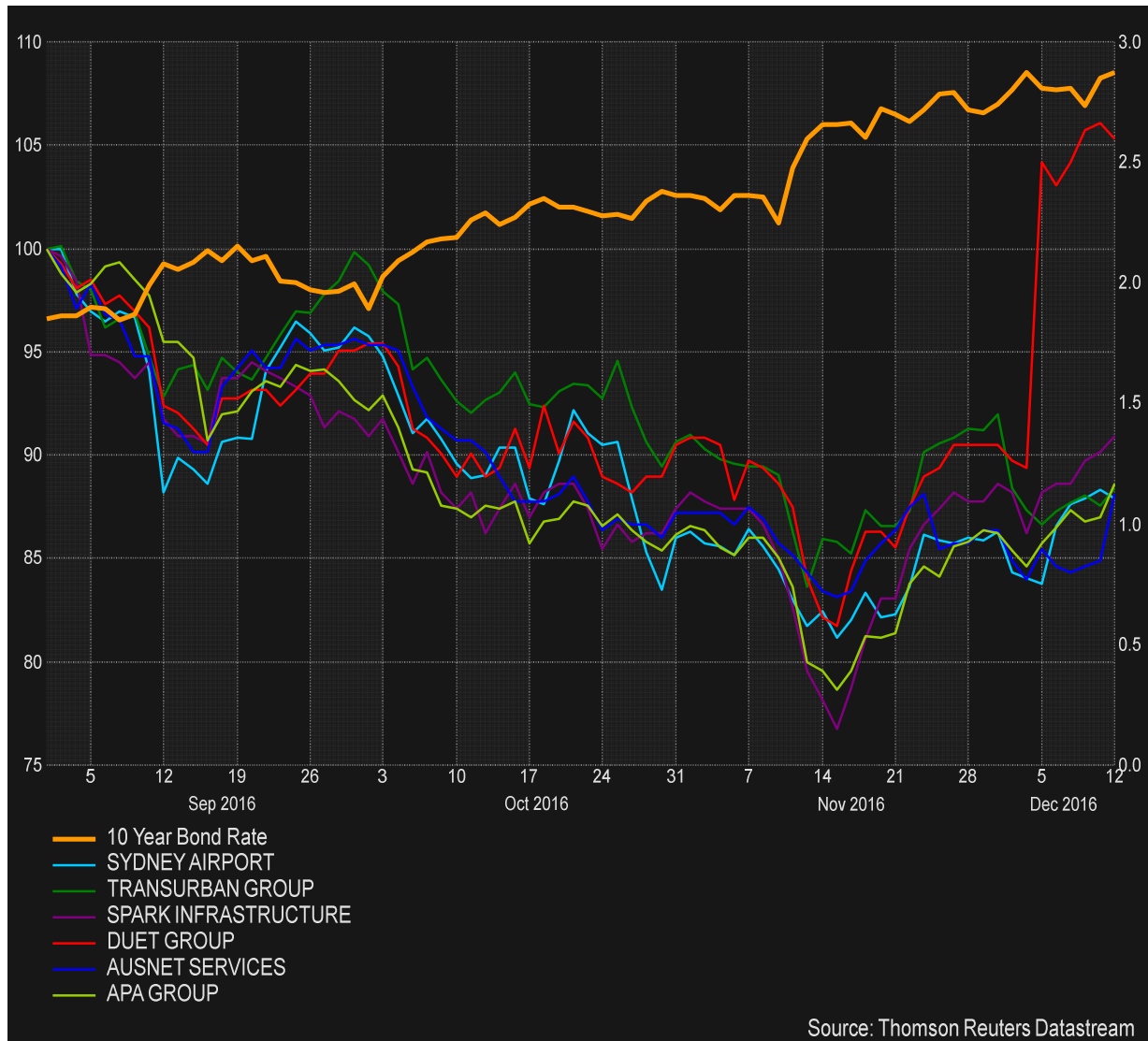


## Sectoral exposure to rising interest rates

That infrastructure equity is sensitive to the level of interest rates is not surprising, especially in today’s low base rate world where many investors see infrastructure as a ‘bond substitute’. This article looks at the relative sensitivity of various infrastructure sub-sectors to rises in interest rates.

Listed infrastructure markets have reacted strongly to the rise in rates (see below), yet the impact on unlisted markets seems less clear. The recent Duet announcement suggests that at least some investors are looking through the recent run-up in rates in assessing value in the sector.



Not all infrastructure sectors are affected equally by rising interest rates. Across the infrastructure asset class there are differing levels of leverage, revenue models, and approaches to interest rate hedging. In the table below, we’ve taken a look at the more common or typical types of projects and their interest rate sensitivity. Of course all infrastructure projects are, to varying degrees, unique and there will be some projects with quite different interest rate sensitivity relative to their peers.

For each sector we have commented on:

- **Typical Leverage.** For example, patronage assets tend to have relatively low gearing (say debt of 40-60% of enterprise value), while PPPs are much more highly geared (75%-85%).

- **Revenue structure.** For most infrastructure assets there is no direct link between revenue and interest rates. One exception is regulated utilities (in Australia), where the allowable revenue is usually reset every 5 years as part of regulatory review. In general, this reset allows revenue to equal a regulated return on capital plus operating costs. This means that higher interest rates (all else equal) will feed through to higher revenues for regulated utilities (albeit with up to a 5 year lag).
- **Interest rate hedging.** Interest rate hedging strategies (i.e. what proportion and for what term, are interest rates on debt locked in through swaps, etc.) has a significant impact on new interest rate exposure. For example, PPPs typically have high leverage and no underlying growth in project cash flows. For this reason, projects typically fully hedge the interest rate exposure of their debt (or pass this risk back to the State through the payment mechanism). This means there is no additional impact on equity from changes in base interest rates (credit spreads do have a big impact however). This contrasts with utilities where interest rates on debt
  - are typically only locked in over 5 year regulatory periods.

	Patronage	Utility/Regulated	Availability/PPP
<b>Examples</b>	Toll road, Airport, Sea Port	Electricity distribution/transmission, Regulated gas pipeline.	Public private partnerships with a availability based revenue structure
<b>Typical Leverage (a)</b>	Low	Medium	High
<b>Revenue Structure</b>	CPI/patronage linked	Periodically reset to WACC x Regulated Asset Base (RAB)	Fixed or fixed for equity with a floating interest rate debt pass through matched to debt.
<b>Typical Interest Rate Hedging</b>	Fully hedged for the first 5-7 years, partial hedging thereafter.	Fully hedged aligned with 5 year regulatory resets	Fully hedged for full term or the State takes long term base rate risk.
<b>Net Exposure</b>	High Equity exposure + unhedged debt tail	Low-Medium Revenues re-set every 5 years with updated base rate	Medium-High Equity exposure is long-dated but usually no unhedged debt tail.
<b>Typical Equity Duration</b>	12-18	7-12 (b)	10-15 (c)

- Leverage is compared to other infrastructure assets – not the market as a whole
- For utilities, interest rate sensitivity is significantly affected by the RAB premium. Utilities purchased at high RAB multiples will have significantly higher interest rate sensitivity.
- This depends on the remaining concession term. Duration will shrink as a project approaches the end of the concession.

Overall this analysis suggests that patronage assets, particularly those with very long concessions and high patronage growth rates, are likely to have the highest interest rate sensitivity. Utilities, will have the lowest interest sensitivity as revenue resets will adjust for future interest rates.

The main caveat to this would be utilities acquired at a substantial premium to the regulated asset base. As the regulator's adjustment for changes in interest rates only applies to the regulated asset base – for assets purchased at a substantial premium – the premium receives no interest rate adjustment. For example, for a utility purchased at a 1.5x RAB multiple, a regulatory adjustment to the base rate will only apply to the 1.0x RAB and the other 0.5x will get no adjustment. The effect of this will all flow to equity – resulting in a quite high interest rate sensitivity.

There are a couple of further complications worth noting:

- Is it higher inflation or higher real interest rates? If the reason interest rates are moving higher is high inflation – most infrastructure projects will benefit through inflation linked revenue. In fact, most equity in projects has a net positive exposure to inflation (that is, revenue moves 1 for 1 with inflation, but debt by less than 1 for 1, giving a net benefit).
- Interest rates versus credit spreads. The analysis above focuses on movements in base interest rates. Credit spreads are assumed to be unchanged. Higher credit spreads are unambiguously negative for all infrastructure projects (as they are all relatively highly geared). In history, higher interest rates have tended to be associated with lower credit spreads (think of an economy doing well and, in this environment, credit is relatively available) and vice versa (think of an economy in recession, interest rates may be low but credit margins will be high). If this negative correlation continues, this will tend to reduce the sensitivity to base rates (as there is an offsetting credit margin effect). However, in today's over indebted world, this past correlation may not be as reliable. Likewise, equity risk premia are likely to be wider, and a negative for infrastructure projects during periods of falling base rates (our analysis assumes no change in equity risk premia).
- Economic shocks more generally. The above analysis focuses purely on base rates and implicitly assumes that patronage or other revenue drivers are held constant. For economically sensitive assets (e.g. ports), changes in interest rates will be correlated with changes in patronage and this will tend to offset the impacts of interest rates.

In summary, infrastructure assets by the very nature of their low-risk long-term cash flows are sensitive to interest rates. This has been a massive and surprisingly consistent tail-wind for the performance of equity investments in the sector over the past decade. Investors should be ready for potential head-winds (or at least gusts!) over the period ahead if base rates have indeed bottomed out.