Introduction

Interest rates continued to collapse over the September quarter. The Australian 10-year bond fell another 30 bps and is now at around 1%. On 1 October, the RBA cut the cash rate to an historic low of 0.75% and signalled further cuts. I'm sure it's not lost on this readership that there has been far more commentary in recent quarters in the media and other circles about the potential introduction of QE in Australia as we near the 'zero bound'.

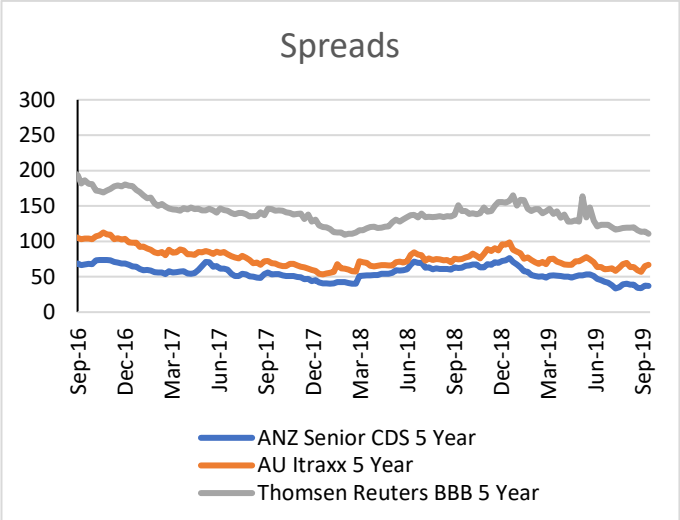
Further abroad, the US yield curve is inverted out to 20 years. Loan volumes picked up over the quarter (they are seasonally higher over the second half of the year). In Europe, realising that QE has run its course, they are looking to expand the program and push interest rates further negative, but also introducing some protections for depositors.

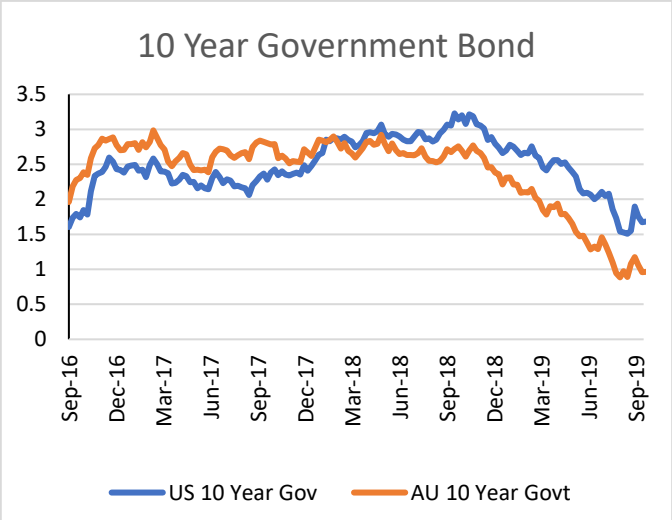
Whether at home or abroad (particularly Europe and Japan) the impact on the banks of these continued and extraordinary measures (causing net interest margins to be crushed) will be a thing to watch closely.

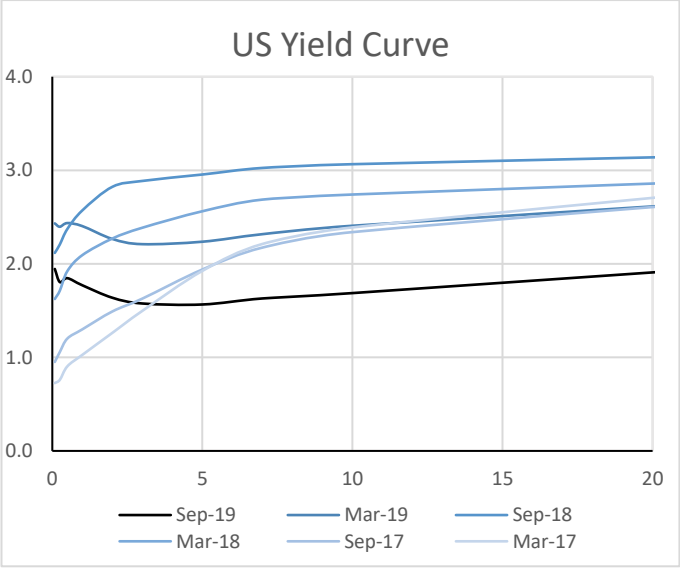
In this newsletter we provide an update on the outlook for domestic passenger growth for Australian airports. We also discuss the implications of lower risk-free interest rates for regulated utilities. The final article considers the potential implications of the difference between current bond market implied inflation expectations and standard investor assumptions.

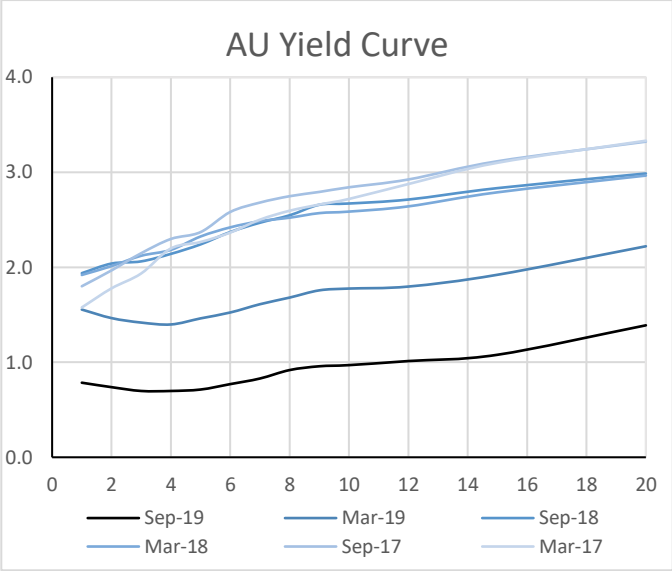
Markets update

Other than bond yields discussed above, markets have remained relatively consistent with prior quarters.









New issuance and refinancing

Infrastructure debt activity was relatively subdued this quarter in terms of transaction numbers

Date	Borrower	Instrument	Size (m)	Term (Yrs)	Curr.	Pricing/Notes
July	Ausnet	Bond	240	10	AUD	2.6%
July	NT Airports	Loan	550	5/7	AUD	Refinance
July	Genex Pumped Hydro	Loan	610	25	AUD	BBSY + 200, NAIF
July	Mobilong and Moyhall Solar	Loan	7	5	AUD	Construction
July	Goonumbla Solar	Loan	120		AUD	Construction
July	Victoria Schools PPP	Loan	310		AUD	Refinance
July	Moorabool North Wind Farm 1	Loan	250	2	AUD	Construction
July	Neerabup Gas Power Station	Loan	260	10	AUD	Refinance
August	Bango Wind Farm	Loan	260	5	AUD	Construction
August	ANZ Hospitals/ Healthscope	Loan	2,150	5	AUD	BBSY + 400 to 425, LBO
August	Taralga Wind	Loan	170	5	AUD	Construction
August	Daydream and Hayman Solar	Loan	290	5	AUD	Refinance
September	Karadoc Solar	Loan	95	2	AUD	Refinance
September	RNSH	Loan	930	4/5/17	AUD	Refinance
September	WA Land Titles	Loan	700		AUD	Acquisition

Equity and other news

- Half of the 420 MW Macarthur Wind Farm is up for sale. Rothchild is running an auction to sell Malakoff's 50% stake. The other 50% of Macarthur Wind Farm is owned by HRL Morrison. The project is paid an availability payment by AGL and does not take direct generation risk.
- New Zealand's Napier Port has raised NZ$234 million via an IPO on the NZX at NZ$2.60 per share for a 45% stake in the port, around 12x EBITDA. Napier Port is the third New Zealand port asset to be listed on the NZX alongside Port of Tauranga and South Port.
- The ACT Government has announced that it will launch a new tender for up to 250 MW of renewable energy and battery storage. The contracts will have a 10 year tenor rather than the 20 year tenor in previous reverse auctions.
- QIC launched a takeover offer for Pacific Energy, an ASX listed off-grid energy supply business. The original QIC offer implies an enterprise value of $487 million for the company. A competing offer was put forward from

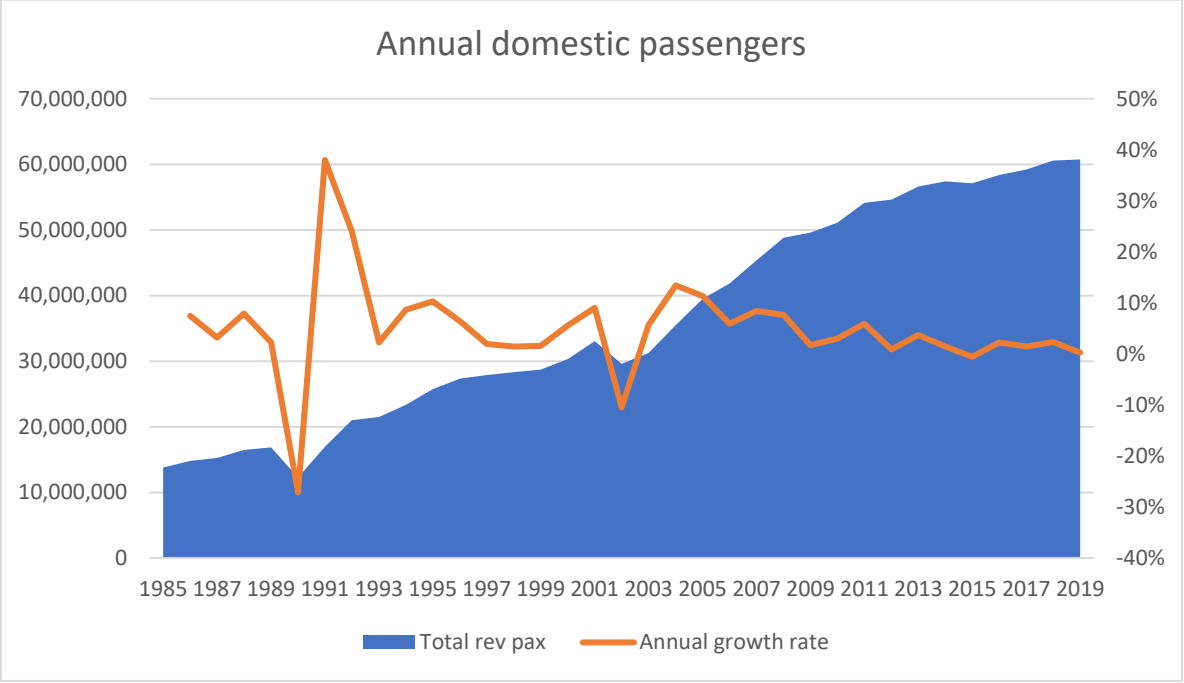
OPTrust and Infrastructure Capital Group, implying an enterprise value of $535 million. The competing offer has been matched by QIC and has been recommended by the Pacific Energy board.

- Macquarie Infrastructure and Real Estate has paid $1.4 billion for a 40 year lease of the WA land titles. The consortium includes Hesta and Sunsuper.

Airports

Australian airports have been very attractive infrastructure investments. The core of their strong investment returns has been the long-term growth in passenger numbers. Higher passenger numbers drive both higher direct aeronautical revenue (landing charges) as well as higher retail and property revenues (through higher rents, more parking revenue, etc).

While much of the focus tends to be on international passenger growth (as they are more profitable for airports – with higher landing charges), domestic passenger travel has shown positive growth on the back of population growth as well as trends towards cheaper airfares over the long-term (e.g. the rise of low cost airlines). The annual growth rate since 1984 is 4.5% domestic passenger growth per annum.



Currently, domestic passenger growth is running significantly below trend, with roughly zero growth on a total domestic passenger basis. For example, the table below shows annual growth for the five largest domestic city pairs in Australia.

Table 1: Year on Year change in available seat kilometres for top 5 city pairs

	City-Pair	YE Jun 2018	YE Jun 2019	% Change
1	Melbourne – Sydney	10 870 145	10 784 481	-0.8
2	Brisbane – Sydney	5 776 063	5 774 032	0.0
3	Brisbane - Melbourne	4 373 793	4 322 056	-1.2
4	Gold Coast – Sydney	3 177 640	3 118 529	-1.9
5	Adelaide - Melbourne	3 096 909	3 109 510	0.4

We would expect this weakness is domestic passenger growth to continue. One way of getting a handle on likely near-term trends for domestic passenger travel is to review the earnings announcements of Qantas and Virgin for intended domestic fleet changes.

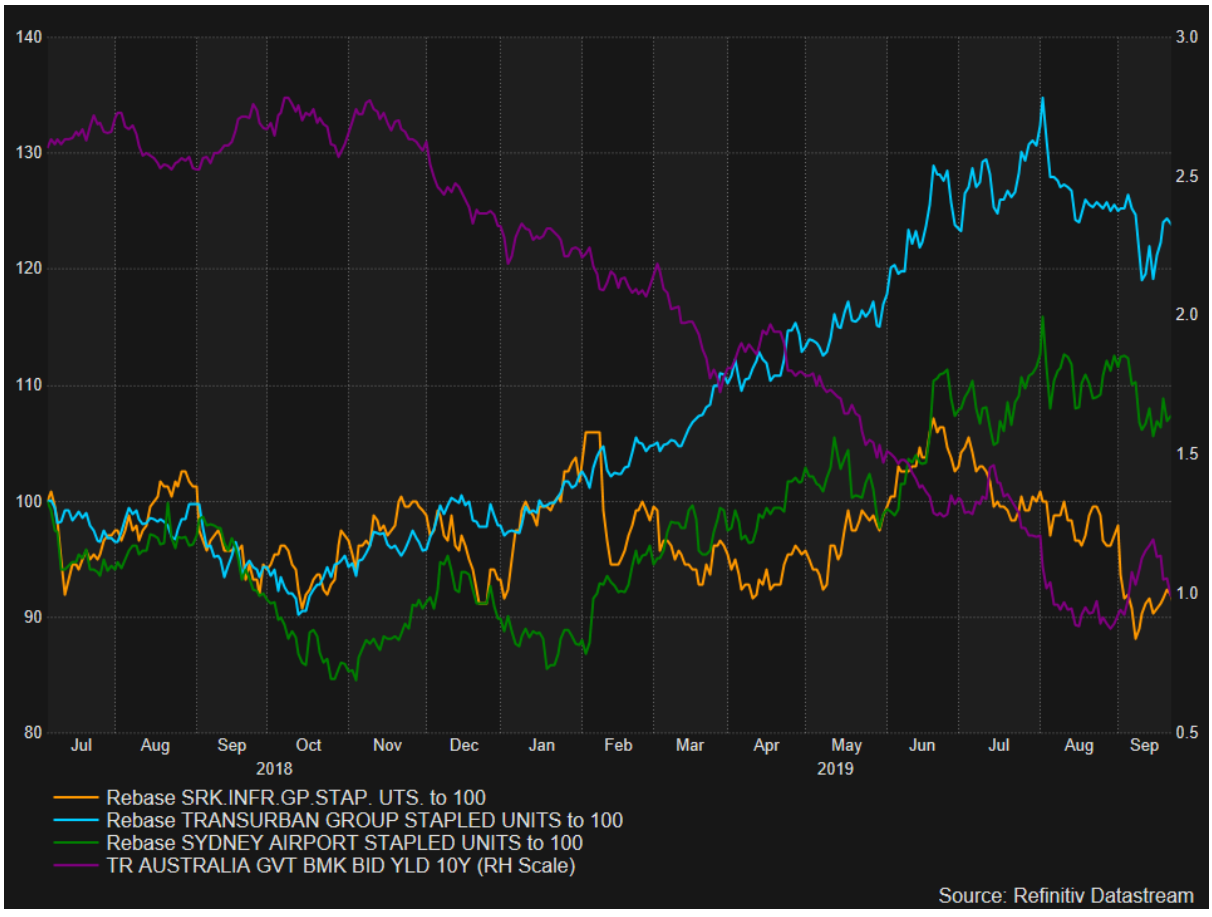
These airlines dominate domestic passenger travel in Australia. To the extent they increase the size of their fleets, this creates additional capacity that will, on average, be filled. That is, growth in the fleet is associated with increased discounting and, hence, greater travel and more passengers for airports. Conversely, if they shrink their fleets, there will tend to be fewer discounted fares available – fares will tend to rise faster than inflation – and passenger growth for airports will moderate.

In its most recent earnings releases, Qantas announced that they forecast domestic capacity to be flat to down. In addition, Virgin has announced that domestic capacity will be reduced 1.5%.

On this basis, it would be reasonable to expect the weakness in domestic passenger growth that has been experienced over the last year to continue in the near-term. This will be a headwind for airports – particularly those with a high domestic passenger share (eg regional airports).

Regulated WACCs

The Australian 10 year government bond has fallen from 2.7% in 2018 to around 1.0% this quarter. Over the same period of time, there has been a divergence in listed infrastructure stock prices. Transurban has gained around 30%, Sydney Airport has gained around 10% and Spark Infrastructure is down 10%.



Infrastructure assets are often stereotyped as long-lived monopoly assets generating long-term stable cash flows. As such, lower long-term interest rates should provide a benefit, pushing up valuations. The chart above compares Spark Infrastructure – an investor in regulated utilities – with Transurban and highlights the folly of stereotypes. Not all infrastructure assets benefit from lower interest rates. Rather than being thought of as a bond proxy, it is probably better to think of Australian regulated utilities as a lagging floating rate note. In this context, falling risk-

free interest rates present a significant challenge for future equity returns, particularly in the context of regulated assets that have historically been purchased at substantial premiums to their regulatory asset base.

For regulated assets, allowable revenues are set by the Regulator and calculated on an allowable rate of the return basis (the regulatory weighted average cost of capital or WACC). Lower interest rates feed through into lower WACCs via both the cost of debt and the cost of equity.

In November 2018 the laws were amended to require the AER to publish binding instruments demonstrating calculations of the regulated WACC that would apply to all regulatory decisions. In December 2018, the AER published guidance on the "Rate of Review Instrument" and an explanatory statement. The Rate of Return Instrument sets out the AER's approach to estimating the cost of equity and debt. The AER determined that the nominal pre-tax cost of equity in 2018 would have been 6.4%.

Since the last rate of return guidance provided by the AER, base rates have fallen considerably.

The cost of equity is estimated using the CAPM, a component of which is an estimation of the risk-free rate. The risk-free rate is estimated via the 10-year government bond rate and averaged over 20 to 60 consecutive business days on the date prior to the determination of the regulated return. If the AER repeated their determination on the cost of equity today, keeping all other parameters the same, the cost of equity would fall from 6.4% to 4.6% since late 2018.

While, the cost of equity is reset at each regulatory decision, the AER updates the cost of debt on a staggered basis at each regulatory reset. That is, the cost of debt is estimated based on a 10-year trailing average of BBB and A benchmark curves. This means the cost of debt will tend to feed in over time (and presumably – in broad terms – will match the refinancing of the utility's debt portfolio).

Australian infrastructure equity investors have historically targeted equity IRRs in the low double digits. For Australian investors, this has shifted to the high single digits as base rates and return expectations have fallen. This

is in stark contrast to the mechanical application of current regulatory frameworks, at 1% base rates, this would see allowable equity returns fall to sub 5%!

Whether this is fair or not, and whether equity investors were overpaid in the past or not, is a question for another day (and another newsletter article). The key point we would make is that allowable equity returns on Australian regulated assets are likely to fall sharply and, to the extent that these returns fall short of investor expectations, the strong asset value premiums would be expected to dissipate (it is important to remember that most recent Australian transactions have seen investors pay 1.3-1.6x the regulatory asset base).

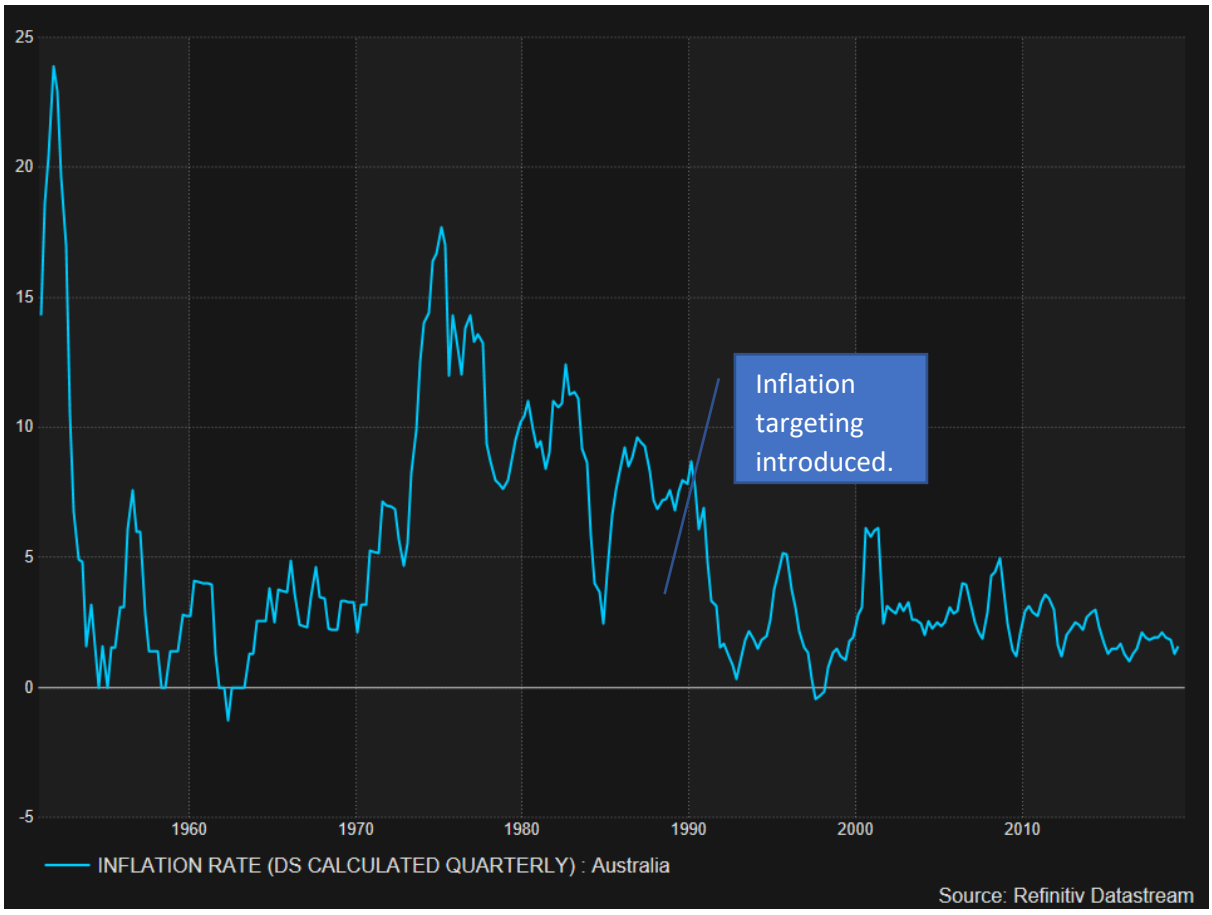
Furthermore, similar to the experience of UK water investors over the period 2008-10, any investor that is hoping for an investor friendly regulator, in the current politically charged environment regarding electricity prices is likely to be sorely disappointed. The government and regulators on their behalf will be wanting to ensure that the impact of lower base rates flows through to lower network charges to the maximum extent possible.

Inflation and Infrastructure Equity Returns – A case of high expectations

Most infrastructure equity investors adopt inflation assumptions in line with the mid-point of the RBA target band – 2.5% per annum. This is significantly above bond-market implied inflation expectations. If the bond market is right, this implies a material overstatement of expected returns.

History of Inflation Targeting

The Reserve Bank of New Zealand was the first in the world to start inflation targeting in 1989. This was followed by Canada and Sweden, then Australia in 1993. Prior to inflation targeting, most central banks had policies targeted towards control of the money supply.



Inflation was high in the two decades prior to inflation targeting. This was due to a variety of factors including, the 1970s oil shocks, post war population growth, centralised wage setting and floating of the dollar.

Under the inflation targeting regime to date, average inflation has been almost exactly on the RBA midpoint of 2.5%. However, this result is partly driven by two periods of materially above target inflation – in 2000 as a result of the introduction of the GST (which added circa 3% to inflation that year) and in 2008 when the GFC saw the AUD fall sharply(triggering a boost in inflation). Excluding these periods, inflation has tended to slightly undershoot the mid-point of the RBA target range.

Inflation and Infrastructure Equity Returns

Most infrastructure equity investors adopt a 2.5% inflation assumption for Australian projects – in-line with the mid-point of the 2-3% target range. This is significantly higher than current market based estimates of future inflation. For example, the inflation linked bond market is currently pricing implied 10-year forward inflation to be around 1.3% - or more than a percentage point below the RBA target.

What is the impact infrastructure equity returns if there is an inflation shortfall? In the following scenario we assume a stereotypical infrastructure asset with the following characteristics,

- a flat real growth profile. That is, revenues and costs are assumed to move in-line with inflation,
- a 50-year asset life,
- gearing of 70%, and
- a cost of debt of 4%. For simplicity, this isn't assumed to change with inflation outcomes. This might reflect that base rates are locked in under interest rate hedges or that inflation outcomes are in-line with bond market forecasts and, hence, lower inflation doesn't necessarily result in lower risk-free interest rates.

The following is the expected output in various inflation scenarios.

Inflation	WACC	Return on debt	Return on equity
0.0%	4.1%	4.0%	4.6%
0.5%	4.6%	4.0%	6.6%
1.0%	5.1%	4.0%	7.8%
1.5%	5.6%	4.0%	8.9%
2.0%	6.1%	4.0%	9.8%
2.5%	6.5%	4.0%	10.7%

3.0%	7.0%	4.0%	11.5%
3.5%	7.5%	4.0%	12.3%
4.0%	8.0%	4.0%	13.0%

The table above illustrates the significant impact inflation has on infrastructure equity returns. Given the financial leverage, a 1% shortfall in inflation would cut equity returns by around 2%. That is, typical infrastructure equity is levered approximately 2 to 1 to inflation.

Or putting it more starkly, if the bond market is right and inflation over the next 10 years is significantly below the RBA target range, then infrastructure equity returns are likely to disappoint by circa 2%.

Infrastructure equity return expectations – high given base rates

This is potentially linked with another anomaly we have been witnessing. Given the low level of Australian base rates, 1% at the time of writing, we feel that typical infrastructure equity return expectations are too high.

Historically, infrastructure equity has offered similar total returns to listed equity, but with a different composition of risk premia. That is, infrastructure has had a lower correlation with equity markets or the economic cycle (i.e. a market beta significantly less than one) but at the same time offered a significant illiquidity premium.

Typical expectations of listed equity returns are based on the sum of the risk-free rate plus an equity risk premium of 4-6%. When risk-free rates were 4-6% this implied a listed equity return of 10-12%.

Infrastructure equity expected returns were similar, but with a different composition, the same 4-6% risk free plus a market risk premium of 2-3% (assuming a beta of say 0.5) plus a liquidity premium of 1-3%. This results in an expected return for infrastructure equity of 10-12% but with lower market risk than listed equities.

However, the days of 4-6% risk free rates are Long in the rear-view mirror. Now risk free is 1%! This implies a listed equity return of 5-7%.

While return expectations for infrastructure equity have come down – particularly under the influence of offshore investors, who have had to live with low or negative risk free rates for longer – I am not sure whether the average market participant is expecting returns of 5-7% from their infrastructure portfolio. For large, trophy, core infrastructure assets, returns are probably being bid down to 6-7%, but I think a lot of managers are still targeting 8-10%.

This raises an interesting question. At a 1% risk free rate, an 8-10% return objective is a very substantial return premium. In particular, a return premium materially above the standard market risk premium or for that matter historical return premia.

Why is it reasonable to expect these returns?

Is it because investors are taking more risk? Does that mean infrastructure assets will be less defensive? Examples of this would be a move from core infrastructure to non-core infrastructure, or the inclusion of more PE style costs cutting/growth programs (expansion of non-regulated product/service lines) in base case return projections.

Another theory is investors are implicitly adjusting for too optimistic inflation forecasts. That is, an 8-10% return at a 2.5% inflation forecast is more like a 6-8% return on a market implied return forecast. While this is still a high combined market and liquidity risk premium, it is more in line with history.