

Optimal Debt Policy, and an Institutional Proposal to help in its Implementation

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Extended Abstract/Executive Summary

This paper does two things. First it reviews the recent literature on optimal fiscal policy, including work by the authors. In particular, it focuses on results in Benigno and Woodford (2003), Schmitt-Grohe and Uribe (2004), Kirsanova and Wren-Lewis (2006), and Leith and Wren-Lewis (2006) that suggest that an optimal fiscal policy would involve steady-state debt following a random walk in response to shocks, rather than debt returning to some target level. Second, it puts forward a proposal for the establishment by national governments of a Fiscal Monitoring Commission. Although this body, at least initially, would have no statutory power, it would provide independent information about the long term prospect for government finances, and provide a mechanism by which governments could be encouraged to move towards implementing an optimal fiscal policy.

Recent developments in the public finance and macroeconomics literature have allowed an integrated evaluation of budgetary policy at the macroeconomic level, where costs due to distortionary taxes can be directly compared to the costs arising from Keynesian disequilibria. Using this approach, both Benigno and Woodford (2003) and Schmitt-Grohe and Uribe (2004) show that it is optimal for government debt to follow a random walk after fiscal shocks. Essentially the discounted costs of servicing permanently higher debt (through higher distortionary taxes) are outweighed by the short term costs of reducing this debt, due to both temporarily higher taxes and changes to inflation.

This result appears robust in a number of respects. First, it remains even if government spending as well as taxes are treated as an instrument, as Leith and Wren-Lewis (2006a) show. Second, it remains even if fiscal policy is not fully optimal, but is instead described by a simple feedback rule, where spending responds to debt disequilibrium. Kirsanova and Wren-Lewis (2006) show in this case that optimal feedback will be at a minimal level, such that debt disequilibrium is eliminated over centuries rather than years, and so debt almost follows a random walk.

The paper discusses these results in detail. It draws on Leith and Wren-Lewis (2006a) to show that the random walk result depends on the existence of some form of commitment technology, so that policy can either be fully optimal and time inconsistent, or follow a 'timeless perspective' approach. Leith and Wren-Lewis (2006a) show that under discretion, optimal policy in a closed economy will involve a return to the original level of debt, so that the random walk result no longer holds. However, the paper argues that this does not provide a rationale for debt targets.

The random walk result does depend critically on policy makers being benevolent, in the sense that they maximise social welfare. The paper gives new results to show how excessive discounting by fiscal policy makers will distort the optimal policy, and how this can lead to explosive paths for debt. Debt targets provide a possible mechanism for avoiding such outcomes, but they are inevitably second best, in the sense that they preclude achieving the optimal outcome that would occur if policy makers were benevolent (the random walk result). In contrast, applying pressure on a myopic fiscal policy maker to be more concerned about debt disequilibrium can come very close to achieving the first best policy.

The paper suggests institutional change as a way of improving aggregate budgetary decisions. A number of authors (e.g. Wyplosz (2005)) have suggested various forms of Fiscal Policy Committee, often drawing parallels with Independent Central Banks. The proposal in this paper is a more modest, although we would argue it is also more politically feasible. This is for a Fiscal Monitoring Commission, which would be charged with producing the best available projection for the public sector finances, and making recommendations if these projections appeared to imply an unsustainable or sub-optimal path for public sector debt.

The paper outlines five minimum requirements for such a body: that it be funded by government, that its director be responsible to an independent committee, that it should have the resources to undertake once a year a long term (e.g. 50 year) projection of government finances based on current plans, that if these projections indicated that there was a significant chance that the public finances were not sustainable or sub-optimal the FMC should publish proposals for changes to aggregate spending or taxes, and that the government is required to publish a response to these proposals. The FMC is compared to existing institutions, such as the Congressional Budget Office in the US, and monitoring by the EC Commission.

Although the government would not be required to implement the proposals of the FMC, the paper argues that the FMC would achieve a number of goals. The government would be forced to address the issue of sustainability, either by agreeing with the FMC's assessment, or by publishing alternative assessments of its own, and justifying why its own assessment was superior to the FMC's. This would put the issue of the long term control of debt, and the funding of any fiscal changes, firmly into the political arena. If the government undertook expansionary, counter cyclical fiscal action they would explicitly have to address the issue of how deficits would eventually be funded.

1. Introduction

This paper does two things. First it reviews some recent literature on optimal fiscal policy, including work by the authors, with a particular focus on optimal policies towards debt. It also presents some new results involving a mildly myopic fiscal policy maker. Second, it puts forward a proposal for the establishment by national governments of a Fiscal Monitoring Commission, which would produce independent information about the long term prospect for government finances, and provide a mechanism by which governments could be encouraged to move towards implementing an optimal fiscal policy.

We argue that the proposals in the second part of the paper are strengthened by the analysis in the first part. In particular, results in Benigno and Woodford (2003), Schmitt-Grohe and Uribe (2004), Kirsanova and Wren-Lewis (2006), and Leith and Wren-Lewis (2006a) all suggest that a first best fiscal policy would involve debt following a random walk in response to shocks, rather than debt returning to some target level. Simple fiscal rules, like those embodied in the Stability and Growth Pact or operated by the UK government, would find it almost impossible to reproduce this first best outcome. We believe this strengthens the case, made by Wyplosz (2005) and others, for exploring institutional solutions to improve fiscal outcomes.¹ Our own proposal is relatively modest, because it involves establishing an institution with no formal control over fiscal instruments, but for the same reason we believe that this proposal may be easier for national governments to contemplate.

Section 2 of the paper looks at recent research that calculates optimal paths for debt following shocks, using a framework that incorporate costs due to distortionary taxes, sub-optimal provision of public goods, inflation and output disequilibrium in an integrated manner. A key result is that debt should follow a random walk, and we examine the robustness of this result. The role of fiscal policy as a countercyclical device is implicit in this analysis. We make it explicit in Section 3, and discuss its role in complementing (in a closed or small open economy) or replacing (in a monetary union member) national monetary policy.

In both these sections we restrict ourselves to considering benevolent, cooperative policy makers. This is clearly unrealistic. In section 4 we present some new results that extend the analysis of section 2 to cases where fiscal policy makers are myopic. We compare the welfare implications of mildly myopic policy makers with policy that is forced to follow simple rules for debt. We show how both outcomes are inferior to cases in which 'outside pressure' leads to an adaptation of policy makers preferences such that they include a concern about debt disequilibrium.

Section 5 presents our proposal for a national Fiscal Monitoring Commission, and also compares these proposals with existing institutional arrangements, including the Congressional Budget Office in the United States. A final section concludes.

¹ The case for independent fiscal institutions remains strong, however, even without these arguments.

2. The Benevolent Policy Maker and Debt

How should a national fiscal authority respond to some unexpected shock to the budget deficit, which raises (say) national debt? It is generally acknowledged that some fiscal action is required in this situation, because otherwise a debt interest spiral will emerge (where additional debt interest is paid for by borrowing, which raises debt further etc), and debt will eventually explode.²

Until recently, the general presumption in the literature has been that some action should be taken to bring debt back down to its original (pre-shock) level, and the main question was how quick this correction should be. (See Leith and Wren-Lewis, 2000, for example.) The outlines of this debate are familiar. If correction is too rapid (at the extreme, if the budget is always balanced), the automatic stabilisers are switched off and fiscal action may generate unwelcome movements in output and inflation. However, correction that is very slow may not be credible.

More recently, an alternative answer has emerged. On the assumption that policy makers (both fiscal and monetary) are benevolent (i.e. they act to maximise social welfare), then the optimum response to a shock that increases debt is to leave debt permanently higher. The implication is that, under an optimal policy regime, steady-state debt will behave as a random walk, increasing or decreasing as a result of whatever shocks hit the economy.

This result is powerful because it comes from an analysis which integrates a number of issues involved in budgetary policy in a consistent and microfounded way. It takes account of the costs of Keynesian disequilibria (due to nominal inertia/price rigidity), but also the costs of distortionary taxation and the utility derived from public goods, all using a common metric based on the utility of a representative agent. It has the striking implication that a policy that aims to hit an unconditional debt target is bound to be sub-optimal.

Two key papers are Benigno and Woodford (2003), and Schmitt-Grohe and Uribe (2004). Both consider a closed economy, and examine a single fiscal/monetary policy maker (or equivalently cooperation between the two). Both treat government spending as exogenous, and have distortionary income taxes as the fiscal policy instrument. Policy makers are benevolent, in that they maximise the welfare of the representative consumer, and they are able to implement a time inconsistent policy. The papers differ in the particular methods they use. Benigno and Woodford take a 'linear quadratic' approach, by deriving an approximation to social welfare using Taylor expansions. Schmitt-Grohe and Uribe (2004) take a Ramsey approach. However, both suggest that steady-state debt should follow a random walk under an optimal, time inconsistent policy.

The intuition behind this result is as follows. Imagine two alternative paths for, say, taxes. In one, taxes are immediately raised to eliminate any

² It can be argued that if no action is taken, debt will not explode, but instead inflation will increase to erode the real value of debt (or reduce the real rate of interest) through mechanisms related to the Fiscal Theory of the Price Level (see, for example, Woodford (2001)). However, even if such a process might occur, it seems likely that the result would in most circumstances be severely sub-optimal, as we note below.

disequilibrium in debt. In another, taxes are raised by a much smaller amount to simply service the interest payments on the excess debt. In the first case we incur quite large, but short term, costs from higher distortionary taxes. In the second, we incur much smaller distortions, but they are permanent. However, a benevolent policy maker discounts these permanent costs, so they will be finite. Both paths will involve welfare costs because higher taxes are distortionary, so output will fall as taxes rise. However the social welfare function will in general imply that large output gaps are more costly than a sequence of smaller gaps of the same total size (in terms of budgetary arithmetic). Thus, the path where taxes are raised permanently by enough to service the additional debt is likely to involve lower social costs to one that involves eliminating the additional debt.

As this intuition suggests, the optimality of steady state debt following a random walk is implied by tax smoothing (see Sargent (1987) pages 380-390 for example). This conclusion is reinforced when we consider inflation. Inflation will be zero in steady state (assuming zero is the policy target), and as a result it will be zero in all periods where taxes are raised just to service the additional debt. (The output gap is identical in each period.) However, under the alternative path where the additional debt is eliminated, the output gap will be larger in the short term than in the long run, and a changing output gap will imply changing inflation. So the path where debt disequilibrium is completely eliminated will also be more costly in terms of inflation.

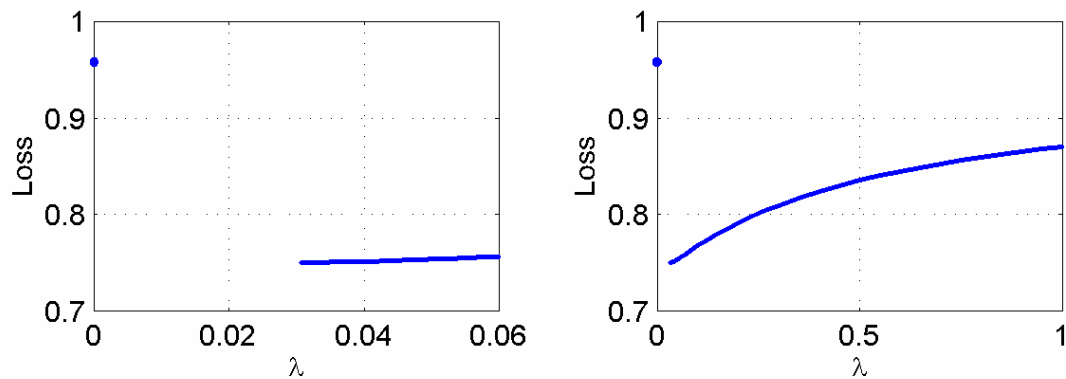
This intuition assumes that taxes are the instrument used to control debt. However, the same arguments can be applied if government spending is the instrument. In the original steady state, assume that the provision of public goods is optimal (given consumer preferences). Any variation in government spending away from this level will have social costs, which will also be convex. Kirsanova and Wren-Lewis (2006) show that the results in Benigno and Woodford also apply if government spending is the policy instrument, and Leith and Wren-Lewis (2006a) show that it also applies if both spending and taxes are instruments.

The analysis in Benigno and Woodford (2003) and Schmitt-Grohe and Uribe (2004) involves optimal policy: policy can react immediately to all shocks hitting the economy, including the shock that generates the debt disequilibrium. It might reasonably be objected that while such discretionary activism might be possible for monetary policy, it is unrealistic for fiscal policy from an institutional point of view. However, as the intuition outlined above suggests, the random walk result is 'first order' robust to simpler set-ups.

Suppose, for example, we postulate the simplest possible form of 'fiscal feedback rule', where disequilibrium in the policy instrument (spending or taxes) is a linear function of debt disequilibrium, and the feedback parameter is λ . Whatever model we are using, conventional stability analysis can determine a minimal value of feedback required to avoid explosive debt (as in Leith and Wren-Lewis (2006c) for example), on the assumption that monetary policy is 'active' in the sense of Leeper (1991). Clearly this minimal value will imply a random walk in debt. Kirsanova and Wren-Lewis (2006) show, using government spending as the instrument, that the optimal value of fiscal feedback is virtually the same as this minimum value, so that for all practical purposes optimal fiscal feedback implies a random walk in debt.

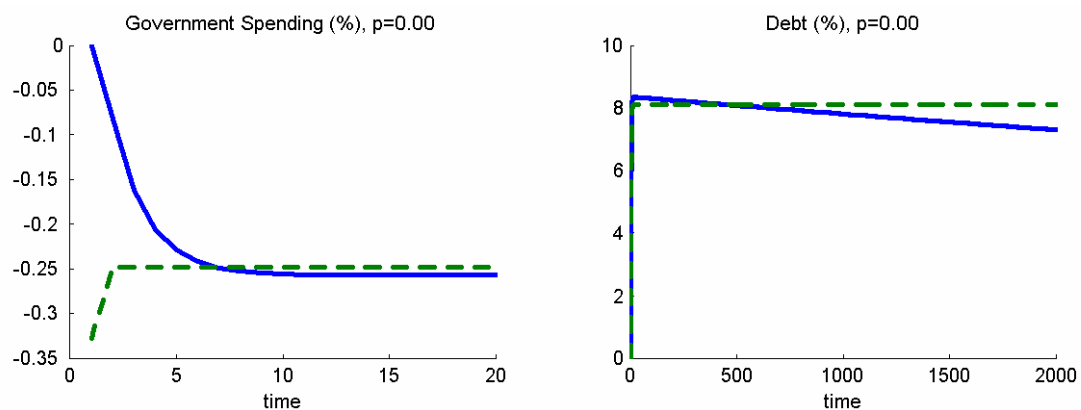
Figure 1 is taken from this paper. It shows how welfare losses vary with different values for fiscal feedback λ following a cost-push shock. There are two panels: one for small values of λ , and one for larger values. Where values are not shown, the model is indeterminate/unstable. The optimal (loss minimising) value of fiscal feedback is very small: government spending is cut by about 5 p.a. for every 100 increase in debt. Figure 2 plots two paths for debt following a shock. One is the fully optimal path, and the other involves optimal fiscal feedback (i.e the optimal value of λ from Figure 1). Although debt under optimal fiscal feedback is not a pure random walk, debt has hardly decreased after 500 years!

Figure 1 Welfare loss for different degrees of fiscal feedback on debt*



* Taken from Kirsanova and Wren-Lewis (2006). Unit cost-push shock, loss is measured in percentage of steady state consumption, assuming 1% standard deviation of shocks.

Figure 2 Response of government spending and debt to a cost-push shock over time*



** Taken from Kirsanova and Wren-Lewis (2006). Solid line is optimal fiscal feedback, dashed line is fully optimal policy. Unit cost-push shock, assuming 1% standard deviation of shocks. Period=Quarterly.

Figure 1 shows that if we increase the degree of fiscal feedback from this optimal value, the welfare costs associated with this shock rise: not by much at first, but significantly once we correct debt disequilibrium rapidly. In addition, Kirsanova and Wren-Lewis (2006) show that this is accompanied by a less aggressive monetary policy. This is because large fiscal feedback is deflationary, reducing the need for monetary policy to respond to the shock. However, fiscal policy is less efficient than monetary policy at dealing with the cost-push shock, which is why welfare deteriorates. (The worst outcome in welfare terms, however, occurs when there is no fiscal feedback at all, when monetary policy is forced to become 'passive', controlling debt rather than stabilising inflation. Although the model is determinate for no fiscal feedback, for reasons described in the Fiscal Theory of the Price Level, Figure 1 shows clearly that social losses are highest in this case, so this is not a desirable policy.)

The basic model in Kirsanova and Wren-Lewis (2006), like Benigno and Woodford (2003), and Schmitt-Grohe and Uribe (2004), involves 'infinitely lived' consumers. However, Kirsanova and Wren-Lewis (2006) also examine consumers of the Blanchard/Yaari type. Although optimal policy in this case (whether fully optimal or using a fiscal feedback parameter) departs very slightly from a random walk, the return of debt to its original steady state is very slow.

All the analysis described so far applies to a closed economy. However, the basic intuition behind the random walk result does not depend on this assumption. Leith and Wren-Lewis (2006b) and Lambertini (2006) show that the result applies in an open economy, either under flexible exchange rates or as a monetary union member.

In all these senses, the random walk result for optimal debt policy appears to be robust. However, so far we have considered optimal commitment policy i.e. policy that is time inconsistent, so implicitly there exists some commitment mechanism in place to prevent policy makers from re-optimising in the absence of new information. (Benigno and Woodford (2003) assume commitment, but of the timeless perspective variety.) Many would argue that this is rather unrealistic in the context of policy towards debt, because of the long time horizons involved. Does the random walk result still hold for discretionary policy i.e. policy that is constrained to be time consistent?

Leith and Wren-Lewis (2006b) show analytically that in a closed economy it does not. The reason can be seen by looking at the path of government spending with the fully optimal policy in Figure 2, taken from Kirsanova and Wren-Lewis (2006). In the first period of the simulation, government spending falls by more than in the new steady state. This indicates that the optimal commitment solution does not completely accommodate the additional debt caused by the shock: there is an attempt in the first period to reduce debt slightly. (Leith and Wren-Lewis (2006b) demonstrate this algebraically, in a model with both spending and taxes as instruments, and discuss which instruments of policy will be used in this first period to reduce debt.) Spending is cut, or taxes increased, only in the first period, because this minimises any inflation impact.

However, the promise not to reduce debt in subsequent periods is time inconsistent. In each period, policy makers will be tempted to re-optimize, and

surprise agents with further action to reduce debt. In fact, this temptation will remain *as long as debt disequilibrium in the long run is positive*. As a result, a time consistent policy in this context will involve debt returning to its original level in the long run. The optimal discretionary policy does not involve a random walk in steady-state debt.

Does this result provide a justification for debt targets? The answer is clearly no. Consider the analogy with inflation bias. In a Barro-Gordon type set-up, the optimal discretionary policy involves positive long run inflation i.e. inflation bias. Under certain circumstances (see Kirsanova, Vines and Wren-Lewis (2005) for example) the optimal commitment policy involves no inflation bias. This provides a rationale for inflation targeting. But note that here inflation targets are designed to move us away from the discretionary solution towards the commitment solution. Debt targets would do the opposite: they would lock us in to the sub-optimal discretionary solution.

It could be argued that risk premia that might emerge as debt levels begin to look potentially unsustainable may negate the random walk result. However, one can conjecture that while such effects may raise the costs of sustaining a higher debt stock, such long-term costs will still need to be traded off against the short-term costs of reducing the debt stock. We can explore this to some extent by looking at a model with Blanchard/Yaari consumers. As we noted above, in this model higher debt in steady state will raise real interest rates in steady state. Under a standard calibration, where the probability of death (p) is 1% per quarter, then this trade-off is small: an increase in the debt to GDP ratio of 10% (from 40% to 50%, say) will raise real interest rates by only 0.02% points. As we noted above, debt is almost a random walk in this case.

However, if we set $p=7\%$, then the real interest rate effects of higher debt are more significant: a permanent 10% increase in debt to GDP raises the long run real interest rate by 0.8%. (Although a value of p this large is not realistic in a literal sense, it can be justified as a proxy for other sources of discounting by consumers: see Leith and Wren-Lewis (2000) or Kumhof, Laxton and Schule (2006)). In this case, the optimal path for debt does involve a return to its original steady state value, with about half of the initial increase in debt (following a cost-push shock) recovered after 15 years. Debt correction therefore remains very slow, although it would be interesting to re-examine this case in a model with physical capital, where we would get additional costs from crowding out.

These results therefore suggest that any policy that involves unconditional debt targets is bound to be sub-optimal. We consider the size of the costs involved in section 4.

3. Cyclical Fiscal Policy Stabilisation

The results above suggest that benevolent policy makers would not act 'as if' they were trying to hit debt targets. Even if policy was formulated such that debt targets were explicit (as in Kirsanova and Wren-Lewis, 2006), those targets would to all intents and purposes be missed by a benevolent policy maker. Another powerful reason for departing from debt targets in the short term is provided by the potential for counter cyclical fiscal policy.

A common benchmark for assessing the contribution of fiscal policy to stabilisation objectives is that of automatic fiscal stabilisers. Automatic stabilisers apply where there is no deliberate change in fiscal instruments over the business cycle, but where progressivity in the tax system and the dependence on income levels of certain government expenditures and transfers can, potentially, offset some of the macroeconomic volatility associated with the business cycle. As discussed in Andres and Domenech (2006), automatic stabilisers fail to function in the presence of balanced budget fiscal rules (an extreme form of debt target) as the progressivity in the tax system is dominated by the pro-cyclicality of government expenditures. Stockman (2001) shows that this failure to allow automatic stabilisers to function, as a result of balanced budget fiscal rules, may have significant welfare consequences. Furthermore, although embedding fiscal policy in real business cycle models appears to exacerbate rather than mitigate macroeconomic volatility (see for example, Gali (1994)), fiscal policy in the form of automatic stabilisers in the absence of strict debt targets can reduce volatility in more realistic economies containing significant real and nominal rigidities (see Andres and Domenech (2006)).

Given that automatic stabilisers appear to have a potential stabilisation role, an obvious question to ask is whether or not a more active approach to fiscal stabilisation can generate further welfare benefits. It is certainly the case that in some circumstances optimal monetary policy is completely adequate at dealing with shocks, and fiscal stabilisation would add little or nothing. For example, if the only source of nominal inertia are Calvo contracts in price setting, and shocks are to technology or tastes, then monetary policy can in principle completely negate the welfare consequences of these shocks. (This is because these shocks have real impacts, but no necessary impact on nominal variables, so they need not incur the nominal inertia externality.) Even with cost-push shocks, changes in government spending may add little to monetary policy. For example, Kirsanova and Wren-Lewis (2006) show that the difference for social welfare between a fully optimal, commitment policy and optimal fiscal feedback is small.

However, the ability of monetary policy to fully stabilise the economy on its own disappears once we consider models that incorporate other rigidities such as nominal wage inertia. In addition, the effectiveness of fiscal policy increases when we allow for more than a single fiscal instrument. Leith and Wren-Lewis (2006b) consider optimal fiscal and monetary policy following a persistent technology shock in an open economy with wage as well as price inertia, when fiscal policy has three potential policy instruments: government spending, income taxes and revenue (or employment) taxes. They consider both a small open economy, and a (small) member of a monetary union. Including wage as well as price inertia means that monetary policy alone can no longer fully offset taste or technology shocks.

In a small open economy, allowing government spending to complement monetary policy as a stabilisation tool adds little to welfare. However revenue taxes are much more useful. If both tax instruments are used, fiscal policy combined with monetary policy can in principle be used to fully eliminate the impact of technology and cost-push shocks.

The benefits to fiscal stabilisation are even more evident if we consider a member of a monetary union, subject to asymmetric shocks. Tax

instruments remain useful (as Ferrero (2006) shows in a two country model of a union), but now government spending can also play an important (welfare enhancing) stabilisation role, as Leith and Wren-Lewis (2006b) show in a model with several small national economies. Other papers (see for example, Lombardo and Sutherland (2004) and Beetsma and Jensen (2004)) emphasise the importance of coordinating stabilising national fiscal policies in order to reap the welfare benefits of fiscal stabilisation when one economy's policy can have significant spillover effects on others.

Leith and Wren-Lewis (2006b) also consider the impact of implementation lags in the operation of fiscal policy. These clearly diminish the effectiveness of fiscal policy as a stabilisation device, but benefits remain, particularly if shocks are persistent. The authors also show that allowing for government debt without lump sum taxes does not significantly alter these results, particularly for optimal policies under commitment.

While fiscal policy can in principle complement monetary policy as a stabilisation tool, particularly if a range of fiscal instruments is available or if the economy is part of a monetary union, the size of any welfare gains will depend critically on the type of model being used. In models with few rigidities except the most basic form of nominal inertia, the welfare gains of any stabilisation (monetary or fiscal) tend to be small, as Lucas has noted.³ However, once we add more rigidities, the welfare benefits of stabilisation tend to increase. For example, Kirsanova, Satchi, Vines and Wren-Lewis (2007) examine a two country model of monetary union with inflation persistence as well as nominal inertia. They look at simple stabilisation rules for fiscal policy, where the rules have spending reacting to inflation, output and the terms of trade with a one quarter lag. They find significant benefits to stabilisation in terms of social welfare. One interesting result in this paper is that these rules are still effective if fiscal policy responds only to national differences in output and inflation. Recent work using relatively large SDGE models of a monetary union with a variety of 'rigidities', such as Coenen et al (2006), Forni et al (2006), Ratto et al (2006) and Kumhof et al (2006), also suggests that fiscal stabilisation can have an important stabilising role.

³ See Lucas (2003) for a summary of his argument.

4. Myopic behaviour by fiscal authorities

Leith and Wren-Lewis (2006d) argue that the main reason why many economists are wary of fiscal stabilisation relate to problems of political economy rather than economic effectiveness. Part of this has to do with implementation lags of the kind discussed above. In some countries, particularly the US, institutional constraints place important barriers to timely fiscal action. The more the details of fiscal action need to be negotiated between different political actors, the longer is the delay before they can be implemented, and the more distorted they may become.

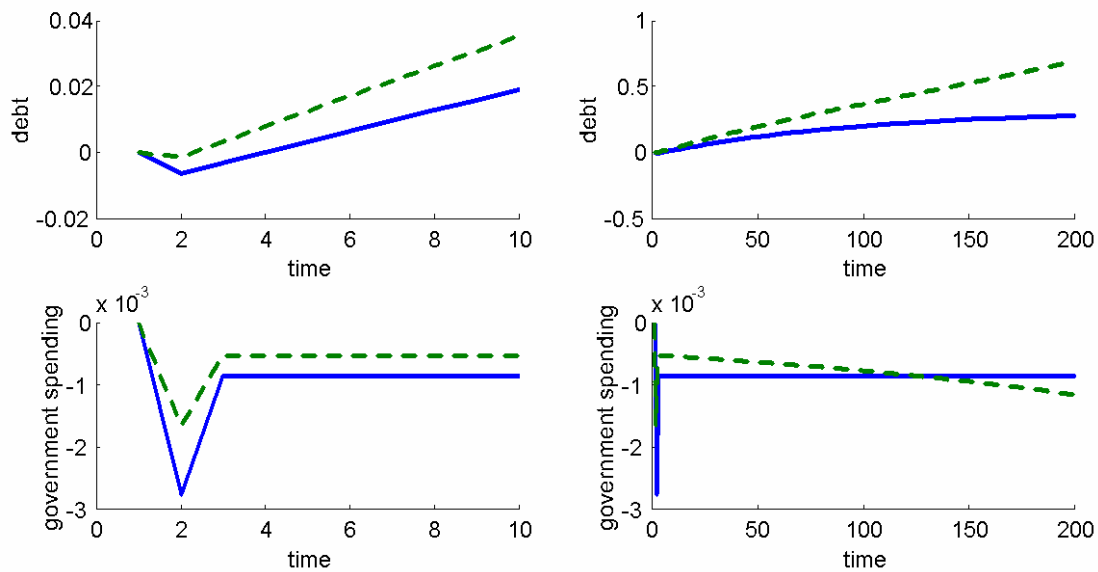
Perhaps a more serious concern is that politicians may not act benevolently. In particular, as we note in the following section, behaviour in the majority of OECD countries over the last few decades points to a 'deficit bias'. One possible reason for deficit bias (others are noted below) is that governments may not be re-elected, and as a result may discount the future more heavily than the private sector (see Alesina and Tabellini (1990)). Building up debt also restricts the ability of a future government to undertake spending that may not accord with the preferences of the current government. In this section we re-examine, in a very simple way, how governments would react to shocks if they were 'mildly myopic' – although they remain concerned about the utility of the representative agent, they discount that utility at a higher rate than the private sector. We will look at how debt behaves when the fiscal authorities are mildly myopic, and when debt targets might improve social welfare in these circumstances.

To do this, we use the closed economy model of Leith and Wren-Lewis (2006a). We assume a benevolent monetary policy maker, but a mildly myopic fiscal policy maker, who together play Nash. (Details are given in an appendix.) The fiscal authority's annual discount rate is approximately 6%, compared to 4% for the monetary authority and the private sector. We consider only one fiscal instrument, government spending, but deviations from the initial steady state in government spending are costly for welfare because of over/under provision of public goods. Figure 3 plots the reaction of the fiscal instrument and debt to a cost-push shock, and compares it to the same shock when the fiscal authorities are benevolent.

The solid line represents the outcome when we have benevolent fiscal and monetary policy makers, and this outcome follows the random walk result, for reasons discussed at length above. The dashed line represents the outcome from a Nash game between fiscal and monetary policy makers, where the only difference between the two is that the fiscal authorities have a higher discount rate. In this case, debt steadily increases, and does not (and will not) reach a new steady state.⁴

⁴ Although this solution is explosive (as inspection of eigenvalues confirm), the rate of increase in debt is less than the rate of discount, so welfare costs will still be finite. As a result, we can compute optimal paths. This is why we only consider mild myopia: with stronger discounting, the increase in debt and other macro variables would explode more rapidly, and the social costs of this would be infinite.

Figure 3 Debt following a cost-push shock under optimal cooperative policy and under Nash with myopic fiscal policy makers*



Solid line = cooperation, Dashed line = Nash. *period=quarterly.

The reason is straightforward. Government spending needs to fall to provide funds to service the higher debt level. Impatience by the fiscal authorities means that they cut spending by less than is required to stabilise the debt stock. As Figure 3 shows, this will eventually imply that larger cuts are required, but mild myopia means that these future cuts are valued less than smaller cuts in spending in the short term.

Such a result might seem inevitable, given that the socially optimal response with a non-myopic fiscal policy maker is a random walk in debt. However, this simple intuition ignores the actions of the other player. For the monetary authority, explosive debt is costly, because it is maximising social welfare. In principle, it can use monetary policy to influence the budget deficit to prevent this happening. In fact, even in the socially optimal case it does this to some extent (i.e. interest rates fall, despite positive inflation: see Leith and Wren-Lewis (2006a) for a detailed analysis of when and why this happens). However, Figure 3 shows that, when the fiscal authority is short-sighted, it is not optimal for the monetary authority to try and reduce interest rates *sufficiently to prevent* an explosion in debt. (Of course, any attempt by the monetary authority to do so would encourage an even looser fiscal policy, so it's a game they may not be able to win.)

Unconditional debt targets that were enforceable (by which we mean targets that had to be met come what may) would clearly prevent the explosion of debt shown in Figure 3. We characterise unconditional debt targets by assuming that the fiscal authority is forced to follow a feedback rule, where deviations in government spending from the steady state are given by a simple feedback rule on debt disequilibrium of the kind considered above. Table 1 shows the social loss that occurs under various policies following the shock described above.

Table 1 Welfare costs of different debt policies/preferences*

Policy	Welfare cost
Fully Optimal, co-operation	0.190
Myopic fiscal (6%), Nash	0.349
Optimal debt feedback rule	0.332
Fast debt feedback rule	0.358
Myopic fiscal (6%), plus debt disequilibrium in objective function	0.192

* Absolute units of loss. Cost push shock is autocorrelated with $\rho=0.9$.

The benchmark loss comes from the social optimum random walk result. A (mildly) short-sighted fiscal authority increases the loss considerably, but it is still finite, despite explosive debt. This is because debt explodes at a rate less than the rate of discount, so losses are still finite. The third row shows the optimal degree of debt feedback, which for reasons discussed in section 2 is very slow in returning debt to its original level. The next row shows welfare under more rapid fiscal feedback, such that debt returns to target more rapidly (corrections worth 40 a year for 100 debt disequilibrium). This increases the welfare cost of the shock, such that it is actually above the cost under Nash when debt explodes. This shows that it is possible that strict and very tight debt targets could actually be worse for welfare than debt that exploded very gradually. Of course, if policy makers were more myopic, debt would explode at a rate above the rate of time preference, and so the welfare cost would be infinite, and any debt target would be preferable.

The final row of Table 1 shows the impact of introducing an additional element into the fiscal policymakers objective function, besides (over discounted) representative agent utility. This is a term in the deviation of debt from its original steady state. If the parameter on this additional term is chosen to maximise welfare, then as Table 1 shows we can almost match the benchmark result achieved with benevolent policymakers. We could interpret this result as representing a conditional debt target i.e. a target that fiscal policy makers should aim to get close to alongside other objectives. An alternative interpretation is that it reflects external pressure on fiscal policy makers to avoid debt disequilibrium, perhaps from a 'watchdog' body of the kind discussed in the next section.

We can use these results to draw two conclusions. First, there is a danger with short-sighted policy makers that debt could become uncontrolled: following a positive shock to debt, policy makers would not raise taxes or cut spending by even enough to service the higher level of debt, leading to a debt-interest spiral.⁵ Second, this outcome is avoided when we have unconditional debt targets. However, these targets may be costly in terms of

⁵ Short sighted behaviour cannot provide a complete explanation for the tendency for debt to rise over the last few decades in many European economies, because following random shocks we would expect to see as many debt implosions as explosions (although it could be argued that Australia and New Zealand provide examples of steadily falling debt: see Leith and Wren-Lewis (2006d)). The problem may be that the standard model is set-up in a way that makes tax decreases as costly as tax increases.

social welfare if they are achieved too quickly. Better outcomes are achieved when debt correction is very slow, but such slow adjustment may in the short term be difficult to distinguish from lack of control, and may therefore lack credibility.

The results above also suggest a third possibility: that by applying the right degree of 'pressure' on short-sighted policy makers to avoid debt disequilibrium, we can almost achieve the social optimum. This could take the form of a complex rule for fiscal action, where policy makers attempted to achieve the optimal trade-off between various targets, including minimising debt disequilibrium. However, complex rules of this type do not seem a practical option from a political point of view. In the next section we explore an alternative means of applying pressure: institutional change.

5. A proposal for a quasi-independent Fiscal Monitoring Commission

A number of authors have argued the case for establishing some form of new fiscal institution to tackle problems associated with the control of debt in an uncertain macroeconomic environment. (See, for example, Eichengreen et al (1999), Wyplosz (2001) and (2005), Ball (1997), and Wren-Lewis (1996) and (2003).) One motivation comes from the parallel with monetary policy and independent central banks. To the extent that it may be desirable for fiscal policy makers to take discretionary action in the face of macroeconomic shocks (see section 3 above), then they will be subject to an inflation bias problem, and delegation may help to avoid this (see Calmfors (2003)).

However, a stronger motivation may come from the problem of 'deficit bias'. Levels of government debt in the OECD area today are around double their level thirty years ago, although there is considerable variation among countries around this average. It seems extremely unlikely that increases in debt of this size could represent an optimal response to shocks. Instead, it seems more plausible that this reflects non-benevolent behaviour on the part of fiscal authorities.

Two of the most popular theories used to explain deficit bias are the time inconsistency of preferences theory formalized by Alesina and Tabellini (1990), and the common pool theory (see, for example, Von Hagen and Harden (1995) and Krogstrup and Wyplosz (2006)). In the former theory, governments do not fully internalise the cost of debt, because those costs may be born by an opposing party if the government is not re-elected. Indeed, it may be advantageous for a government to increase debt to constrain the actions of a future government with different political preferences. This is likely to lead to myopic type behaviour of the kind explored in the previous section. Common pool theories focus on the fact that many decision makers (e.g. spending ministries) may be involved in formulating budgets, and these decision makers fail to internalise the overall costs of higher spending and debt.

Most of the literature has focused on the use of policy rules as a means of tackling problems of deficit bias, following the adoption of rules of various types by some governments, and of course the Stability and Growth Pact of the EU. However, as we noted in the previous section, rules that involve returning debt to its pre-shock level are likely to be sub-optimal. This sub-optimality can be reduced if debt correction is very slow, but in this case rules may not be credible. More generally, credible and enforceable rules may by necessity have to involve a significant departure from optimal behaviour.

This motivates an interest in some form of institutional change.⁶ The IMF categorises such proposals into two types: those which involve giving control over fiscal instruments to an independent agency ('Independent Fiscal Agencies' (IFAs), analogous to monetary policy committees setting interest rates in independent central banks (ICB)), and Fiscal Councils, which only have an advisory role. The basic difficulty with IFAs is that they require policy makers, and through them the public, to give up rather more control than is

⁶ While we would argue that rules alone are likely to be inadequate in encouraging optimal policy, it may be the case that rules can coexist alongside new institutions, particularly when these rules are 'soft' and open to interpretation.

lost by establishing an ICB. An ICB varies a single instrument to achieve a well defined goal. In some countries that goal is established politically (as in the UK). While changes in interest rates can have powerful effects on individuals, those effects are relatively short term: changes in real rates will not last beyond a business cycle.

An IFA that had control over a variety of tax rates and which was required to ensure long term fiscal sustainability would potentially have much more political discretion. If the IFA decided that taxes should increase, which taxes? More fundamentally, the impact of such tax increases may be permanent, and the only beneficiaries could be unborn generations. Although the IFA could be seen as representing such generations, this position would be bound to be intensely political. Such difficulties might be overcome, particularly if the IFA was only concerned with short term stabilisation, as in Wren-Lewis (2003). However, the fact that no examples of IFAs as yet exist suggest that the political costs involved are very high.

Alesina and Tabellini (2004) discuss some of the criteria for successful delegation. One of these is that there should be a broad consensus on what constitutes 'sound policy' in any particular domain. In the context of public debt, this seems to be true only in part. There is a clear consensus that debt should follow a sustainable path i.e. that fiscal actions (rather than inflation) should ensure that the government's intertemporal budget constraint holds. However, there is less agreement on what an optimal path for debt might be. Should steady state debt follow a random walk, as the literature cited above suggests, or should there be a target for debt? If the latter, what should that target be? This lack of agreement makes delegating decisions over debt problematic.

Fiscal Councils, on the other hand, take no formal power from governments. They may nevertheless be effective, because they help correct an asymmetry of information between the government and its electorate. The electorate does not have the expertise to establish whether an increase in the budget deficit represents the optimal response to some shock, or additional spending designed to appease particular government supporters. The government has an interest in claiming the former, while opposition parties will invariably claim it is the latter. A Fiscal Council can play a 'watchdog' role in providing this information in an unbiased manner, and thereby help the electorate to provide the appropriate judgement.

Although a Fiscal Council is an alternative to an IFA, it can also evolve into an IFA. If the government invariably follows the advice of an established Fiscal Council, and that advice is perceived as helpful in managing public debt, then it becomes much easier for both the government and electorate to then transfer some decision making power to the Council. Indeed, it could be argued that a Fiscal Council is a prudent first step in establishing an IFA. In this sense, Fiscal Councils can facilitate rather than detract from the establishment of IFAs. However, the transformation of a Fiscal Council into an IFA is neither inevitable or necessarily desirable, as it could be argued that giving a Fiscal Council formal powers removes an important democratic safeguard from fiscal decision making.

Stéclebout-Orseau and Hallerberg (2006) set out three criteria for an institution to provide a successful fiscal 'watchdog' role: technical capacity, visibility and lack of bias. Technical capacity is clearly necessary to correct the

informational advantage the government has. Visibility relates to the extent to which the electorate has access to the information provided by the watchdog. Lack of bias is required to ensure that the information provided is free from any strategic interest beyond achieving an optimal outcome for debt. If these criteria are fulfilled, then the government will incur a cost in ignoring the advice of the council, which is essential if the council is to play a useful role (see Debrun and Kumar, 2006).

The body we propose, which we call a Fiscal Monitoring Commission (FMC), is a form of Fiscal Council that would be required to monitor the long term national fiscal position, and if these projections suggested an unsustainable position, to indicate how the overall fiscal position should change to correct this. The minimum requirements for the Fiscal Monitoring Commission (FMC) would be as follows:

- 1) It would be established, and financed, by the national government.
- 2) The director would be appointed by, and subject to, an executive committee made up of experts in relevant fields. Ideally, members of the committee should be appointed on long term (5-10 year) contracts in a bi-partisan manner. Their role would be to ensure the FMC and its director applied best practice, but also that it remained politically neutral.
- 3) The FMC would employ sufficient economists to be able to undertake long term projections of the public accounts, or equivalently evaluate in a complete and critical manner any similar projections put forward by the government. This would involve complex issues such as judging what the current output gap was, evaluating trends in technical progress etc.
- 4) The FMC would report once a year. Its projections would be based on published government plans. Unless its projections suggested that current plans, to a reasonable degree of approximation, were sustainable, it would attempt to compute the optimal degree of correction, in terms of *overall* changes in *either* spending, or taxes, or both. (In other words, it would attempt to calculate what a benevolent policy maker would do).
- 5) The government would be required to formally respond to the proposals made by the FMC, but it would not be required to implement them.

Thus, the FMC would apply political pressure on the government, but that pressure could be ignored. However, as the government finances the FMC, and had a role in appointing its board, ignoring its recommendations would incur some political cost. Once established, then it would always be possible as a further step to give the FMC some control over policy, but to go this far as a first step seems politically unrealistic.

To have the FMC appointed and financed by the current and previous governments might seem unwise in term of independence. However, we also need to ensure that the other key criteria for a watchdog cited above are also fulfilled: technical capacity and visibility. Various countries have completely independent bodies and academics already making evaluations of the longer term fiscal position, but these can easily be dismissed by the relevant

government as 'just another view'. It would be much more difficult to dismiss the views of a body set up and financed by the government itself.⁷ Ignoring the advice of the FMC has to be politically costly, and it is clearly more difficult for the government to ignore the advice of an institution it established and finances.

The role of the executive committee of the FMC is crucial for independence. This committee is the Director's protection from political interference (or under-resourcing), but also the safeguard against the political 'capture' of the Director. The precise composition of this executive committee will depend on the existing political and institutional framework, and this differs considerably among countries.

The advantage of publishing 50 year projections is that the issue of sustainability is directly addressed. The UK's finance ministry, H.M.Treasury, publishes 50 year projections of the public finances each year as part of its pre-budget report. If a FMC were established in the UK, this work would be 'duplicated' by the FMC. The key difference, of course, is that the FMC's projections would be independent. This is not to suggest that H.M.Treasury's projections are necessarily politically distorted. However, as the reaction to the recent decision in the UK to change the timing of business cycles illustrates⁸, its calculations will always be perceived as potentially biased. If the Treasury is doing its job correctly, the projections of the FMC would demonstrate that it was unbiased, and therefore add to the government's credibility.

The proposed FMC has a number of similarities to the Congressional Budget Office (CBO) in the United States. The CBO is designed to be politically independent, it has a director appointed by the President and the Speaker of the House of Representatives, and has a panel of economic advisors. It publishes budget projections, including 50 year projections of the kind suggested for the FMC.⁹ There are however important differences. The scope of the CBO is much more wide ranging, providing detailed analysis of micro as well as macro aspects of the budget process. Most importantly, a key difference between the CBO and the FMC is that the latter would be committed to explicitly advising on policy, in the sense that it would say whether some fiscal correction was needed, and what the optimal timing of that correction should be. The CBO is explicitly precluded from making policy recommendations. Furthermore, under point (5) above, the government would be required to respond to those recommendations. An interesting thought

⁷ This is an example of where a competitive market ("competition among fiscal councils") is unhelpful, in part because the quality of the product is very difficult to establish. With diversity of advice, inevitably the government will choose to follow the advice that suits its own interest. This problem can be reduced to some extent by setting up 'wise men' councils, which in effect collect and in some way aggregate diverse opinions. However, if the technical capacity of the government still exceeds those of individual wise men, and the resources of wise men are not pooled, then the government can still claim that it has additional information.

⁸ One of the UK Government's fiscal rules requires balance over the course of the cycle. The timing of the cycle can therefore be crucial in assessing whether this rule has been met.

⁹ A number of other countries ask independent or semi-independent bodies to prepare projections or forecasts that are used as part of the budget process. For example the Netherlands's Central Planning Bureau provides the economic assumptions for the budget. One particularly interesting additional role played by Central Planning Bureau is that it assesses the budgetary implications of the major political parties ahead of elections.

experiment is to imagine whether a CBO refashioned as a FMC would have had an impact on recent US fiscal policy, or public discussion of that policy.¹⁰

Two countries that do operate Fiscal Councils which make specific policy recommendations are Belgium and Denmark. In Belgium the institutional detail is complex, in part because of the more decentralised fiscal structure (Lebrum, 2006). However, an important role of the 'High Council of Finance' is to provide reports on the budgetary position and make recommendations on short and especially medium-term budgetary targets (and since 2002, also on long-term targets) for the general government and other spending institutions.

In both Belgium and Denmark that central bank is represented on the council. Would it be sensible to go much further, and let an independent central bank take on the role of a Fiscal Council? There are two reasons why this is probably undesirable. First, the focus of the central bank is on short term stabilisation, while the FMC is concerned with long term trends in public debt. While Wren-Lewis (2003) suggests giving the central bank some limited, short term control of selected fiscal instruments, this was to strengthen its ability to stabilise the economy over the business cycle (or in the case of EMU, to partially make up for the lack of a national monetary policy), and not as a means of optimally managing debt. Second, there are good reasons for thinking that a central bank's primary focus on controlling inflation might produce a 'surplus-bias' in its recommendations.

The European Commission monitors budget developments in member countries as part of the SGP. It also makes very public policy recommendations. However, in both respects it falls short of what the FMC would be required to do. Its forecasts operate over a rather short time horizon. Its recommendations are designed to meet the criteria laid down in the SGP. This is quite different from the key aspects of optimal debt policy as described above.

If these two aspects could be corrected, would EC monitoring provide an alternative to a national FMC for EC member states? The difficulty here is that EC monitoring would interact with the strategic position of other member states, and so advice coming from the EC could reflect those strategic interests. An example of this kind is explored in Stéclebout-Orseau and Hallerberg (2006). It is politically important that the FMC is seen as having only one interest, which is that fiscal policy is optimal from a national point of view. The danger is that advice coming from the EC might not only be ignored, but that politicians might gain nationalistic benefits from doing so.

On the other hand, there are good reasons for retaining an important role for EC monitoring, even if a national FMC is established and its advice is followed. This is because of the externalities involved in fiscal actions by individual EU members (see Uhlig (2003) among others). For example, there may be a tendency for policies based on national welfare to attempt to appreciate the real exchange rate against other members of the union (see Gali and Monacelli, 2004), but of course collectively they cannot achieve this, leading to a sub-optimal union wide allocation. One role that continued EU

¹⁰ The CBO has published 50 year projections (e.g. December 2003) showing that US fiscal policy is not sustainable. However, it is precluded from saying when this should be corrected, perhaps thereby allowing politicians to postpone solutions.

monitoring would have would be to encourage FMCs to internalise these externalities.

Although the government would not be required to implement the proposals of the FMC, we would argue that the FMC would achieve a number of goals. The government would be forced to address to issue of sustainability, either by agreeing with the FMC's assessment, or by publishing alternative assessments of its own, and justifying why its own assessment was superior to the FMC's. This would put the issue of the long term control of debt, and the funding of any fiscal changes, firmly into the political arena. If the government undertook expansionary, counter cyclical fiscal action they would explicitly have to address the issue of how deficits would eventually be funded. From the perspective of a benevolent policy maker, the FMC would give the government credibility in undertaking countercyclical action, or in allowing 'drift' in the level of public debt where that was appropriate. In short, it could help provide a 'commitment mechanism' by which optimal policy decisions could be implemented.

6. Conclusion

Recent research has reinforced the suggestion that optimal policy under commitment should involve steady-state debt following a random walk. Following a fiscal shock stemming from any source, it is not optimal to return debt to its pre-shock level. As a consequence, a policy that involves an unconditional debt target (i.e. a target that has to be met) is bound to be sub-optimal.

The random walk result appears robust, in that it applies (at least approximately) in different types of economies, and to a variety of models. It is also relevant to the design of simple policy rules, where the optimal degree of feedback from debt disequilibrium should be very slow. Our research suggests that it need not apply to optimal discretionary policy (i.e. where there is no commitment mechanism in place, and policy is constrained to be time consistent), but we argue that policy targets should be designed to encourage achieving commitment solutions, rather than locking policy into discretionary solutions.

In practice debt targets may be designed to avoid the consequences of non-benevolent policy makers, and we give an example based on a myopic fiscal authority. We would certainly not recommend that debt targets be abandoned in such circumstances. However, we argue that because such targets will move policy away from the policy that maximises social welfare, this strengthens the case for institutional remedies to non-benevolent behaviour.

We propose one particular institutional change designed to improve budgetary outcomes, which is the establishment of a national Fiscal Monitoring Commission. This body would have no formal control over policy, but with good design can apply advice and pressure on politicians to move towards a first best policy for government debt. In particular, this body would be mandated to provide policy advice on how aggregate fiscal outcomes should be adjusted to achieve not just sustainable but optimal paths for government debt, and the national government would be required to justify any deviation from those recommendations.

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Appendix: Details of simulations in Section 4

The results set out in Table 1 are derived using the closed economy model set out in Leith and Wren-Lewis (2006a). The representative agent maximises the following utility function at time zero:

$$E_0 \sum \beta^t \left[\frac{C_t^{1-\sigma}}{1-\sigma} + \chi \frac{G_t^{1-\sigma}}{1-\sigma} - \frac{N_t^{1+\varphi}}{1+\varphi} \right]$$

where C is a basket (using a CES aggregator) of consumption goods, G is government spending, and N is labour supply. (We ignore stochastic terms not used in this exercise.) Maximisation gives rise to the standard Euler equation and first order conditions for labour supply.

Monopolistically competitive firms, facing a linear production technology, set prices according to Calvo contracts. This gives rise to a standard New Keynesian Phillips curve. Monetary policy sets the nominal interest rate to maximise social welfare. The government finances its spending through lump sum and labour taxation, and by issuing debt. There is an employment subsidy in steady state, which exactly offsets the impact of monopolistic firms and distortionary taxation, so that the steady state is efficient (i.e. equal to the allocation determined by a benevolent social planner). The budget is balanced in steady state using lump sum taxation. However both the employment subsidy and lump sum taxation are fixed at their steady state values, so lump sum taxes cannot be used to respond to shocks to the government budget constraint.

Social welfare is derived as a quadratic approximation to utility, and involves quadratic terms in the output, consumption and government spending gaps (where a gap is the difference between actual and flex price levels of a variable), and a quadratic term in inflation. The fiscal authority maximises per period social welfare, but with a discount rate that may exceed β .

The simulations shown in Figure 3 are derived by applying a unit cost-push shock (a shock to the Phillips curve), with the fiscal authority using government spending as the instrument used to maximise its objective function. The technique used to derive Nash equilibria is described in Kirsanova, Stehn and Vines (2005).