

Another regulatory puzzle: Treatment of working capital and construction work-in-progress

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Following our 2021 [Insight on inflation of the Regulatory Asset Base \(RAB\) and Weighted Average Cost of Capital \(WACC\)](#), in this [Insight](#) we shed light on the treatment of working capital and work-in-progress, which are seemingly esoteric issues that can have a significant impact on tariffs and a regulated company's ability to cover its costs.

Working capital is the cash needed to fund day-to-day operations

Companies need cash to cover the differences in timing between incurring costs and receiving revenues from customers. For example, if a company pays its contractors \$1m every month and only recovers its cost from customers every two months, then it has a working capital requirement of \$1m. This working capital has an opportunity cost and regulators must account for it when setting allowed revenues.

Regulators sometimes neglect working capital and miss or double count it

Whether or not an explicit working capital allowance needs to be included in allowed revenues depends on the cashflow timing assumptions implicit in the return on investment (ROI) formula. This can become quite complicated.

It is surprisingly common that regulators are not deliberate about their approach to working capital and, on occasion, either miss providing a working capital allowance altogether, or double count it by

providing both an explicit and implicit allowance. Regulators should take one of two approaches to working capital.

The first option is to provide an explicit working capital allowance

Some regulators (eg IPART in Australia) assume mid-year timing of revenues when calculating ROI.¹ Because this calculation assumes revenues are earned at the same time as costs are incurred, the company needs an explicit allowance to compensate it for delays between it delivering services and receiving payments.

The explicit cost of working capital is calculated as the rate of return (usually the Weighted Average Cost of Capital) multiplied by the net working capital requirement, which is in turn calculated as the average difference between receivables and payables,² plus inventory.

The advantage of this option is that working capital is estimated quite precisely. The downside is that a mid-year ROI formula is more complex and not intuitive.³ It can also be time consuming and contentious to estimate working capital explicitly.

The second option is to provide an implicit working capital allowance through the return-on-investment formula

Some regulators (eg the Australian Energy Regulator, and Ofwat in the United Kingdom)

¹ Sometimes referred to as 'return on assets' or 'return on capital.'

² Often calculated using the 'lead-lag' methodology.

³ Mid-year ROI is calculated as half a year's return on the opening balance of the RAB, plus half a year's return on the closing balance of the RAB after it is discounted by half a year.

assume end-year timing of revenues when calculating ROI, thereby implicitly giving regulated companies approximately an extra half year of return on investments.⁴ This serves as an implicit (albeit imprecise) working capital allowance.

The advantage of the implicit approach is that the ROI formula is significantly simpler to apply and working capital might not need to be estimated.

Another potential trap is the treatment of inflation when calculating working capital explicitly

Regardless of whether a regulator applies a 'real' or 'nominal' regime to calculate ROI and allowed revenues (we discuss real vs nominal regimes in our [previous Insight](#)), an explicit working capital allowance should be calculated using a nominal rate of return.

Under a 'real' regime, ROI is calculated by multiplying a real RAB by a real rate of return, with tariffs indexed to inflation. This works because inflation is effectively capitalised by keeping the RAB in real terms, but this does not apply to working capital.⁵

There are also different options for the treatment of construction work-in-progress

A separate issue, which can be viewed as a specific type of working capital, is how regulators should ensure that companies recover their costs of financing capex across multi-year construction periods.

Regulators tend to apply one of three options:

- **Capex as incurred** – Capex is added to the RAB in the year it is spent, which means that it immediately begins earning a ROI and being depreciated, even if the asset is not yet commissioned. This is the simplest option to apply because regulators do not need to keep track of work-in-progress when calculating allowed revenues.

- **Capex on commissioning, with capex financing costs capitalised** – Capex is added to the RAB when the asset is commissioned, which has the advantage of ensuring that customers do not start paying for assets before receiving any benefits. The amount that is added to the RAB needs to include capitalised financing costs, otherwise the regulated company is not compensated for the capital that was tied up during the construction period. The downsides to this approach are that (a) it makes the calculation of allowed revenues more complicated because regulators need to keep track of work-in-progress across different regulatory periods, and (b) it can potentially make funding the investment difficult for the company because they are not given any pre-financing.
- **Capex on commissioning, with capex financing costs expensed** – As with the second option above, capex is added to the RAB when the asset is commissioned. But instead of capitalising capex financing costs, a return on work-in-progress (during the construction period) is included as a component of allowed revenues. This means that the company begins earning a return on capex as soon as it is incurred but waits until the asset is commissioned before earning depreciation. This option is effectively a hybrid of the two options above.

Regulators should be particularly careful about their choice in jurisdictions where the RAB is periodically reconciled with the net book value from the statutory accounts, because this can potentially lead to double counting of capex financing costs⁶.

As always, regulators should be deliberate and careful about their choice of options

As with so many regulatory issues, specific circumstances and priorities matter. Regulators should be very deliberate in their choice of options for remunerating working capital and work-in-progress and not treat them as modelling technicalities to be buried deep within spreadsheets.

⁴ The exact ROI formula applied by regulators often varies and therefore so does the size of the implicit working capital allowance. As an example, if ROI is calculated based on the opening RAB, the company earns a full year's return on the depreciation that occurred in the year, whereas in practice the company will collect revenues throughout the year to cover that depreciation, and therefore would not require a full

year's return on the full amount of that year's depreciation to achieve financial capital maintenance.

⁵ The exception is cases where the working capital requirement is included as part of the indexed real RAB, in which case a real rate of return is appropriate.

⁶ Because for the net book value includes capitalised interest costs.