Funding the Future

Some thoughts on accounting for the national debt

During a recent discussion on this blog on how to account for the UK's so-called national debt, regular commentator and bind expert Clive Parry suggested he would offer some comments on this issue. His thoughts follow:

What are we trying to achieve when we account for the national debt? Suppose, as a comparison, I took out a £100,000, 25-year, mortgage 5 years ago – what questions might I reasonably want answers to?

I would suggest that they are "What are my repayments now?" and "How much do I owe now?". I might also want to know the answers to these questions for the recent past, the near future and the further out future.

The recent past is easy. My payments will comprise interest and capital repayment. For example, £7,000 in the last year could be split as, perhaps, £4,000 in interest and £3,000 capital repayment1. This will reduce the "amount owed" from (say) £89,000 to 86,000.

The near future is easy, too. I know the interest rate on the mortgage and can project what interest and capital will be paid next year.

Further out things are much more uncertain. Interest rates might change when I "refix" my rate. I might remortgage and take on more debt to build an extension. I might also switch to an "interest only" mortgage because money is tight. In that case, we can make some projections and estimates but they will only be educated guesses. The point is, no answer is certain.

So, how does this "thought experiment" inform our thinking on the National Debt?

First, I will confine the discussion to debt accounting but I mention two other things in passing:

* The debt is there to finance a useful asset. We need to consider both sides of the balance sheet – particularly as we consider public ownership of utilities. It is wholly inappropriate to consider the liability in isolation; we incurred it for a reason.

* To whom do I owe the money? This matters because if, for example, the money is owed to the Bank of England Asset Purchase Facility it really is not owed to anyone outside government, in which case it is not debt. Being able to recognise when a liability really exists is important.

Second, I will assume the National debt exclusively comprises gilts. I will mention short term Treasury bills ("T-bills") along the way but other components of the National Debt are small and/or easily dealt with, and so I will ignore them here.

In that case, here goes…

In a simple world where (say) I borrow £100 at 2% interest for 5 years the accounting is very straightforward. Interest is £2 a year and my debt is £100. The complications come because few debts are that simple, especially when it comes to the national debt.

First, I could have borrowed £90 with no interest and agreed to repay £100 in 5 years time, which is a (roughly) equivalent arrangement.

Or, second, with interest rates now much higher than 2% the market value of this loan (assuming it had one) will no longer be £100, but may is much lower. If it were (say) £90 - is the size of the debt £100 (what I will owe on maturity) or £90 the cost of buying the debt in the market today and retiring it?

Third, we could ask "what must I pay back when the bond matures?" for an individual bond but this has no meaning for the National Debt which is a portfolio of gilts with differing maturity dates that are continually refinanced by the issuance of new bonds as the old ones are redeemed, and everyone knows that this is going to happen and that the refinancing will definitely take place.

Fourth, this could be an inflation linked debt/bond with an unknown future redemption amount (in cash terms) 2.

I will deal with these points in turn.

By and large, conventional gilts are issued at prices close to par – ie. the amount repayable is roughly equal to the amount borrowed and the coupon (interest rate) is fixed for the life of the bond at the prevailing "going rate". We can then take these sums as known and certain with overall small capital appreciation/depreciation and spread those gains/losses out over the life of the bond and consider them as "interest" 3. This works for conventional gilts because all these cash flows and rates completely known at the point of issuance and do not change at all over the life of the bond. This is

well trodden accounting ground, even if a little complicated.

So, what is the "size" of the national debt? Well, adding up the face value of all bonds outstanding tells us what it would cost to repay each bond as/when it matures. But it does not quite answer "what would it cost to pay off the debt today?". The answer to this is the market value of all debt outstanding. Gilts are highly liquid and the data is already collected and available. Overall, this is the best estimate that there is; it does not depend on what price the gilts (index linked or conventional) were originally issued at or at what price bonds will mature at (par for all conventional bonds but uncertain for inflation linked bonds), merely the price today.

Whilst using Market Value solves almost all the issues related to the size of the National Debt, there is still a question about how we account for "interest" on Inflation linked debt.

The coupon on an Index Linked (I/L) gilt is typically much lower than that of a conventional gilt because the face value is uplifted by inflation and interest paid is then paid on this uplifted amount. Clearly, this not a "free lunch" and we have to account for it, but how? What will the redemption amount be? The answer is, we just don't know.

The ONS approach is to call any uplift due to inflation "interest". It is an attempt to mirror the approach with conventional gilts issued with low coupons at deep discounts where the discount, spread over the life of the bond is considered as interest. However, this approach fails on two counts. First, the uplift is included as interest in the year it occurs even though the cashflows resulting from it are spread over many years. Second, the approach only really makes sense where the future cashflows are known, which they are most definitely not with I/L gilts.

I am going to suggest a far simpler approach across the board.

* I will define "Market Value" as the Clean Price of each gilt multiplied by the face amount outstanding. 4 The clean price excludes any accrued interest owing on the bond because some time has elapsed since a payment was last made.

* I define "interest" as the coupon rate due on it i.e. the cash paid on each bond in the period plus the change in accrued interest over that period. 5

All that is then required are a few judicious footnotes to the "Market Value" number to explain it.

The change in market value of the gilt portfolio will be the result of:

* Net issuance which (give or take) represents the Budget deficit.

* The inflation uplift on existing I/L gilts.

* The change in value assuming unchanged yields (ie the "pull to par" on bonds at large discounts or premia).

* The change in value due to changes in yields.

1 and 2 are easily available; 3 and 4 (combined) are just the residual that is left... and the split between 3 and 4 is easily modelled.

I stress, total market value is the clean price of each gilt multiplied by the face value outstanding – which follows accounting 'mark to market rules' and is, therefore both a known concept and a proven current figure, which is of importance when decision making. My points 1 to 4 explain changes in this market value, with that difference not being interest but a movement in the capital value of the gilts in issue – a concept quite explicitly recognized as a movement in equity in accounting, which it should also be here so that no confusion arises. The interest cost is, effectively, the cash flow cost of payments actually due in a period.

Finally, there are Treasury Bills. They are "discount instruments" and carry no interest and are short-term (issued for maturities from 1 to 364 days). Over a year lots of bills will have been issued and redeemed so I think it best to take the "T-bill Market" in aggregate as a single beast. For any point in time we can easily know the outstanding amount; for any period we can calculate the difference between issue price and par of each bill issued which (unlike my suggested treatment for gilts) should be considered "interest" 6.

I think that all the information we want is captured and it answers the questions posed by our mortgage borrower at the outset. In particular, it gives a much better picture by treating Inflation uplift on I/L gilts more sensibly.

This means that this year's accounts will match the cash cost during the last year. This number, with some minor adjustments (for budget deficit and changing interest rates) will be a good predictor for the cash cost of debt servicing in the next year. Using forecasts for the budget deficit, inflation and interest rates we can make reasonable projections for things further out.

Finally, I would add that all the data required to do this are available on the DMO website so I am sure that the bright sparks at ONS could whip up a spreadsheet that did all this and publish it tandem with their current "Internationally recognised treatment" of debt.

Footnotes

1Even if the interest rate is constant (in this case at 5%), this ratio will change; as capital is repaid interest is payable on a smaller principal that in turn. In year 1 it will be £5,000 interest, £2,000 capital; in year 25 it will be almost £7,000 capital and no interest.

2Equally, it is true that conventional gilts have an unknown future redemption amount in real terms. Given that tax revenue and government spending is largely inflation linked there are arguments for both approaches.

3 This not always true; in order to promote liquidity in each gilt issue the DMO will, rather than create a "new" gilt at par, issue a further tranche of an existing gilt at the prevailing market price… which might be quite far from par. Investors will buy a bond with a coupon below the "going rate" if the capital appreciation to par (when the bond matures) is sufficient.

4 Usually, Market Value would use Dirty Price but in this instance Clean is is needed because we are trying to separate out a figure for "interest".

5 Accrued interest used in its technical, bond trading sense.

6 Treatment of bills is complicated and involves discussions about the relationship with CBRAs and, indeed, the nature of money and T-bills themselves. The amounts outstanding are also volatile; in the last 5 years the balance outstanding ranges between £35bn and £110bn (currently £85bn).