

The Convenor,
Public Audit and Post-legislative Scrutiny Committee.

Dear Ms. Marra,

Weighted Average Cost of Capital.

I am grateful for sight of Peter Reekie's letter to you of 17 September on the above issue. I am also grateful to SFT for the amount of work they have clearly done on the issue: his letter yields significant information which, when properly pursued, should be of considerable value to the public interest.

I am not going to deal in detail with all the points covered by Peter Reekie – to do so would risk us losing sight of the key point. And the key point in Peter Reekie's letter is the confirmation of what I suspected when I originally wrote to the Committee: namely, that there is a substantial difference between the average project IRR for hub and NPD projects, (which Peter Reekie now confirms is 5.92%), and the average WACC for the same projects, (which he gave in earlier evidence to the Committee as 4.74%).

This raises a number of important questions. Which of these two measures is the better indicator of the cost of finance for the projects? Does the difference between the two indicators matter? And, in the light of the figures, what further information should the Committee be asking for?

A casual reader of Peter Reekie's letter might easily come to the conclusion that it doesn't matter whether the WACC or project IRR is used as an indicator of the interest rate being paid by the public sector: or even that the WACC is the better measure. He describes the WACC as "the most widely used measure in project finance to provide a snapshot of the overall borrowing rate...It is relatively simple to calculate and understand. Therefore it is the financing metric most readily employed..." By contrast, he rather grudgingly describes the project IRR as being "also a recognised measure of the cost of capital in a project."

This comes close to being disingenuous. As is well known, (and as I will show), the project IRR is the actual interest rate being paid by the borrower in a transaction: the WACC, (if different), is not.

To understand why the project IRR equates to the interest rate being paid, we need to start with the definition of interest. Interest is the cost each year for the use of the capital owed to the lender at the start of the year. In any given year, the amount of capital owed to the lender will increase by interest, calculated as the rate of interest applied to the outstanding debt at the start of the year, and decrease by the amount of any payment from the borrower to the lender during the year. In the final year of the transaction, the last payment made by the borrower will equal the outstanding debt at the start of that year, plus interest on that debt. Hence, at the end of the transaction, the outstanding debt is zero: no money is owed by the borrower to the lender – or indeed, vice versa.

Now, for the kind of transaction commonly encountered, where initial drawdowns are followed by repayments, there is a unique rate of interest which satisfies the above property – namely, the property that, at the end of the transaction, no money is owed between borrower and lender. And this unique rate of interest, it turns out, is actually the IRR: that is, the discount rate which makes the net present value of the transaction equal to zero. So in this sense the IRR is the unique value which represents the interest rate the borrower is actually paying during the transaction. The WACC, if different from the IRR, gives a mistaken indication of the true rate of interest.

Why is the WACC quoted so commonly? Well, as Peter Reekie notes, it is convenient. And, in some circumstances, the WACC is actually equal to the true rate of interest, the IRR. This will happen if senior and subordinate debt have the same repayment profiles through time. But for SFT projects, this latter condition does not hold – since sub debt has, typically, a very delayed profile of repayments relative to senior debt. The implication is clear: for SFT projects, the project IRR, not the WACC, is the appropriate measure of the initial cost of borrowing to the public sector. (I say initial cost because, as Peter Reekie alludes to, the public sector also invests in its own debt – but I leave this aside.)

That is not to say that the WACC is useless. A large difference between IRR and WACC is an indicator that repayment of sub debt is heavily weighted towards the end of the project. This is potentially significant as an indicator of the scope for private sector lenders to extract excess profits. To understand why, it is worth looking back at the history of PFI. In original PFI schemes, Treasury set a target IRR of around 15% as an acceptable return on broad equity, (that is, sub debt plus pure equity.) What they missed is that, for a given IRR, the more heavily end weighted the repayments are, the greater the value of the payment stream in the secondary market. Because PFI broad equity payments were heavily end weighted, equity investors were able to extract grotesque profits (of multiples of their original investment), by making secondary market sales – even though the IRRs on their projected equity returns were within the Treasury’s target range. It is therefore important to monitor the differential between WACC and IRR, as one means of detecting whether sub debt payment streams are becoming unduly end weighted: and hence of detecting whether private sector sub debt investors might be slipping through the net schemes which potentially contain excess private sector profits.

In this context, Peter Reekie’s suggestion that, in future, the SFT will publish not just average WACCs, but also average project IRRs, is indeed to be welcomed. But it does not go far enough. I suggest that the Committee might ask for the following information from SFT – none of which would be onerous, given the work which SFT has clearly now undertaken in establishing project IRRs for all schemes.

a) Peter Reekie quotes WACC and project IRR for the aggregate of all NPD and hub schemes. But given that several NPD schemes contain a substantial element of (cheap) EIB funding, this potentially conceals what is actually happening for hub projects. Information on the six hub projects for which I have access to the financial models suggests that hub project IRRs may commonly be materially above 6%. Peter Reekie should be asked to quote WACC and IRR figures separately for the average of NPD schemes, and hub schemes.

b) Peter Reekie is suggesting, apparently, that each year an average WACC, and an average IRR, should be published, averaged over all schemes to date. This would make it almost impossible to detect any emerging trend in the differential between IRR and WACC. It goes without saying that any such trend would potentially be of great significance. So Peter Reekie should be asked to publish average WACCs and IRRs for the aggregate of schemes where contracts have been signed in each year: (and, in the light of the preceding comment, for hub and NPD separately.) Given that these are average figures, there would normally be no confidentiality problems in publishing such figures for all individual years up to, and including, the most recent.

c) Peter Reekie rejects my suggestion of publishing, for each scheme individually, the weighting factor for senior debt implicit in the project IRR, on the grounds that this would be too much work. This argument appears wrong. Given knowledge of the project IRR, (IRR), the interest rate on sub debt, (SUB), and the interest rate on senior debt, (SEN), the required weighting factor is simply

$$w = \frac{SUB-IRR}{SUB-SEN},$$

which, given that all the quantities in this calculation are now known to SFT for each scheme, would take seconds to calculate for each scheme. SFT should be asked to publish this weighting factor for each scheme. (Note that this would pose no confidentiality problems, even for schemes still within the two year confidentiality window. For schemes outwith this window, SFT should also publish IRR and SEN.)

Publication of the information at a), b) and c) above would be of considerable interest, and value: and would allay, or otherwise, any suspicion as to whether excess private sector profits were being slipped through in the financing of hub and NPD schemes. The Committee will wish to consider whether to ask for this information.

But, in a sense, SFT should actually be doing this kind of work internally, to discharge their responsibilities in monitoring the operation of NPD and hub projects. And rather than guddling around indirectly with indicators based on the difference between project IRR and WACC, SFT should be directly analysing the repayment profiles of hub and NPD sub debt. The Committee might also wish to consider making this suggestion to SFT.

Finally, I should take this opportunity of alerting the Committee that I am in ongoing discussion with SFT on another aspect of hub finances: namely, whether the senior debt interest rate in some hub financial models has been calculated correctly. Depending on what emerges from these discussions, I may wish to report further to the Committee.

I hope the above is helpful,

Yours sincerely,

Dr. J. R. Cuthbert
11 October 2018

