

## THE COST-BENEFIT APPROACH TO FISCAL STIMULUS<sup>1</sup> (2013)

*Not published or submitted, so far*

### **Introduction: The Three Crucial Assumptions**

What are the benefits and costs of a fiscal stimulus policy that is implemented to avoid a recession? I assume that (1) the country concerned has a floating exchange rate, (2) in the absence of a counteracting fiscal or monetary policy there would be a recession, leading to reduced output and employment – in other words, a Keynesian “output gap” and (3) monetary policy is ineffective or, at least, very limited. My analysis consists of a comparison between the recession outcome, with its output gap, and the outcome of a fiscal stimulus policy which eliminates the output gap but adds to the public debt and hence the future liabilities of taxpayers.

### **Motivation**

This paper is a simple extension of Keynesian policy analysis. It is motivated by the events of 2010 to 2013 when a concern about public debt creation (coming from “deficit hawks”) inhibited the use of fiscal stimuli designed to reduce output gaps. A crucial element in this story concerns the limitations of monetary policy, which until the recent crisis has been the principal instrument of demand management in most or all developed countries. The reasons for this (and the empirical evidence) go beyond this paper.

Here I shall simply assume that monetary policy is not used at all to reduce output gaps. This situation of the possible

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<sup>1</sup> This paper is a development of Corden (2010). It has been particularly influenced by Koo (2008) and Krugman (2012). See also Auerbach (2012), Buiters (2010) and Wren-Lewis (2010). I am indebted to extensive discussions with Christopher Smallwood.

impotence or weakness of monetary policy may well have changed by the time this paper is published. Further research may, indeed, show that monetary policy (such as “quantitative easing”) has been significantly effective. But one should be prepared in advance for a situation to turn up again where significant fiscal stimuli appear to be needed to maintain aggregate demand.

### **The Model: The Three Periods**

The following model refers to one country and has three “Periods.” Period I is the period before the crisis, when there is usually a boom. Period II is the crucial period when there would be a recession – or even a Great Depression – in the absence of counteracting “Keynesian” monetary or fiscal policy. I shall call this the “laissez-faire” outcome. Below I will compare the Keynesian fiscal stimulus outcome with the laissez-faire outcome. Finally, Period III represents “The Future” when the economy would have recovered in any case, no doubt with the help of a revived, effective monetary policy. A central issue is how Period III would be affected by the choice of policies in Period II. Does Period III benefit or lose from the fiscal stimulus outcome compared with the laissez-faire outcome?

In begin then with Period I. There is a boom, perhaps a housing boom. There is full employment, however defined, and low inflation of goods and services. Private debt increases. This might describe the US situation in 2007 and most of 2008, and that of Japan before its crash in the 1990s.

Period II begins with the inevitable slump. Savings of indebted households increase and investment by companies decreases as they aim to reduce the debts incurred during the boom. Furthermore, there is no compensating increase in spending by creditors. Thus the decline in private spending – possibly very sudden – leads to a recession. There is a downward multiplier. This is the laissez-faire case, i.e. the outcome in the absence of a

Keynesian counter-cyclical policy. It invites a Keynesian policy reaction designed to restore aggregate demand.

In Period III the private economy would recover even in the absence of a Keynesian policy, so that consumption and investment spending would increase again. Keynes might have said that there would be a return of “animal spirits”. This is a familiar story in the recent world crisis. Thus, we can imagine that in Period III – “The Future” - internal balance would have been restored even in the absence of any explicit intervention through fiscal policy.

### **The Model: Fiscal Stimulus and the National Debt**

Let us now assume that a substantial fiscal stimulus is introduced in Period II by the “Keynesian” government. The aim is to maintain aggregate demand, roughly at the Period I level, thus totally avoiding a recession. It is bond-financed, and extra government spending consists of investment spending, possibly on infrastructure. It would not be spending on current government consumption, nor involve tax cuts. Furthermore, such spending would have a multiplier effect. Thus output and incomes will rise relative to the laissez-faire outcome described for Period II above. The multiplier effect offsets the downward multiplier that would have contributed to the recession in the absence of a fiscal stimulus.

At this point I introduce some elementary textbook Keynesian analysis.

Relative to the counterfactual there is an “injection” into the income stream consisting of the initial fiscal stimulus. It increases aggregate demand. Then there is the multiplier effect. The size of that depends on the three potential leakages from the income stream, namely into taxation, into imports and into private savings. There are leakages at every round of spending.

Finally, the sum of all the leakages must add up to the initial “injection.”

Now we simplify the story. First, the total leakage into increased taxation revenue can be subtracted from the initial bond-financed stimulus to yield the *net stimulus* that has to be financed. Second, the leakage into imports can be turned into a net zero leakage given the floating exchange rate. I explain this below. This leaves the leakages into private savings. The sum of these leakages must be equal to the net stimulus. In other words, initially the government sells bonds to finance the stimulus, but the increased tax revenue allows it to buy back some of these bonds, leaving the *net stimulus*. Finally the private sector as a result of a series of leakages into savings increases its total stock of savings – which allows it to buy bonds equal to the value of the net stimulus.

Next, let us introduce the *National Debt*. This is often defined as being the same as the government or public debt. Here I define it as being the *sum* of the public and the net private debt of residents of the country. The *net* private debt is the gross private debt minus private credits. An increase in private savings might be used to pay off private debits or might augment private credits.

In this simple story, relative to the laissez-faire counterfactual, as a result of the fiscal stimulus the government borrows to an amount equal to the net stimulus, and the private sector saves, and thus lends, to the same amount. The *National Debt*, as defined here, does not change as a result of the fiscal stimulus.

All this can be assumed to happen in Period II. In Period III (“the future”) the National Debt is the same as it would have been in the absence of the fiscal stimulus (at least in the specific case expounded here). But (relative to the laissez-faire outcome) it consists of a larger public debt – larger liabilities of taxpayers – and a smaller net private debt – larger net assets (or less

liabilities) of the private sector. This changed composition of the National Debt is likely to produce problems, which I shall discuss later.

### **The Multiplier**

What about the multiplier resulting from the fiscal stimulus? Here, again, we come back to textbook Keynesian theory. The higher the marginal propensity to save of the private sector the lower the multiplier and thus the less the benefit of a given net stimulus in increasing incomes and output, and thus also private consumption, during Period II.

In the absence of a fiscal stimulus there would have been an initial private sector reduction in spending owing to deleveraging - *supplemented by a downward multiplier effect*. Let us assume (in the absence of more information) that this multiplier is the same as the upward multiplier with sign reversed of the net fiscal stimulus. In that case, to achieve a full offset to avoid the recession the net fiscal stimulus should be equal to the initial private sector spending reduction that caused the recession. Incomes, output and employment would be (roughly) maintained in Period II at the Period I level as a result of such a fiscal stimulus.

Perhaps the reduction in private spending that resulted from deleveraging consisted primarily of reduced private investment spending. Furthermore, let us assume that the fiscal stimulus was spent on public infrastructure investment. In that case the net effect of a fully offsetting fiscal stimulus would have been that public investment spending had temporarily replaced private investment spending.

### **The Leakage into Imports**

I now come back to a matter put aside earlier. I assumed that the net leakage resulting from a fiscal stimulus through increased imports was zero. This result would come about if (a) the exchange rate floated, with no intervention in the foreign exchange market and (b) net capital flows stayed unchanged. Assumption (a) means that the net current account balance must be equal to net capital flows. Adding assumption (b) means that higher imports (with no fiscal policy changes abroad) would lead to depreciation of the exchange rate, which would increase exports and moderate the initial rise in imports, so that there was no change in the current account balance, and hence no net leakage of the stimulus “injection” into the foreign sector.

If increased imports were to lead to an increased current account deficit, there would have to be increased capital inflow to finance the increased deficit. Unchanged capital flows might result from interest rates both at home and abroad staying very low as a result of monetary policies.

In general, if a fiscal stimulus affected capital flows there would be a net leakage abroad of the stimulus (positive or negative) via the effect on the real exchange rate. For example, if the stimulus restored confidence, so that it led to capital inflow, and hence to a current account deficit – which implies less depreciation than is needed to keep the current account constant – there will be a net leakage of the stimulus effect to foreign countries. This will reduce the domestic multiplier, and also reduce the domestic savings that are generated. A fixed exchange rate is a special case of this.

### **The Bond Market**

The domestic and foreign bond markets might be reluctant to buy the government’s bonds initially because of lack of confidence in the government’s ability or commitment to pay

interest and eventually repay. Perhaps there is a “bond market strike”. But these doubts may eventually be dissipated by avoidance of a recession and by Period III recovery. In that case the central bank should buy the bonds initially and later sell them, when confidence has been restored<sup>2</sup>.

## **The Increase in Public Investment**

A key element in the fiscal stimulus package should be investment spending by the government – assumed here to be in the form of infrastructure improvement. Government spending on investment has three advantages over spending on current consumption. First it is temporary by its nature, and thus avoids the crowding out of both private consumption and private investment spending once the private sector revives. Secondly, an increase in consumption spending, possibly via tax cuts or higher social welfare payments, is often politically difficult to reverse. Thirdly, tax cuts (whether to raise private consumption or investment) present the well-known problem that the benefits may be saved rather than spent, at least for some time. And finally – and crucially for this paper - the eventual benefits of an improved public capital stock resulting from public investment spending in Period II may compensate for the costs in Period III of a higher level of public debt. I shall come back to this very important aspect below.

Keynes advocated government investment spending as a central part of a fiscal stimulus policy. It should be implemented when the danger of a recession looms, or when an actual recession has already begun. Indeed, this might be regarded as the central part of the “Keynesian” policy recommendation. Most important,

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<sup>2</sup> A successful fiscal stimulus feeds the bond market with extra savings, yet the market might boycott its potential benefactor. One solution appears to be central bank intervention through monetisation; the other (rather radical) idea might be for a government to require its residents to invest some part of their savings in their own government’s bonds. I am not advocating such a “confiscation policy”, but just raise the issue.

such a policy requires investment plans to be prepared in advance. Therefore, an understanding of the Keynesian policy message is particularly important at a time of booms. The message should be: During a boom, *run a fiscal surplus and prepare plans for deficit spending!* In Australia and the United Kingdom, for example, that message failed to be heard from (about) 2003 to 2007<sup>3</sup>. The fiscal surplus at times of boom is designed to compensate for the necessary increase in public debt at times of potential slump when a fiscal stimulus is needed. But, just as important, is the need to plan in advance for implementing a fiscal stimulus policy.

When plans for government stimulus spending have not been prepared adequately in advance there is inevitably a loss of efficiency. Spending has often to be large and also quick to achieve its recession-fighting objective. Two countries that implemented their stimulus spending quickly and effectively in 2008-2009 from the point of view of avoiding or reducing a potential recession were China and Australia. But in both cases subsequent discussion and analysis revealed a good deal of inefficiency. The main lesson is for “next time”. Prepare adequately during a period of boom! But there is something else that is not often understood.

When the alternative (the counterfactual) to such a quick stimulus policy is large-scale unemployment, the shadow wage of labour that should be used to measure the cost of inefficiency is much lower than the actual wage. Indeed, the shadow wage may have been close to zero. There may thus have been a positive social return from so-called “inefficient” spending (whether for consumption or investment), even though this return could have been higher if there had been adequate advance planning.

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<sup>3</sup> In Australia there was a boom in export income from iron ore and coal, and in the United Kingdom a boom in incomes of the financial services sector. In Australia the Howard government did run a budget surplus but (in my view) it was not enough. There were undesirable new expenditures on “middle-class welfare”. The UK, with Brown as Chancellor of the Exchequer, actually ran a budget deficit.

On the matter of efficient investment, the Japan experience is worthy of close study. There has been a massive fiscal stimulus in Japan, reflected in high public debt accumulation. This prevented a low growth rate economy turning into a deep depression. Such high debt accumulation has often been criticised, but in fact, given the private (non-financial corporate) sector slump in spending, a rise in public spending was highly desirable and did indeed avoid a severe recession or even depression. It seems that the fault was that the opportunity to make really useful public investments was not taken. Political factors determined the pattern of public investment<sup>4</sup>

### **Two other Reasons why Investment may increase.**

In addition to the effects of a fiscal stimulus on national investment through an increase in investment by government there are two other ways in which national investment may increase. Of course, I am again considering an increase *relative to the counterfactual laissez-faire recession outcome*.

Firstly, an increase in involuntary unemployment at a time of recession leads to a loss of human-capital investment in the form of work experience. Hence a temporary rise in unemployment can have adverse long-term effects. This is a case of *hysteresis*, discussed, for example, in O'Shaughnessy (2011). By avoiding or reducing such unemployment a fiscal stimulus leads thus to higher human-capital investment relative to the recession counterfactual.

Secondly, private investment may recover already during Period II when the fiscal stimulus induces a multiplier process. Higher public spending supplemented by the multiplier process will lead to increased employment and private consumption, and thus is highly likely to improve expectations about the future

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<sup>4</sup> See Horioka (2006) and Bruckner and Tuladhar (2010) for further discussion of the Japanese case.

state of the economy, and thus further stimulate both private consumption spending and private investment spending. Incidentally, it was a central feature of Keynes' thinking that "animal spirits" – i.e. motivation for investment spending – depended to some extent on current consumption spending<sup>5</sup>.

### **An Overview of the Fiscal Stimulus Story**

Let me give an overview of the Fiscal Stimulus story so far. I assume here that the fiscal stimulus has been sufficient to completely avoid a recession.

We start with a Period I equilibrium where there is "internal balance" –i.e. high employment and low inflation. This equilibrium is maintained by a particular level of private investment spending. The latter includes household spending on new housing. Then this private investment spending suddenly declines. We move into Period II. So we have a potential recession. But the decline in private spending is then replaced by government investment spending to the same extent. Thus "internal balance" is maintained. The recession is avoided. Hence there is also no downward or upward multiplier.

In Period I private savings finance a part of private investment that comes to an end in Period II. In this latter period, thanks to the Keynesian policy such private savings finance instead public investment. Also, thanks to this policy in Period II private indebtedness is reduced, while public indebtedness increases. In Period III private investment revives, and the temporary recession-avoiding boom in public investment comes to an end.

Finally, let me focus on the United States, where critics of government action are numerous. Some part of private investment in boom Period I - including especially investment in

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<sup>5</sup> Investment spending stimulated by an increase in aggregate demand increases the multiplier. This is the "accelerator" effect owed to Samuelson (1939). It gives rise to various complications, including a business cycle. There is a critical discussion in Ackley (1961,pp.485-93).

housing – was found to have been inefficient, as indicated by the unexpected losses that have been made. The inefficiencies of that period are notorious. If a fiscal stimulus policy sufficient to avoid a recession had been followed in Period II the missing private spending would have been replaced by public investment that - being managed by the Federal and State governments - would no doubt also have an element of inefficiency. But it is not obvious, and certainly not inevitable, that the actual US stimulus package of the American Recovery and Restoration Act of 2009 was less efficient in its details and consequences than the private sector boom which preceded it and which it replaced.<sup>6</sup>

What is the net effect of the Fiscal Stimulus *relative to the recession counterfactual* ? It is that the total National Debt stays unchanged, with private net debt becoming lower, and public debt becoming higher. In addition, there is a higher level of total investment in Period II to the benefit of Period III. This has two parts. The first part is the increase in public investment that is (in this paper) the essence of the fiscal stimulus policy. The second part is the higher human capital investment and higher private investment that are by-products of the stimulus policy. Finally, consumption and employment are higher in Period II. Thus, provisionally, one might conclude, that there are apparently net benefits in both Periods II and III. But such a conclusion assumes that when public debt increases while private net debt declines to the same extent, there is no net cost or burden. This must finally be reconsidered. What is the burden of increased public debt?

### **The Burden of Public Debt: Two Definitions**

In a pioneering discussion Lerner (1947) argued that public debt financed internally is not a problem or burden. Domestic bondholders and taxpayers are effectively the same citizens. Taxpayers are the debtors and bondholders are the creditors.

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<sup>6</sup> See Auerbach et al (2010) and Grunwald (2012) for details.

When a domestic creditor increases his holdings of bonds that counts as a reduction of his net debits. An increase in public debt is a burden only when the debt is foreign-financed. Presumably private debt that is foreign financed also creates a burden. It follows from this approach that when the fiscal stimulus increases private savers' bond purchases by the same amount as the government increases bond sales – as happens in our simple analysis earlier - there is then no net increase in the nation's total debt, so that the National Debt stays constant. This also means that there is no change in the nation's net foreign debt. There is thus no increase in the debt burden.

The objection to this view is that domestic bondholders and taxpayers are not necessarily the same persons or entities. The taxpayer has to transfer funds to the government which then pays debt service to its bondholders. Taxation involves collection, disincentive and other distortion costs. Apart from that, the taxpayer clearly bears a burden. Perhaps the bondholders are the old retirees and the taxpayers are the young workers. Then there is the matter of default. A government cannot default to its domestic bondholders without cost even though they are citizens and even though this would benefit taxpayers. Trust by domestic savers would be lost and the domestic financial system damaged. This problem is currently obvious in the Eurozone when bonds of governments that are in financial difficulties are held by domestic banks. It follows that we cannot reach the simple conclusion that there is no increase in the debt burden when the increase in the government's borrowing is just offset by the consequent increase in domestic private savings.

It seems to me more realistic to define the "Debt Burden" differently. Any increase in taxpayers' liabilities, whether to domestic bondholders or foreign bondholders, represents an increase in the government's debt burden, and must be regarded as the principal adverse effect of a fiscal stimulus, to be balanced against various favourable effects. We have a case

where (relative to the laissez-faire counter-factual) public debt goes up and – owing to higher private savings – private net debt goes down. But the fact that there is a rise in private savings does not automatically offset the effects of the government's investment spending. It is not the National Debt but the Public Debt that matters. In our particular case the National Debt is unchanged, but the Public Debt clearly increases.

Let us then accept that the increase in the taxpayers' liability is the relevant debt burden created by the Fiscal Stimulus. It is realistic to assume that, as a result of developments before Period I, there has been some accumulation of Public Debt. Perhaps this has been large. This stock of debt would then increase as a result of the Period II fiscal stimulus. Presumably the bigger the existing stock of public debt relative to GDP the greater the marginal cost, broadly interpreted, of any addition to it. This increase in public debt when the existing stock is already high is the popular or conventional argument against fiscal stimulus. It is the crucial current policy issue in many countries, notably the USA, Japan and the UK<sup>7</sup>. It obviously involves more payment of interest. Furthermore, some of the debt may have to be repaid early in Period III, while some may be refinanced to be repaid later.

### **Framework for Cost-Benefit Analysis**

Let us now bring it all together by summarising the elements of a cost-benefit analysis of a fiscal stimulus in Period II. As underlined in this paper the alternative (counterfactual) to the fiscal stimulus is to allow the laissez-faire recession outcome to prevail.

- (a) The principal favourable effect is the increase in consumption and employment in Period II. This is the Keynesian short-term benefit.

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<sup>7</sup> There are well-known complications in the Eurozone, but arguably the same issue arises there.

- (b) The negative effect of the fiscal stimulus is a higher Debt Burden in Period III through an increase in taxpayers' liabilities. The extent of this cost depends on
  - (i) how the economy – the government and the taxpayers – adjust to the increased debt and (perhaps)
  - (ii) the bigger the initial public debt relative to GDP.
- (c) The increase in public investment (infrastructure) in Period II yields a return in Period III. This is the crucial long-term benefit, where good policy and a commitment to efficiency can ensure a net benefit in Period III from the fiscal stimulus.
- (d) There are three other possible favourable effects of a stimulus, yielding benefits for Period III from the Fiscal Stimulus in Period II, namely (i) more human capital investment in Period II owing to the avoidance of high unemployment that the laissez-faire outcome would have produced, (ii) higher private investment in Period II, and (iii) more private savings in Period II, which increases taxpaying capacity in Period III and thus reduces the burden on other taxpayers.<sup>8</sup>

If we just took into account (a) and (b) we would conclude that a present Keynesian benefit (in Period II) would be incurred at a future cost (in Period III). This is the currently popular approach. If we combined (b) and (c) we would have the elements of a standard cost-benefit analysis of public investment spending. The technical and economic efficiency of this public investment is crucial, and allows for the possibility that not only is there a net benefit for Period II (because of (a)) but also a net benefit for Period III if (c) and (d) combined outweigh (b). In making a correct calculation of the opportunity cost of this investment, when the alternative is unemployment, a low shadow cost of labour should be taken into account.

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<sup>8</sup> This assumes that there is likely to be some overlap between bondholders and taxpayers.

The simple and obvious messages of this paper (though sometimes forgotten by “deficit hawks”) are (1) that the counter-factual to the fiscal stimulus is the recession that the fiscal stimulus avoids, and (2) that when one is concerned about creating liabilities for the future (Period III) one should also focus on the creation of assets.

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