circular flow of income.

A first implication, which emerges from equation (2), is that the discussion of budget deficits cannot proceed without consideration of private sector surpluses. With regard to issues of

sustainability, a budget deficit is sustainable only if the private sector surplus is sustainable. A full consideration of that requires though some disaggregation of the private sector to consider the borrowing and lending within the private sector. For example, if there is a set of households who persistently run deficits, even though other sets of households persistently run surpluses, the position for the first set of households may be unsustainable. A relatively small budget deficit (and more so budget surplus) may be unsustainable because the deficits of components of the private sector may be unsustainable. An example of this could be the position in the UK circa 2007 when household savings were close to zero, and high consumer spending was underpinned by rising house prices; it is actually rather difficult to think that household savings close to zero and rising house prices (at 10 per cent plus) were sustainable. This is to suggest that the budget deficit position was not sustainable at the prevailing level, although it was too low, since the private sector position was itself not sustainable.

A second implication is that there can only be net private savings if there is a budget deficit. Thus when there is a tendency for propensity to save to exceed propensity to invest, a budget deficit becomes necessary to absorb the differences between intended savings and investment if savings and investment decisions are to be implemented. The 'functional finance' thesis promotes the idea that budget deficits should be used to seek to achieve high levels of economic activity rather than striving for a balanced budget. Issues over striving for a balanced budget (particularly a 'structural balanced budget') are examined extensively below. In the discussion on sustainability of budget positions we have to specify what the budget position is. It is usual to set it in terms of a specified proportion of GDP.

A similar point can be made by reference to the current account/financial account position. When a particular level of economic activity is supported by fiscal and other policies that involve unbalanced current account, this may not be sustainable. This is particularly evident in the case of a current account deficit, which involves borrowing from overseas and thereby the accumulation of foreign debt.

2.2 Sustainability of What?

The question is what sustainability means in the context just discussed when applied to the public sector. Is it the primary deficit (that is excluding any interest payments) or the total deficit, bearing in mind that public discussion generally relaters to the total budget deficit? Or should it be the sustainability of the fiscal stance and impact on demand? If so then allowance needs to be made over time for evolving public debt, interest payments on it, and their impact on demand. A fiscal stance aimed to achieve a specified level of demand and employment

would then involve a varying budget deficit over time, and the issue would be the sustainability of that path of budget deficits.

There are in this context some measurement issues to be addressed. There are at least three such issues. The first relates to who owns the government debt and how much is held within the public sector (a notable example here being the holding of US government debt by the social security fund). The second is whether the appropriate concern should be over the liabilities of the government (bonds etc.) or over the net asset position taking into account the investment in infrastructure undertaken by government and the corresponding assets owned by government. The third is what is to be included in the public sector (e.g. should public corporations be included) and how are off-balance-sheet items to be considered (e.g. future obligations under public private partnerships and private finance initiatives).

The liabilities of the public sector in the form of public debt are included but there is no mention of any assets. But the public sector does own a wide range of assets in the form of roads, building etc.. There are, of course, many difficulties of valuation involved. For the UK the general picture has been one where the public sector has a positive net worth with assets exceeding liabilities. The financial crisis has taken its toll in this context so that at the end of 2010 the estimates of net worth were close to zero having been over £400 billion at the end of 2007.[1]

3. Debt and Growth

An argument against running budget deficits over a number of years is that even if it does not involve unsustainable rise in public debt (relative to GDP), the resulting higher (than otherwise) debt ratio will be detrimental to growth. The director of the IMF Fiscal Affairs Department, for example, has argued that "in addition to problems for growth arising from a debt crisis, one should also be worried about problems for growth arising from high, even if stable debt" (Cottarelli, 2011, quoted in Panizza and Presbitero, 2012). Authors at the Bank of International Settlements also suggest that "Our results support the view that, beyond a certain level, debt is bad for growth. For government debt, the number is about 85% of GDP. For corporate debt, the threshold is closer to 90%. And for household debt, we report a threshold of around 85% of GDP, although the impact is very imprecisely estimated. Our result for government debt has the immediate implication that highly indebted governments should aim not only at stabilising their debt but also at reducing it to sufficiently low levels that do not retard growth. Prudence dictates that governments should also aim to keep their

[1] The source of the data as in the text is the Office for National Statistics (2012).

debt well below the estimated thresholds so that even extraordinary events are unlikely to push their debt to levels that become damaging to growth" (Cecchetti et al., 2011, p. 1).

In turn a lower rate of economic growth has implications for the sustainable debt level. A lower growth rate would entail a higher debt to GDP ratio for a given size of budget deficit. Setting a limit on the debt to GDP ratio (such as the 60 per cent under the Stability and Growth Pact[2]) is a reflection of the notion that, after some point, higher debt ratios imperil growth. Following the work of authors such as Reinhart and Rogoff (2010, 2011) for example, a debt to GDP ratio of 90 per cent is often quoted as endangering growth. And to quote the authors: "Our main result is that whereas the link between growth and debt seems relatively weak at 'normal' debt levels, median growth rates for countries with public debt over roughly 90 percent of GDP are about one percent lower than otherwise; average (mean) growth rates are several percent lower. Surprisingly, the relationship between public debt and growth is remarkably similar across emerging markets and advanced economies" (Reinhart and Rogoff, 2010, p. 573). But it is interesting to note that they find "no systematic relationship between high debt levels and inflation for advanced economies as a group (albeit with individual country exceptions including the United States)" (Reinhart and Rogoff, 2010, p. 573).

Reinhart et al. (2012) suggest that "As a starting point, we observe that in the countries that have one or more episodes of public debt overhang listed in [their table], real GDP growth averages 3.5 percent per annum over the full period for which debt/GDP is less than 90 percent and data is available. The comparable average for all debt overhang episodes is 2.3 percent (or 1.2 percent lower than the lower debt periods). Similarly, Reinhart and Rogoff (2011) show that periods where public debt is over 90 percent of GDP are associated with roughly 1 percent lower growth, while at lower debt thresholds, the correlation of the public debt/GDP ratio with growth is small. Three episodes of public debt overhang, however, are associated with higher GDP growth. One of these, an outright boom, is associated with post–World War I rebuilding in Belgium" (p. 80).

Reinhart et al. (op. cit.) go on to add that "We identified 26 episodes since 1800 of public debt overhang in advanced economies: that is, cases where the ratio of gross public debt to GDP exceeded 90 percent in a given country for more than five years. Taken as a whole, these episodes suggest several lessons about public debt overhang. First, once a public debt overhang has lasted five years, it is likely to last 10 years or much more (unless the debt was

[2] But note that the 60 per cent debt to GDP ratio has been frequently breached; we rather doubt that breaching that limit has been the cause of the rather dismal growth performance of the eurozone!

caused by a war that ends). The average duration of our debt overhang episodes was 23 years. Second, it is quite possible to have a 'no drama' public debt overhang, which doesn't involve a rise in real interest rates or a financial crisis. Indeed, in 11 of our 26 public debt overhang episodes, real interest rates were on average comparable, or lower, than at other times. Third, the weight of the evidence suggests that a public debt overhang does slow down the annual rate of economic growth, and given the length of these episodes of public debt overhang, losing even 1 percentage point per year from the growth rate will produce a substantial decline in the level of output, and a massive cumulative loss" (pp. 83-84).

Although the work of Reinhart and Rogoff (2012) is often invoked in justification for austerity policies – especially as many countries approach or surpass the 90 per cent figure— there are many reasons why it should not be taken at face value. A perhaps relatively minor issue relates to the way in which debt is measured. There are in general tiers of government, local, regional and central. It would be usually the case that it is central government, which has a relationship with the central bank, and only the expenditure of central government that could be (partially) financed by central bank money. Local and regional governments are generally subject to a range of budget limitations and receive a range of transfers from central government. And as Reinhart et al. (2012) observe, "Of course, focusing on gross debt issued by the central government has its shortcomings. For example, it would be desirable to have long-dated measures of general government debt that include states and municipalities. However, for long-dated historical data, the Reinhart–Rogoff (2011) database only contains central government debt. There is also the issue of net debt versus gross debt ….. Again, net debt data is not available on a long-dated cross-country basis" (footnote 2, pp. 74-75). It could also be added that no account is taken of the public investments, which may have been made (after all the so-called 'golden run' of public finances views deficits equal to public investment as fully justified).

A more substantial set of doubts on the work of Reinhart and Rogoff (2010, 2011) relates to the serious statistical errors in their work as recently demonstrated by Hendon et al. (2013). The latter replicate the work of Reinhart and Rogoff (2010, 2011) and "find that coding errors, selective exclusion of available data, and nonconventional weighting of summary statistics lead to serious errors that inaccurately represent the relationship between public debt and growth among these 20 advanced economies in the post-war period" (pp. 2-3). Once these statistical errors are removed, the conclusion emerges that the relationship between public debt and GDP is not -0.1 percent as in Reinhart and Rogoff (op. cit.) but 2.2 percent instead. Hendon et al. (2013) also refute the Reinhart and Rogoff (2010, 2011) evidence that

"for an 'historical boundary' around public debt/GDP of 90 percent, above which growth is substantively and non-linearly reduced. In fact, there is a major non-linearity in the relationship between public debt and GDP growth, but that non-linearity is between the lowest two public debt/GDP categories, 0-30 percent and 30-60 percent, a range that is not relevant to current policy debate" (p. 3).

Furthermore, there are very wide variations in the debt to GDP ratios – for example, Estonia and South Korea, at less than 10 per cent through to Japan at over 250 per cent. There are similar variations over time in a country's public debt ratio. The UK being a notable example—after having a debt ratio in excess of 100 per cent for the first six decades of the 20th century, it rose to over 250 per cent during World War II and then declined to 60 per cent by early 1960s and then ups and downs occurred since between 80 per cent and 30 per cent. There is also the question of the validity of the usually quoted measures in that typically the holding of government debt within the government itself is not taken into account. The USA perhaps is the outstanding example, where a substantial portion of the government debt is held by the Social Security Fund in an accounting arrangement, which makes it appear that future pensions will be backed by financial assets. Following on from discussion above, it should also be pointed out that no allowance is made for assets held by government nor for off balance sheet debts (such as those arising under Public Private Partnerships and Private Finance Initiatives; see, for example, Sawyer, 2009).

The empirical works from which we have just been quoting treat causation as running from debt ratio to growth. In contrast, we would point to the possible causation running from growth to public debt ratio. Indeed, and as Panizza and Presbitero (2012) argue: "The link between public debt and economic growth could be driven by the fact that it is low economic growth that leads to high levels of debt. Alternatively, the observed correlation between debt and growth could be due to a third factor that has a joint effect on these two variables. Establishing the presence of a causal link going from debt to growth requires finding an instrumental variable that has a direct effect on debt but no direct (or indirect, except for the one going through debt) effect on economic growth" (p. 2). The authors proceed to undertake instrumental variables estimation for the debt ratio to growth relationship seeking to follow as much as possible the sample and variables used in the study of Cecchetti et al. (2011) referred to above. Significantly for our argument here is that their results with instrumental variables (and thereby seeking to address the endogeneity issues) do not confirm any causal relationship running from debt ratio to growth. Panizza and Presbitero (2012) state that "we do not find any evidence that high public debt levels hurt future growth in advanced

economies. Therefore, given the state of our current knowledge, we think that the debt-growth link should not be used as an argument in support of fiscal consolidation" (pp. 16-17).

A further aspect is that a high debt ratio is often the result of war, and hence of destruction, as well as lower capacity and output potential; any relationship between debt and growth would then depend on how an economy was able to recover from that destruction.

The experience of many countries in the aftermath of the 2007/09 financial crisis illustrates the causality issue involved here. Growth since 2007 has been low (or negative) in many industrialised (and other) countries. Budget deficits much larger than previously and debt ratios have risen rather rapidly. But it cannot be argued that the high and rising debt levels led to slower growth; it was rather slower growth, which led to the rising debt ratios. Particularly from a cross-sectional perspective (to which the Reinhert and Rogoff, 2011, regressions relate) there would tend to be a relationship between investment (relative to GDP) and budget deficit as can be seen by reference to equation (2). Clearly the relationship would not be one-for-one as differences in savings behaviour and the current account position would intervene. The investment to GDP ratio would be related to the rate of growth of the capital stock (for a given capital-output ratio). The debt to GDP ratio is based on cumulative deficit, and the longer-term relationship would be given by the debt to GDP ratio equals budget deficit divided by the (nominal) growth rate.

From equation (2) above, $I = (T - G) + FA + S$, we may deduce the following. To begin with, investment can be written, relative to GDP (Y) as:

(3) $\frac{I}{Y} = \frac{I}{K}\frac{K}{Y} = g_K.v$

where v is the capital-output ratio and g_K the growth rate of the capital stock.

The budget surplus relative to GDP is:

(4) $(T - G)/Y = -b = -d.(g + p)$

where b is the budget deficit relative to GDP, d the debt to GDP ratio, g is real growth rate and p rate of inflation. We may also write:

(5) $(FA + S)/Y = \alpha$

Combining these equations would give:

(6) $g_K.v = -d.(g + p) + \alpha$

and taking growth of capital stock and growth of output as equal it can be derived that:

(7) $\frac{dg}{dd} = -(g + p)/(v + d) < 0$

In other words, this simple model would indicate a negative relationship between the growth rate and the debt to GDP ratio, which arises from the implications of relatively low

investment and associated low growth rate. The direction of causation in effect runs from low investment and growth to budget deficits to debt/GDP ratio.

4. The Inter-Temporal Budget Constraint Thesis

Although a government can borrow and lend and does not face a requirement to balance its budget in any given year, it is nevertheless asserted that a government faces an inter-temporal budget constraint under which the discounted budget position over an infinite time horizon has to sum to zero. Hence any period of deficit has to be at some stage counter balanced by periods of surplus. In contrast to the individual where the inter-temporal budget constraint holds over a life-time, for the government it is applied over an infinite time horizon. The idea expressed in equation (2) above representing the interdependence between the accounting position of the public sector and that of the private sector is an important one for this section. Equation (2) expresses the view that one sector cannot run a surplus without the other sector nrunning a deficit. In a similar vein the liabilities of one sector are the assets of the other - and this is particularly important since it means that the liabilities of the public sector (government debt) are the assets of the private sector. We deal with the validity of these propositions to begin with in the section that follows.

4.1 The Inter-Temporal Budget Constraint and Sustainability

The inter-temporal budget constraint is based on the idea that the government, like any other economic agent, faces a budget constraint. This constraint is such that borrowing can be undertaken in some periods, but not in all of them, and that overall the debt position of the government sums to zero (see, for example, Blanchard and Fisher, 1989).

This approach follows the general idea that the inter-temporal budget constraint is based on the behaviour of households who seek to maximise their lifetime utility. Households pursue consumption smoothing over time, whereby they borrow in a way that enhances their economic welfare. In other words, households borrow to increase their consumption above their income. While this approach is based on the contribution of Blanchard and Fischer (1989), they state explicitly, though, that it is paramount to introduce an additional condition, which is the one "that prevents families from choosing such a path, with an exploding debt relative to the size of the family. At the same time we do not want to impose a condition that rules out temporary indebtedness. A natural condition is to require that family debt does not increase asymptotically faster than:

$$\lim_{t\to\infty} a_t \exp\left[-\int_0^t (r_v - n)dv\right] \geq 0 \quad (8)$$

This condition is sometimes known as a no-Ponzi-game (NPG) condition. Although (8) is stated as an inequality, it is clear that as long as marginal utility is positive, families will not want to have increasing wealth forever at rate $r - n$, and that the condition will hold as an equality" (pp. 49-50). In equation (8) the symbols have the following meaning: *a* is non-human wealth, *r* is the rental price of capital, *n* stands for population growth, and v debt per capita.[3]

A similar approach is put forward in the case of the government. In fact, Blanchard and Fischer (1989) suggest that "Integrating this budget constraint and imposing the NPG condition this time on the government (that debt not increase faster asymptotically than the interest rate) gives an inter-temporal budget constraint for the government:

$$(9)\ b_0 + \int_0^{\infty} g_t R_t dt = \int_0^{\infty} \tau_t R_t dt$$

The present values of taxes must be equal to the present value of government spending plus the value of the initial government debt b_0, given the NPG condition. Equivalently, the government must choose a path of spending and taxes such that the present value of $g_t - \tau_t$, which is sometimes referred to as the primary deficit, equals the negative of initial debt, b_0; if the government has positive outstanding debt, it must anticipate running primary surpluses at some point in the future" (p. 55). The symbols in equation (9) are as in equation (8); in addition, *g* stands for government expenditure (other than interest payments), τ for tax revenues, and *R* for the discount factor. Blanchard and Fischer (op. cit.) go on to argue that "Integrating this budget constraint subject to the NPG condition gives the following inter-temporal budget constraint:

$$(10)\ \int_0^{\infty} c_t R_t dt = k_0 - b_{p0} + b_0 + \int_0^{\infty} w_t R_t dt - \int_0^{\infty} \tau_t R_t dt$$

The present value of consumption must be equal to the sum of nonhuman wealth, which is the sum of $k_0 - b_{p0}$ and b_0, and of human wealth, which is the present value of wages minus taxes. The government budget constraint shows that for a given pattern of government spending (and given b_0), the government has to levy taxes of a given present value:

[3] The difference between Ponzi and no-Ponzi debt notions in the case of private and public debt should be made clear. A Ponzi-debt game is the case when private and public debt is issued with all payments of interest and principal undertaken by issuing new debt; and thus the need to raise taxes is avoided. No-Ponzi-debt game is the opposite of the Ponzi-debt game. The No-Ponzi game notion for private and public debt is when the growth of private and of public debt is lower than the real rate of interest in the long run (Azizi et al., 2012).

equivalently, the government need not run a balanced budget at every moment of time" (p. 55), where the symbols are as above with the exception of w, which stands for wages.

Re-writing equations (9) and (10) above gives:

$$(11)\ b_0 = \int_0^{\infty} \tau_t R_t dt - \int_0^{\infty} g_t R_t dt$$

$$(12)\ b_0 = \int_0^{\infty} c_t R_t dt - k_0 + b_{p0} - \int_0^{\infty} w_t R_t dt + \int_0^{\infty} \tau_t R_t dt$$

so that the discounted value of the budget surplus is equal to the discounted value of the private sector deficit. This is essentially the dynamic equivalent of equation (2) above applied to a closed economy when that equation is interpreted in *ex ante* terms.

In a closed economy, the fulfilment of the inter-temporal private sector budget constraint requires the equality (over time) between savings and investment. It is possible that savings and investment would be equal at a rate of interest linked with the rate of discount used and compatible with a high level of economic activity. In effect if the private sector imposes upon itself the inter-temporal budget constraint, then the government would be faced with a constraint. Such constraint, that discounted future investment is greater or equal to discounted future savings at the supply side equilibrium level of economic activity, would clearly imply that future taxation is greater or equal to expenditure, which is the inter-temporal budget constraint.

The question arises at this juncture of the conditions under which the discounted future investment is greater than or equal to discounted savings. It should be first noted that we are speaking here of the inequality holding at the supply-side equilibrium level of economic activity. In general this would not be full employment, but could correspond to a NAIRU (non accelerating inflation rate of unemployment) or an inflation barrier (Arestis and Sawyer, 2005). One of two arguments would usually be invoked. The first would correspond to an appeal to Say's Law to the effect that 'supply creates its own demand'. The second would be to argue that the interest rate was also set such that the condition is held. However, in any other circumstances (that is when *ex ante* savings tends to exceed *ex ante* investment at full employment), then adherence to the inter-temporal budget constraint would impose on the private sector a requirement of (over time) of *ex post* savings equals to *ex post* investment. This would entail low levels of economic activity to reduce savings (below the full employment *ex ante* level), and significant levels of unemployment would be the consequence of meeting the inter-temporal budget constraint.

If it were the case that (*ex ante*) savings and investment were equal, then that equality would be in effect the budget constraint for the private sector, and hence there would be a budget constraint on the public sector. If there is an inter-temporal equality between savings and investment, then similarly there would be an inter-temporal budget constraint on the public sector. But then the question arises as to whether households behave in the manner portrayed by the inter-temporal budget constraint thesis. We examine this question in the sub-section that follows.

4.2 Is Household Behaviour Consistent with the Inter-temporal Budget Constraint Thesis?

In attempting to answer the question posed, it is necessary to examine the household budget constraint, which is the counterpart of the government's inter-temporal budget constraint. The basis of the argument is straightforward. Each (representative) household maximises life-time utility, which depends on consumption. The household will spend up to budget constraint under a non-satiation assumption. In effect there is a life time marginal propensity to consume of unity. A 'bequest effect' (specifically desire to leave more than inherited) would imply overall life time savings. The use of inter-temporal optimisation can be objected to along the lines of 'unrealism' in terms of the information and computational requirements; also along with the unrealistic assumptions made to make it operative, especially those of rational expectations and never-defaulting representative agent. It can also be pointed out that the analysis makes no allowance for uncertainty about the future, where here uncertainty is fundamental uncertainty in the sense of Knight and Keynes, rather than risk with known probabilities on future outcomes. There is clearly no allowance for learning nor for changes in tastes and preferences in light of experience, nor any consideration of changes in household membership in essentially a world without separation and divorce. A particularly important aspect of this approach is the perfect capital market assumption. More specifically, the absence of credit rationing (which would mean that some individuals were credit constrained) and the assumption of a single interest rate are important considerations. Furthermore, there is no mention of banks in this analysis, and since banks play an important role in terms of credit rationing their omission is noteworthy.

Insofar as *ex ante* income and expenditure are equated with each other (perhaps through suitable variations in the rate of interest), then there is no role for fiscal policy. The need for fiscal policy (in the sense of the absence of a balanced budget) arises where *ex ante* savings and investment are not equal to one another at a desirable level of income (often taken to be high level of employment) (Arestis and Sawyer 2003a, 2003b, 2004, 2006). In a closed

economy, we know that there is equality between net private savings and the budget deficit, and the purpose of a budget deficit can be seen to be the absorption of 'excess savings'. The imposition of the condition that income is equal to expenditure is equivalent to imposing the condition that savings is equal to investment, which is the re-instatement of Say's Law. In this context the relevance of fiscal policy is ruled out by assumption.

The obvious interpretation of the 'no Ponzi' condition is that an economic agent cannot continue to borrow for ever, and that those who lend to that economic agent would not be willing to continue to lend. But an excess of private savings over private investment requires some outlet, and reveals a willingness by the private sector to continue to acquire public debt. For the individual it would be anticipated that the assumption of being able to borrow as much as they wish at the prevailing rate of interest would not hold, and in effect the individual would face some form of credit rationing. In the case of government, its ability to borrow would be constrained by the willingness of the private sector to lend since the budget deficit is equal to private net savings. If the government sought to borrow more than the maximum amount of private net savings, then it would indeed be faced by a borrowing constraint. However, if the government practices 'purposeful fiscal policy' and seeks to run a budget deficit equal to private net savings (at the target level of economic activity), then it would not face this borrowing constraint. The notion of 'purposeful fiscal policy', which is akin to 'functional finance' discussed below, is used to refer to the general presumption that private aggregate demand is likely to be insufficient rather than excessive, and hence that there would be budget deficits rather than budget surpluses. The key notion of the 'purposeful fiscal policy' approach is that the budget position should be used to secure the desired level of economic activity. From that perspective, a budget surplus would arise when private aggregate demand was deemed excessive (or equivalently when ex ante private savings are less than ex ante private investment).

Furthermore, an economic world where the No-Ponzi Game and the transversality condition (that the growth rate of GDP is lower than the real rate of interest) are always valid may not reflect what happened in the OECD countries over the period 1970-2008. Hence, the doubts expressed by Blanchard and Weil (1992) in relation to the NPG condition between 1960 and 1990 are still valid twenty years later. However, the prevalence of their doubts was much greater during the 1980s and 1990s. But the claim that the NPG condition and the transversality condition assure solvency and debt/GDP consolidation is not validated by the data which, instead, are significantly more in line with the Keynesian framework (Azizi et al., 2012, p. 19). And to quote Blanchard and Weil (1992): "The average realized real rate of

return on government debt for major OECD countries over the last 20 years has been smaller than the growth rate. Does this imply that governments can play a Ponzi debt game, rolling over their debt without ever increasing taxes?" (p. 1).

5. Sustainability of Deficits and 'Functional Finance'

The sustainability of deficits is generally discussed in terms of a given deficit to GDP ratio, and the subsequent evolution of the debt to GDP ratio arising from that deficit position. As indicated above, the case where the analysis relates to a specified primary budget deficit indicates that sustainability in terms of convergence on a stable debt to GDP ratio depends on the relationship between the growth rate and the interest rate (on government debt), whereas with a specified total budget deficit the debt ratio converges on a stable debt to GDP ratio. However, from a 'functional finance' perspective, the sustainability of budget deficits should be examined in terms of the sustainability of a fiscal stance designed to secure high levels of employment. As the government debt evolves over time as a result of budget deficits, there are effects on asset positions and possible changes in savings behaviour. With a 'functional finance' perspective, the budget deficit depends on the savings-investment imbalance. As the debt changes so does savings behaviour along with the imbalance between savings and investment; hence, the required deficit changes. The budget deficit should be viewed as strongly influenced by the expenditure and other plans of the private sector. In effect the budget deficit can be viewed as endogenous, and indeed something of a residual in the following two senses. First, whilst a government can set tax rates and its intentions for public expenditure, the resulting budget deficit arises as a result of decisions made by the private sector and the resulting level of economic activity. The government can, of course, seek to forecast what the budget deficit will be but it does not have full power over the budget deficit. Second, the target budget deficit should be set along the lines of 'functional finance', as suggested above, where the intention is to use the budget position to secure a high level of economic activity.

Lerner (1943) put the case for functional finance, which "rejects completely the traditional doctrines of 'sound finance' and the principle of trying to balance the budget over a solar year or any other arbitrary period" (p. 355). Kalecki's (1944) argument was essentially similar: a budget deficit is required to correct a deficiency of aggregate demand, and it is precisely in conditions of deficient aggregate demand that funds will be available to cover the budget deficit. To ensure a high level of economic activity, the budget deficit should be set in line with the anticipated sum of savings minus investment plus net borrowing from overseas

(equal to the current account deficit), which would be forthcoming at the high level of economic activity.

A frequent objection to the use of fiscal policy is the argument that government may not be able to fund budget deficits, and hence attempts to stimulate the economy through fiscal policy and budget deficits will be frustrated. This argument is clearly wrong, since budget deficits are required because there is an excess of (*ex ante*) savings over investment (at desired level of income). If a budget deficit cannot be funded, this is because there is an absence of that excess of savings over investment, in which case a budget deficit would not be required. When there is an excess of savings over investment, then a budget deficit is required to absorb the excess savings, but that, of course, is precisely the situation in which the budget deficit can be funded. In turn the savings (in excess of investment) can only be realised when the government runs a budget deficit.

Fiscal policy is often viewed in terms of the determination of government expenditure and taxation as undertaken without specific regard to the state of private aggregate demand. The 'crowding out' argument after all assumes that there is something to be crowded out. That approach to fiscal policy suggests either that fiscal policy has no effect on the level of economic activity (since there is crowding out) or that there is a positive link between government expenditure (budget deficit) and the level of economic activity. The investigation of fiscal policy through the means of simulation of macroeconometric models is concerned (usually) with the question of what happens if government expenditure is increased, other things being equal. The results of such simulations**,** generally, suggest that an increase in government expenditure does have a positive effect on the level of economic activity (see, for example, Arestis, 2012). Indeed in the context in which these simulations are undertaken, it is somewhat surprising that positive results are obtained since such macroeconometric models generally build in a variety of ways by which there would be crowding out – the most notable one being that imposition of some form of supply-side equilibrium, and an adjustment process by which the economy moves to that supply-side equilibrium.

The evaluation of the effects of fiscal policy has to appreciate that the scale of budget deficits depends on what is happening in the private sector. It is well-known that falls in private demand, by lowering economic activity, tends to raise budget deficits with the reduction in tax revenues. The adoption of discretionary fiscal stimulus in recessions will mean that budget deficits will further accompany reductions in economic activity. The evaluation of fiscal policy should not start from the presumption that there would otherwise be adequate

effective demand in that all would agree that in the context of adequate private effective demand there is no requirement for budget deficits.

An alternative is to think in terms of the sustainability of a 'functional finance' budget deficit - that is the deficit required to secure a high level of economic activity (full employment). A budget deficit adds to the debt and thereby adds to future interest payments on the debt. The question is then how do spending and saving decisions respond to the rising interest payments and rising debt. One response is that interest payments form part of disposable income and government bonds are an asset to the bond holders, which encourages spending. A related view (cf. Godley and Rowthorn, 1994) is that households operate with a desired wealth to income ratio, and as their wealth in the form of government bonds rise their desire to save declines. The other, and opposite, response is that households respond to budget deficits and government debt by reducing expenditure on the grounds of the Ricardian Equivalence Theorem with households believing that there is the prospect that there will be higher future taxes in order to meet the interest payments on government bonds. The prospects of higher future taxation reduces, it is argued, consumer expenditure, and under the full Ricardian Equivalence Theorem would reduce household expenditure one for one with any increase in government expenditure, leaving the overall level of expenditure, and thereby of economic activity, unchanged. There are numerous critiques to be made of this approach, including the assumed absence of any credit rationed households and other transversality conditions, fully rational economic agents, as well as the perfect foresight assumptions involved. Further the empirical evidence is not supportive of the full Ricardian Equivalence Theorem (Arestis and Sawyer, 2003b, 2004) and, as we argue in Arestis and Sawyer (2006), fluctuating economic activity under which budget deficits move counter-cyclically would generate the appearance of partial Ricardian Equivalence. However, the major comment to make is that if the world was one of Ricardian Equivalence then the level of demand could be expected to be stable, and that any attempt by government to inject demand into the economy through increased spending would be offset by reductions in household spending. Whilst the budget position could change (as government expenditure varies) the level of economic activity would not vary, other than for reasons of fluctuations in household expenditure.

A simple model can be used to illustrate our argument. In this model we consider for reasons of simplicity a closed economy in which we abstract from cyclical fluctuations in investment. In terminology, which we develop later, the 'structural' components of private demand only are considered. Consumer expenditure is taken as:

(13) $C = a + c(1-t)(Y + iD)$

where D is government debt and i interest rate on that debt.

With investment taken as exogenous at I^*, G is (non-interest) government expenditure, and tax revenue is given by $t(Y + iD)$.

For a closed economy, the leakages = injections condition is:

(14) $a + c(1-t)(Y+iD) - I* = G + iD - y(Y+iD)$

The level of government expenditure G^* required to attain the high level of economic activity Y^* is then given by:

(15) $G^* = a - I^* + Y^*(t + c(1-t)) - iD(1-c)(1-t))$

and hence the level of G^* required declines as D rises, and the necessary budget deficit declines as D rises and tax revenue rises.

The underlying and sustainable deficit position can potentially be worked out. To give a simple illustration, expand the expression for the budget deficit to give:

(16) $G + iD - T = (S - I)$

Divide through by the full-employment level of income (Y_f), assume constant marginal propensity to save, and use lower case letter to denote upper case divided by Y_f (with the exception that j is used to denote I/Y_f) we obtain:

(17) $g + id - t = s(1-t)(1+id) - j = b$

which provides an equation in d and t and b is the ratio of total budget deficit to Y_f. We treat g as given, d as evolving over time and the tax rate t adjusted to ensure that the equation holds for Y_f. The output level Y_f is taken to be growing at rate r over time, and the variables in equation (16) growing at the same rate with the exception of D and T, which evolve over time. The condition for the budget deficit (relative to income) to be constant over time, i.e. some form of steady state reached, leads to:

(18) $d = \frac{g-t}{r-i}$

These two equations can be solved to provide equilibrium solutions for d and for t.

(19) $t(1-s)r + si(t-g) = g(r-si) + s(i-r) + j(r-i)$

This provides a quadratic equation in t, and hence potentially leads to two solutions.

The debt to income ratio is then given from equation (18); and the deficit to GDP ratio is then given by:

(20) $b = \frac{r(g-t)}{(r-i)}$

In the long run, the required tax rate is given by the equation here for t. In terms of setting long-run goals for fiscal policy (e.g. comparable to the so-called ‘golden rule’ adopted in the

UK, which can be interpreted as the balance of the current budget over the cycle and allow an overall budget deficit of around 2 per cent of GDP) the target tax rate would be given by equation (9), which in conjunction with the target levels of *r* and *a* would generate a target primary deficit.

It will, of course, be immediately recognised that the calculation of the target budget deficits is not straightforward, and that being able to incorporate significant changes in the underlying parameters (e.g. the propensity to invest) would also be complex. But this type of approach would make more sense than imposing some arbitrary rule, such as balance the budget over the cycle. It also recognizes that there are likely to be significant differences between countries reflecting differences in investment behaviour, export opportunities etc..

Ryoo and Skott (2011) conduct an analysis in the context of a stock-flow consistent model. They conclude that "Fiscal deficits and a rise in public debt are necessary if the government wants to maintain full employment following a decline in demand. This Keynesian insight remains as valid as ever. Looking beyond the short run, one could ask whether current debt levels and fiscal deficits are sustainable. It is not always clear what is meant by sustainability, but the question may be whether the fiscal requirements for full employment growth will generate an ever-increasing debt-GDP ratio. In the models we have considered, the stability of the trajectory of public debt depends on the specifications of fiscal policies and household behavior, and the case of instability cannot be ruled out. The current obsession with debt and austerity is misguided, however. Fluctuations in private sector confidence and financial behavior can and should be offset by variations in public debt. The remedy against instability is not fiscal austerity. Stability can be ensured if the tax on interest income is used as the active fiscal instrument; alternatively, a constant tax rate on interest income guarantees stability as long as the rate is sufficiently high" (p. 14).[4]

The conclusion we would draw is that the sustainability of a fiscal stance (developed to secure high levels of employment) has to consider the evolution of the required budget deficit over time as the debt itself evolves and with it interest payments on that debt. The analyses above then suggest that a 'functional finance' stance will be sustainable (in the sense that the debt levels do not rise continuously).

[4] Skott and Ryoo (2012) also conduct a related analysis in the context of an overlapping-generations model with imperfect competition. They conclude that the answer to the question as to whether the fiscal requirements for full employment growth will generate an ever-increasing debt-GDP ratio is simply negative.

6. Structural Budgets

Much discussion on fiscal policy has involved the idea of the structural budget position.[5] It has, for example, become the central part of the 'fiscal compact' of the Economic and Monetary Union (see European Commission, 2012;); also the UK government sets its deficit target in terms of the elimination of the cyclically adjusted deficit; and more generally it is discussed in terms of fiscal consolidation (IMF, 2010a). This section starts by pointing to the difficulties in measuring the structural budget position, which is after all a hypothetical calculation of what would happen in a state of the world that differs from what actually appertains. It continues by arguing that the calculation of the structural budget deficit should check for consistency with private sector behaviour. The subsequent sub-section points to the contractions of setting the target of a balanced structural budget. This is followed by a discussion of the impossibility of 'balanced structural budgets'. The final sub-section asks what the structural budget position should be.

6.1 Measurement Difficulties

The structural budget position is intended to be the budget position, which would prevail when economic activity is at some desirable level. This will be given the label of potential output and signified by Y^*, and the difference between actual output and potential output is the output gap (and can be expressed in percentage terms relative to potential output). In the theoretical literature potential output can be seen as the level of output at which inflation would be constant: this is much in evidence in the new Keynesian and new consensus macroeconomics literature (Woodford, 2003). Although such considerations may influence the choice of potential output as the level of economic activity for which the structural budget position is calculated, it is not central to our argument here.[6] An alternative (though sometimes related) approach would be to treat the level of potential output as corresponding to some normal or average rate of capacity utilisation, which could be proxied in terms of the unemployment rate.

The structural budget position is written as $t^*(Y^*) - G^*$ where t is the tax and transfer function, which is the underlying ('structural') function and G^* the underlying (structural) government expenditure on goods and services. It is assumed that while tax receipts and transfer payments would vary with the level of economic activity for a given set of tax rates

[5] The term cyclically adjusted budget position is also used, e.g. HM Treasury (2012), and this is treated as a synonym for structural budget position.

[6] In this framework, a Phillips curve along the lines of $p = p^e + f(Y - Y^*)$ is assumed, and then for $p = p^e$, $f(Y-Y^*) = 0$ for which the solution of $Y = Y^*$ is assumed. But, as pointed out in Sawyer (2002), the estimation of Y^* from a Phillips curve requires that the (econometrically) estimated equation has the properties that the coefficient on p^e is unity.

and transfer entitlements, government expenditure on goods and services would not. The automatic stabilising feature of fiscal policy would operate through tax receipts and transfer payments (where interest payments on government debt are included in transfer payments).

In the calculation of the structural budget position there are clearly three calculations to be made: the structural tax function, structural government expenditure and potential output. In relatively stable times it could be postulated that the present tax rates and structure and the present levels of public expenditure could be regarded as the structural ones. Whilst that could be done for the current year, making calculations for future years raises some difficulties - for example what would be regarded as the prevailing tax structure as nominal income changes. In more challenging times when tax rates and structure and public expenditure are varied in response to an economic downturn, then distinguishing temporary changes from structural changes, particularly as time proceeds, is not easy to say the least.

6.2 Potential Output

It must first be said that the term 'potential output' is used in a number of different ways, which need to be distinguished, and that it is a theoretical notion that may or may not exist in the real world; and that any estimation of 'potential output' (for a given definition) is inevitably backward looking. The term 'potential output' is generally linked with the supply-side of the economy. In common usage it would suggest some form of maximum output. When we speak of someone's potential we are thinking of the most one is capable of or could potentially achieve. In economic terms 'potential output' can be linked with productive capacity. As such potential output could be interpreted as the (sustainable) physical capacity output, though more usually some notion of costs would be involved, such as the level of production at which costs would start to rise 'sharply'. This approach to 'potential output' is closely related to some upper limit to the level of output.

The notion of 'potential output' is the level of output at which inflation would be constant. In the context of a Phillips' curve analysis we have:

(21) $p = a + by + c.pe$

where p is the rate of inflation, pe is expected inflation and y output. When c = 1, potential output is the solution to $a + by = 0$ (i.e. where actual and expected inflation are equal), hence $y^* = -a/b$.

Even if there is a successful estimation, and as it is well known econometric estimates are subject to statistical errors, the estimates of y* derived from the price Phillips curve could, at best, be placed in a confidence range. Staiger et al. (1997) conclude that "In our regressions (relating to the United States), there is a downward-sloping Phillips curve; it simply is

difficult to estimate the level of unemployment at which the curve predicts a constant rate of inflation. For some purposes, such as targeting the level of unemployment at which inflation is stable, this is a problem", and further "the natural rate probably lies between 4.3 and 7.3 percentage points of unemployment" (p. 47). These remarks can be carried over to the case of potential output, where precise estimates of this variable would be required if budgetary policy is to target a budget balanced where output is at potential.

It is also apparent that the estimation of potential output requires data - that is the estimation can only be conducted after the events. It is only if past estimates of potential output can be used to project forward future potential output can estimates of potential output be derived. As output tends to grow over time, this would involve not only scaling potential output against actual output, but also deriving estimates of the growth of potential output. Any shifts in the price Phillips curve relationship, which involved changes in the estimated potential output, would clearly be ignored in this approach.

A related approach is based on a combination of a production function approach (relating output with factor inputs) with input utilisation at some equilibrium level, from which potential output can be derived. Hence if $Y = F(L, K)$ is the production function, and L^* is the level of employment, which corresponds to a non-accelerating inflation rate of unemployment, then $Y^* = F(L^*, K)$ where it is assumed that capital stock is operated at the desired capacity.

The more general theoretical framework within which 'potential output' is cast is one of the independence of demand and supply factors. The actual level of output is viewed as determined in the short run by the level of aggregate demand, whereas potential output is set on the supply side of the economy, and in general that the growth of potential output is unaffected by what happens on the demand side, and that the level of demand fluctuates around potential output (and hence output gap tends to average out as zero). This theoretical framework is seen clearly in the neo-classical growth model where the rate of growth is the 'natural rate of growth' and there is no independent investment function; also, desired savings are assumed to flow straight into capital accumulation. Once an independent investment function is introduced then the time path of additions to the capital stock and the evolution of the capital stock are set by the investment function. It should be stressed that the concept of 'potential output' is a theoretical construct that may (or may not) be helpful in macroeconomic analysis, but which is not directly observable and may not exist. As indicated above, the level of potential output may be indirectly estimated, but that will always be after the event. Further, it relies on the Phillips' curve, such as equation (21), being successfully

estimated with a coefficient on expected inflation as unity – in the case where it does not then $a + by = (1 - c)p$, and potential output is dependent on the rate of inflation. Further, when other factors influence inflation, then potential output would be dependent on those other factors. Suppose instead of equation (21) the equation estimated was:

(22) $p = c.pe + a + by + d.X$

where d and X are vectors. Then $y^* = [p\ (1 - c) - d.X - a]/b$. It could be argued that if the variables included in X were supply-side variables, then this would be consistent with the general concept of 'potential output' as a supply-side concept. But if any of the variables in X could be viewed as demand-side variables then that would not be consistent with the general notion of 'potential output'.

It is often implicitly assumed that the economy operates on average at the potential output level and also that the economy *should* operate at that level. This is formalised in the quadratic loss function, which appears in the 'new consensus macroeconomics' where the Central Bank loss function to be minimised is quadratic in inflation (minus inflation target) and output gap. Thus inflation below target is treated in the same way in terms of welfare losses as inflation above target, and positive output gap in same way as negative output gap. Actual output above potential generates losses comparable to those from actual output below potential. The zero output gap (actual equals potential output) does not in general correspond to full employment of labour. There are two distinct reasons here. First, potential output is often taken as akin to the average level of output (trend adjusted), and hence sometimes actual output is above and sometimes below potential output. Full employment of labour is more akin to a ceiling for employment and thereby economic activity: unfortunately, full employment is not seen as the average level of employment. Second, potential output can be taken to be the level of output that would correspond to the employment rate, which can be deduced from the NAIRU or NAWRU (Non-Accelerating Wage Rate of Unemployment). The NAIRU is simply the rate of unemployment, which is deemed to be consistent with constant rate of inflation, and should not carry with it any connotation of full employment. The estimates of the NAWRU figures produced by the OECD (and also labelled 'structural unemployment' in OECD *Economic* Outlook), for example and for 2007 (used in order to avoid any influence from the financial crisis) were: France 8.4 per cent, Germany 8.4 per cent, Italy 6.3 per cent, United Kingdom 5.3 per cent and the euro area average 7.6 per cent.[7]

[7] Figures taken from OECD, *Economic Outlook*, Statistical Annexe, December 2010.

6.3 The Measurement of Potential Output and Consistency Checks

Potential output cannot be directly observed, and indirect methods are used to provide estimates of it. In the context of the NAIRU this may be helpful for undertaking economic analysis (or may not) and which may (or may not) have a real world counterpart (Sawyer, 2000). At best, the existence of the NAIRU (and here potential output) can be postulated, and then experience of the real world judged as to whether that is consistent with the NAIRU. For example, does inflation tend to rise when unemployment is below the NAIURU and tend to fall when unemployment is above the NAIRU? In a similar vein, we can ask whether inflation tends to rise (fall) when actual output is above (below) potential output.

Potential output is generally measured in one of two ways. One method is to derive estimates of potential output from inference from actual output by fitting trends to actual data or applying filters such as Hodrik-Prescott to the data. The nature of such a method is that the estimates of potential output will be close to average output. It will then be observed that actual output fluctuates above and below potential output. The other method is when potential output has connotations (directly or indirectly) of constant inflation. When the estimation of Phillips curve (or similar) is undertaken for a period when there was no strong trend in inflation, then the estimate of potential output will fall around the average level of output.

There are well-known, if often ignored, sectoral practices based on national income accounting practices, as reflected in equation (2) above. In terms of outcomes, equation (2) must always hold. In particular, it would hold in outcome terms when output was equal to potential output. However, the key question is whether interpreted in terms of intentions (*ex ante*) the equation would hold as in equation (23):

(23) $G^* - T^* = S^* - I^* - NX^*$

where a star (*) is used to signify the 'structural' value of the variable concerned in the sense of the intended levels of savings, investment and net exports corresponding to the economy operating at potential output. The consistency issue is then simply whether private sector 'structural' behaviour is consistent with the public sector 'structural' budget position. The fluctuations in economic activity arise from fluctuations in demand (for whatever reason those fluctuations occur). As the components of (private) demand fluctuate (around their average or structural levels) the budget deficit (or surplus) varies. But the structural budget does not, nor does the private structural position - that is why the label structural is applied!

The structural budget position as directly calculated above can clearly be changed by changing the structural tax function and structural public expenditure - that is in effect making changes in tax rates and public expenditure, which are deemed permanent. But in

terms of equation (23) above changing the left hand side of the equation cannot ensure a corresponding change on the right hand side of the equation. There can be one case where there would be a corresponding change - when some form of the Ricardian Equivalence Theorem applies in the sense that when there is say a reduction in the structural budget deficit there is a corresponding reduction in net private savings (savings minus investment) minus net exports.

It is now argued (IMF, 2010b) that the timing of fiscal consolidation (taken to mean reduction in the structural budget deficit) should be put back until the level of economic activity revives. But the size of the structural budget deficit is (or should be) unrelated with the level of economic activity.

6.4 The 'Impossibility' of Balanced Structural Budgets?

A structural budget position refers to the budget position, which would hold when the economy is operating at some pre-defined level of output such as equal to potential output often referred to as zero output gap. This pre-defined level of output has connotations of the level of output around which the economy fluctuates, sometimes above that level of output, sometimes below. This level of output cannot then correspond to full employment when that term is interpreted (as it should) as the employment of all those seeking work, or at least as corresponding to a position where recorded unemployment equals the number of job vacancies. The structural budget position is calculated as equivalent to $G - tY^*$ where G is government expenditure on goods and services and assumed here not to vary with the business cycle; t is a summary measure of tax and transfer rates (referred to as tax rate for simplicity) and Y^* is the pre-defined level of output such as potential output.

The national accounts identity can be written as in equation (23). This is an identity in terms of outcomes, but a similar looking equation has an interpretation in terms of equilibrium and intentions. This can be expressed as:

(24) $G - tY = S^i(Y, \boldsymbol{\alpha}) - I^i(Y, \boldsymbol{\alpha}) - NX^i(Y, \boldsymbol{\alpha})$

where superscript i is used to signify intentions of the relevant variable, and it is assumed (for simplicity) that intended government expenditure is carried through, and that tax rates and benefit rates applied as intended. The vector $\boldsymbol{\alpha}$ contains those variables, which would lead to shifts in the functions, and these variables could range over 'animal spirits', interest rates, exchange rate and world trade. What may be termed the 'structural' or 'underlying' equations would come from the entries in the $\boldsymbol{\alpha}$ vector, which is a vector of variables being set at some 'normal' levels, and the corresponding vector is labelled $\boldsymbol{\alpha}^*$**.** Fluctuations in economic

activity would then arise from fluctuation in the variables in the $\boldsymbol{\alpha}$ vector. From equation (24) an equilibrium (sustainable) level of income could be solved for in terms of the vector $\boldsymbol{\alpha}$.

(25) $G - tY = S^i(Y, \boldsymbol{\alpha}^*) - I^i(Y, \boldsymbol{\alpha}^*) - NX^i(Y, \boldsymbol{\alpha}^*)$

Consider the case when the vector of variables is at their 'normal' levels. Then in relation to equation (25) we can ask two questions. First, in order that output be at its potential level Y* what would be the corresponding budget deficit (or surplus)? The approach of 'functional finance' (following from Lerner, 1943) would be to in effect set the balance between government expenditure and tax rates, such that the resulting equilibrium level of income is that of potential output. Second, can it be the case that the resulting budget position is one of balance? The (implicit) answer of the pre-Keynesian analysis (as outlined in the previous section) would be a resounding yes, whereas the analysis from a Keynesian/Kaleckian analysis would be in general no. In other words, does the following equation hold?

(26) $S^i(Y^*, \boldsymbol{\alpha}^*) - I^i(Y^*, \boldsymbol{\alpha}^*) - NX^i(Y^*, \boldsymbol{\alpha}^*) = 0$

The central argument of this paper is that the Keynesian/Kaleckian answer is the relevant one, and that there is an absence of convincing reasoning that savings and investment intentions can be reconciled when output is at potential; and that the market forces, which 'push' the economy towards any such equilibrium, are weak. In terms of equation (26) this forms a constraint on the size of the budget deficit (or surplus); namely that the budget deficit be equal to the sum of net private savings minus net exports at potential output. This is no more and no less than a constraint that says the budget deficit has to be constrained at zero. Having a budget deficit, such as would be indicated by equation (26), still involves fiscal discipline, and fiscal responsibility, where that responsibility includes securing a high level of economic activity; and a budget deficit such as in equation (26) would be sustainable.

The figures in Table 1 illustrate that national governments tend to run budget deficits and tend to have public debt. The long-run tendency for budget deficits has gone alongside average actual output close to potential output. The average output gaps for the period 2001-08 are included in Table 1 and it can be readily seen that for the euro area as a whole an average budget deficit of over 2 per cent of GDP was accompanied by an output gap of less than 0.2 per cent. In light of the way in which potential output is estimated, based on trends in actual output, it is not surprising that the output gap averages out close to zero. But, further, there has been little sign of the crowding-out of private expenditure by budget deficits and little sign of domestic inflationary pressures building up (when the output gap is close to zero).

Another angle on this can be seen by reference to savings and investment behaviour. Savings behaviour is taken to depend on savings out of profits and savings out of wages, written as $s_pP + s_wW$ (where P stands for profits, and W for wages). Savings relative to income could then be written as $s_p\pi + s_w(1- \pi)$ where π is profit share. Investment behaviour would depend on many factors including profitability and capacity utilisation, but the 'underlying' investment behaviour as particularly linked with the trend growth rate of output and the capital-output ratio. Thus 'underlying' net investment relative to income would be NI/GDP = vdY/Y = $v.g$, and gross investment = $v(g + \delta)$ where δ is the rate of depreciation and g as above, namely the growth rate of output. The question can then be posed as to whether $s_p\pi + s_w(1- \pi)$ and $v(g + \delta)$ are equal to one another. The Kaleckian/Keynesian perspective is that since savings and investment behaviour are separate activities, there is not a strong reason to believe that these 'underlying' relationships will be equal. In a closed private economy actual savings and investment would of course have to be equal. The processes whereby savings and investment intentions were reconciled would come through changes in the level of economic activity, which would, for example, tend to suppress investment below the 'underlying' level (through impact of capacity utilisation on investment). There are two other routes through which savings and investment behaviour can be in effect reconciled. The first is a budget deficit and/or net export surplus sufficient to bridge the gap between savings and investment forthcoming at potential output. The second would be policy measures designed to shift the distribution of income in the direction of stimulating demand (Sawyer, 2011).

The advocates of the objective of a structural balanced budget have to show that 'underlying' savings and investment intentions minus net exports would be equal when actual output is equal to potential output. In the absence of such an assurance, it is folly to pursue a structural balanced budget. It may be possible to balance the budget through deflation, but may be impossible to balance the budget consistent with a zero output gap. During the 2000s (prior to the financial crisis) for the EU-15, the savings ratio (to GDP) averaged 21.0 per cent, and the investment ratio 17.7 per cent (figures given in Sawyer, 2011) with an average budget deficit of 2.2 per cent and net exports of 1.1 per cent. The achievement of a balanced budget during that period (with the observed level of output) would have required some combination of significantly lower savings, higher investment and higher net exports. The case then has to be made that future savings, investment and net exports will differ from the pre-2008 experience in ways which would be consistent with a balance budget.

This sub-section has pointed out that the achievement of a structural balanced budget would require that the sum of investment minus savings plus net exports would also need to be equal

to zero and be consistent with a zero output gap. We have argued that there is a lack of convincing arguments that the latter condition would come to pass, and have pointed out that the condition of balanced budget has generally not been met in industrialised countries.

6.5 What Should the Structural Budget Position Be?

This question is easy to answer in general terms but difficult to answer with precision. The easy part is to say that the structural budget deficit should be that which is consistent with the private sector structural surplus. In other words the structural budget position should be set in accord with equation (25). This is in line with Lerner's functional finance approach (Lerner, 1943), and with Kalecki's (1943). This also clearly sets out when fiscal consolidation would be justified - namely when the left hand side of equation (26) is greater than the right hand side of that equation, that is:

(27) $G - tY > S^i(Y, \boldsymbol{\alpha}^*) - I^i(Y, \boldsymbol{\alpha}^*) - NX^i(Y, \boldsymbol{\alpha}^*)$

It may also set out the conditions when fiscal consolidation can bring the intention to reduce the budget deficit, which can bring an actual reduction in the deficit and involve higher levels of economic activity. The first condition would be that the attempted reduction in budget deficit through tax rises and/or public expenditure cuts took place against a background of rising investment, rising net exports and/or declining intention to save. The second condition would be that the inequality in equation (27) held when a reduction in government expenditure (or increase in tax rates) need not lower output, and would allow investment and net exports to increase.

Using the structural budget position as the 'guiding star' of fiscal policy places considerable power in the hands of the economists and statisticians who make the call on the measured structural budget position in light of the inherent difficulties rehearsed above in sub-section 6.4. This is particularly evident in the context of the Economic and Monetary Union where the ‘fiscal compact’ is centrally based on the achievement of a balanced structural budget. However, we would argue for setting out budget proposals in terms of the structural budget position. In doing so we would argue for: (i) the ('structural') level of output set at a high level of employment, which could be deemed one of full employment. This could be significantly higher level of output than that implied by potential output. (ii) the estimation of the structural budget position be out in a transparent manner with public availability, one of the key assumptions made on what are regarded as the 'structural' tax rates, structure and public expenditure. (iii) the estimation of the structural budget position be checked for consistency along the lines suggested by equation (26). This can be done by constructing the right hand side of that equation, and again transparency in the estimation of the right hand side should

be ensured. And (iv) it would then follow that the structural budget position would be consistent with private sector behaviour and with the achievement of the target level of output and employment. It corresponds with what we might call 'coarse tuning' of the economy, and the 'functional finance' approach of Lerner (1943) and Kalecki (1944) seeking to use the budget position to full employment.

7. Some implications for the UK Fiscal and Debt Policies

In this section we seek to draw out some general implications for UK fiscal and debt policies and the conduct thereof. These are divided under eight headings.

First, it is generally forgotten that the debts of the government are the assets of the private sector, and that the debt and the associated interest payments are transfers from one group (taxpayers) to another (bondholders). Austerity to reduce budget deficits is often justified by appeal to the dangers of high debt levels and their unsustainability. It has been argued above that fiscal policy particularly when operated along 'functional finance' lines does not face issues of unsustainable debt. It has further been demonstrated that arguments that high debt ratios reduce economic growth (and a fortiori that there is some crucial debt to GDP ratio such as 90 per cent, above which the economy falls off the cliff) are not supportable. Hence, using such arguments to justify austerity are not valid.

Second, setting a target for the budget in terms of its structural position (in UK case the cyclically adjusted budget, CAB) faces enormous difficulties. It has been argued that there is little reason to think that a balanced CAB is possible – that is a budget which is balanced when output gap is zero. Attempting to attain something which is unattainable is not a sensible way to proceed. In this case, seeking a balanced budget threatens to proceed through reductions in public expenditure (and hence in public services) without achieving the balanced budget.

Third, using the notion of a CAB requires the use of estimates of potential output (from which output gap is calculated). Yet potential output is a slippery concept, and estimates of it have used a variety of techniques. The use of different estimates of potential output obviously would give rise to different estimates of the CAB. The differences can be significant, e.g. order of 2 per cent in potential output would correspond to circa 1.5 per cent difference in CAB. There is a need for much greater transparency over the estimates of potential output. We would advocate the alternative that the level of output (and correspondingly employment level) at which some target budget position is formulated is laid out clearly, and justification provided. This should correspond to a sustainable and feasible level of output that is closer to

the productive capacity of the economy than the present approaches, which are more akin to using average experience over some recent past. This can be called the capacity budget position and its calculation has to incorporate estimates of the levels of private investment, savings and net exports: the capacity budget deficit would, for example, be smaller if private investment were higher. It must be realised that such a level of output would tend to be greater than the average level of output. In an economy with cycles, the capacity output could be reached towards the top of the cycle, but not the average over the cycle.

Fourth, the estimates of the capacity budget position and the average budget position have to be checked for consistency against savings, investment and net export. The arguments above are that when the budget deficit matches the willingness of the private sector to save (relative to investment) then there are not issues of the funding of the deficit (indeed the deficit is required to enable savings to be realised).

Fifth, setting the aim of a budget position which is consistent with a high rate of capacity utilisation is *not* a spend thrift option; there is a clear limit to the size of the budget deficit, which could be viewed as the constraint on the budget deficit. The clear limit is given by S^ - I^ - NX^ where ^ after a variable indicates the levels of the corresponding variables, which would be calculated from the average propensity to save, to undertake investment and of net exports applied to the capacity level of output.

Sixth, the reduction of budget deficit requires (as a matter of accounting) some combination of lower savings, higher investment, higher net exports. Seeking to reduce deficits through cuts to public expenditure could succeed through reducing economic activity and thereby lower savings and reduced imports (hence higher net exports): and not to be recommended. The present levels of budget deficits should be addressed through stimulus of investment and net exports. Insofar as there is some recovery of investment (through replacement investment) then the deficit will fall. The lack of response of net exports to the fall in the value of sterling in the past few years is not encouraging for the stimulus of net exports, though global recovery would help. However, the key lesson is that the reduction in the budget deficit must come from recovery of investment and net exports, and not from reducing public expenditure.

Seventh, the average budget deficit (over time) depends on the average positions of savings, investment and net exports (and similar remarks apply to capacity budget deficit). A small budget deficit at an acceptable level of economic activity clearly requires a corresponding balance between savings, investment and net exports. This would require a realistic estimate of the achievable investment ratio. The difficulties of undertaking that estimation should not

be understated in the era following the financial crisis and reflecting the need to adapt to environmental concerns and the structure of investment (that is the need to shift investment in the direction of environmentally friendly 'green' investment).

Eighth, the role of a more progressive tax system and an attack on the inequalities, which are persistent in the UK economy should be recognized (Sawyer, 2011). A more progressive tax system enhances the automatic stabilisers and also shifts the tax burden from high spenders to low spenders and would have a stimulating impact on the level of demand with tax revenues maintained. Measures to reduce inequalities such as living wage requirements, higher minimum wages would also operate to raise demand. The progressive way to reduce the budget deficit is to reduce inequality.

8. Summary and Conclusions

A major argument to which the proponents of fiscal austerity appeal is that the budget deficit and the debt to GDP ratios are unsustainable. In this paper we have examined this argument and found it wanting. We first note that the debt ratio will converge to a level equal to the deficit ratio divided by the (nominal) growth rate when the total deficit is considered. Further we argue that when the budget deficit is operated according to 'functional finance' principles (that is the deficit seeks to absorb the excess of private savings over investment to underpin a high level of economic activity) then they are not issues of the deficit being funded, and that the debt to GDP ratio will again stabilise (taking into account the effects of interest payments on demand). It has also been argued that any relationship between debt ratio and growth (for which the empirical support seems rather slight) may well arise from reverse causation whereby low investment leads to low growth and to the need for budget deficits and thereby debt.

The notions of a 'structural budget' and the drive for a 'balanced structural budget' have been critically examined. It has been argued that the idea of 'potential output' for which the so-called structural budget is calculated is problematic, surrounded by measurement issues, and is a theoretical concept, which may not have a real world counterpart. It is further argued that there must be a consistency check that corresponding to a structural balanced budget deficit calculation there is a private sector structural position. Hence a balanced structural budget is only possible if the underlying ('structural') private net savings plus financial account equals zero.

These considerations applied to the UK economy (though would also apply to many other countries) suggest that the pursuit of a balanced structural budget is flawed as there is no evidence that such a budget position is attainable or consistent with private sector behaviour. Attempts to pursue such a balanced budget run the danger of setting off an austerity spiral. The underlying budget position should be set to be consistent with a high level of economic activity in the realisation that a substantial budget deficit will be thereby required. The scale of the required budget deficit could be reduced through appropriate policies of redistribution. The resulting budget deficit would be sustainable and is unlikely to damage economic growth prospects.

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Table 1: Government Debt and Budget Positions in Four Countries and Euro Area Expressed as Percentage of GDP

	1983	1983-1990		1991	1991-2000		2001	2001-2008			2008
	Debt	Total budget balance	Primary Budget balance	Debt	Total budget balance	Primary Budget balance	Debt	Total budget balance	Primary Budget balance	Output gap (%)	Debt
France	34.6	-2.5	-0.4	40.1	-3.8	-1.0	64.3	-3.0	-0.5	0.4	76.1
Germany	39.1	-1.6	0.6	40.3	-2.9	-0.2	59.7	-2.4	0.1	0.2	69.0
Italy	70.0	-11.0	-3.4	107.4	-6.4	3.2	120.2	-3.1	1.8	-0.1	114.5
UK	53.9	-1.8	1.1	40.1	-3.2	-0.5	40.4	-2.9	-1.0	0.6	57.0
Euro Area	47.3	-4.4	-0.7	60.1	-3.8	0.6	73.8	-2.1	0.7	0.16	73.4

Source: OECD, Economic Outlook, Statistical Annex, June 2000 (for statistics 1983-1990), and June 2009 (for statistics 1991-2008).