

Introduction

The last quarter was comparatively quiet for markets, with the turmoil surrounding US regional banks fading and, central banks returning to the fight with inflation. This has seen interest rates continue to drift up, particularly at the front-end of the yield curve. There continues to be a bit of a Mexican standoff between central banks – guiding that rates will be “higher for longer”, versus markets which are predicting that near term hikes will be quickly followed by rate cuts. The stability in markets means most Australian superannuation funds are headed for high single digit returns for the 2023-24 financial year – a pleasing rebound from last financial year’s predominantly negative returns. However, this comparatively strong result (at least it’s higher than inflation 😊) belies a challenging outlook with infrastructure assets (and markets in general) needing to absorb higher base rates, weakening economic growth and challenging inflation dynamics (noting inflation has its winners and losers).

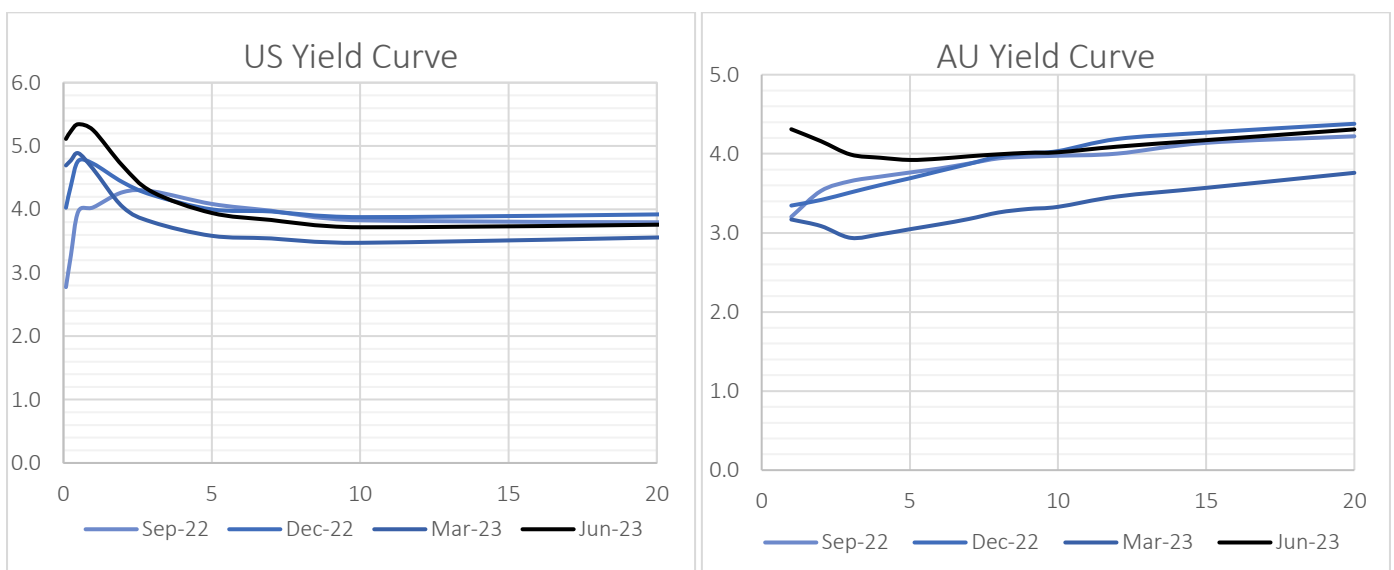
In this quarter’s newsletter we have four articles:

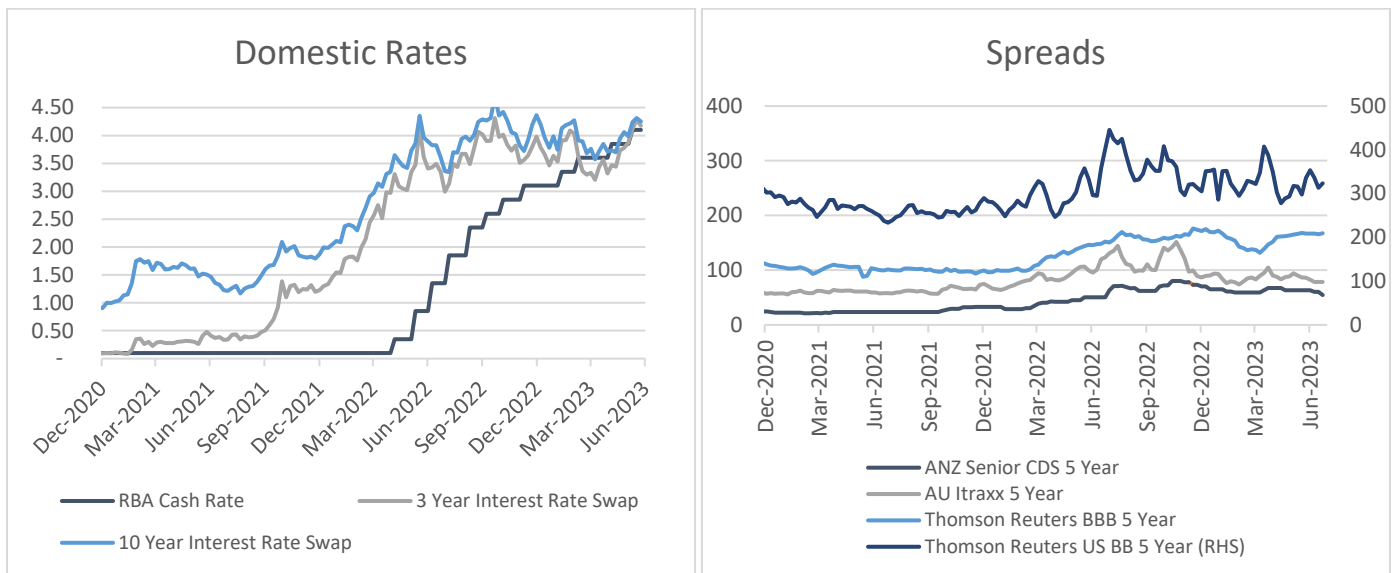
- Inflation - the market is saying this time is different...
- Western Australian Electricity Market vs National Electricity Market – Different Rules Same Challenges
- The boom bust cycle of airlines
- Vale – Markowitz and Goodenough

Markets Update

The inflation tide has been turning differently on either side of the Pacific. In the US, inflation readings have come down to 4% from last year’s peak of 9%. The Fed for the first time this year did not raise rates in the June meeting but firmly pointed that higher rates are here to stay, and markets may be disappointed (if the Fed stays hawkish in the face of a potentially slowing economy) that the rates will not be cut as soon as the bond markets were predicting earlier in the year. As a result, yields on shorter-dated bonds have risen and the peak rates forecast have jumped to 5.75%.

Meanwhile, it’s not quite smooth sailing for ships docked at Martin Place. Despite the monthly inflation falling to 5.6% in May, a strong job market and a housing crunch in major cities suggests that we may well be under the reign of a new RBA governor before the inflation beast is tamed. The yield curve remains flat, and market is pricing rate peaks between 4.9-5% from current 4.1% and a significant tightening of monetary conditions in the coming months.





Sources: Refinitiv Eikon

New issuance and refinancing

Debt markets have been reasonably quiet over the last quarter. This is not surprising with the tight credit market liquidity conditions in the wake of the US regional bank failures, seeing relatively few transactions coming to market.

Date	Borrower	Instrument	Size (\$m)	Term (Yrs)
March	Newcastle Airport	Loan	240	5
April	Collgar Wind Farm	Loan	243	1.5
April	Bald Hills Wind Farm	Loan	180	5
April	Haughton Solar Farm	Loan	74	1.3
April	Boco Rock Wind Farm	Loan	145	5
April	AGL Energy	Loan	1208	3/5/7
June	Airtrunk	Loan	4760	-
June	Transurban	Loan	1000	5

Equity and other news

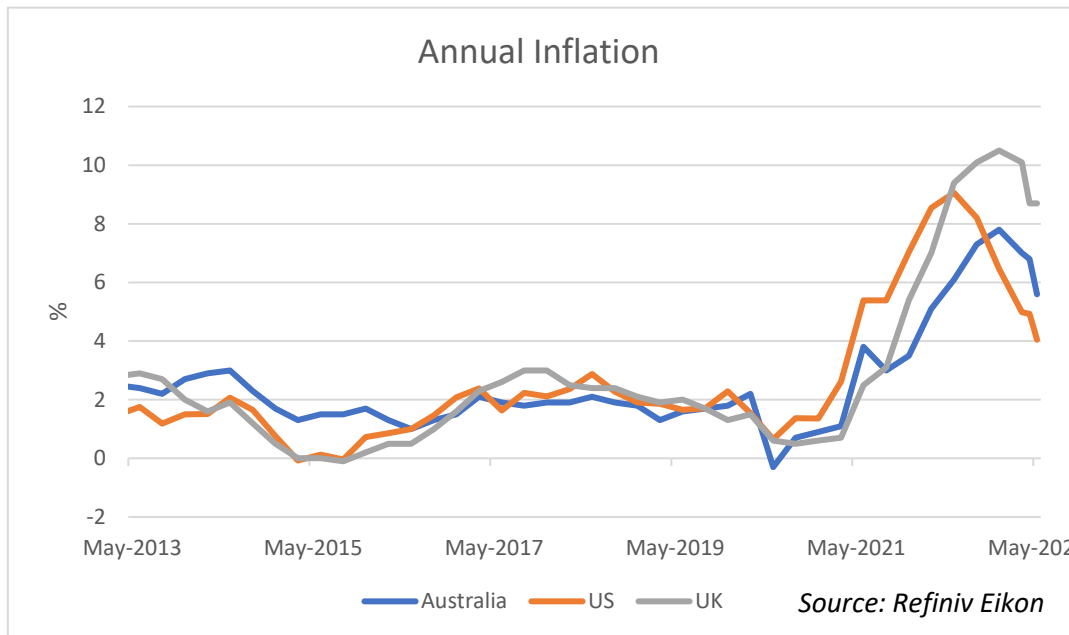
- Lightsource BP has appointed Macquarie Capital to auction its 1-gigawatt Australian Solar Farm portfolio. Indicative offers are due by mid-July, with final bids expected to be called for later in the calendar year.
- Alinta Energy is seeking an equity and co-development partner for its 1-gigawatt Victorian offshore wind project, Spinifex.
- Listed telco, computing and data centre services provider Macquarie Technology Group is raising \$130 million in Equity funding.
- Amber Infrastructure Group has taken over 13 Kiwi assets from Morrison & Co, including 11 schools, a correctional facility and a student accommodation asset as a push to the New Zealand Infrastructure market.
- Privately owned Kimberley Marine Support Base is raising \$290m to build a floating wharf at Broome Port.

- A 55.45 per cent stake in ConnectEast, which owns Melbourne's EastLink, is up for sale. Transurban and Abertis Infraestructuras (Spain's largest toll roll operator) are the front runners in the bid process.
- RBC Capital markets is looking for bids for NatWest Group Pension Fund's one-fifth slice of NSW Land Registry Services.
- Auckland council has passed a proposal to sell 7 percent of shares in Auckland Airport.
- KKR, Ontario Teachers and PSP Investment Board are set to sell their solar and wind platform Spark Renewables to Malaysian electricity giant Tenaga Nasional.
- Suncable's administrators FTI Consulting have announced that Grok Ventures has been successful in securing the project for an undisclosed amount.
- Macquarie and Melbourne's Beck Corporation have begun sounding out potential buyers for Active Utilities, the company which sells utilities solutions to apartment blocks.
- LMS Energy, country's largest landfill gas operator with 36 biogas-to-energy facilities, 26 biogas flaring facilities and six solar projects is up for sale. Pacific Equity Partners and Igneo Infrastructure Partners have emerged as the only two interested parties.
- Macquarie Asset Management has emerged as the buyer of Rest's 12.6 percent stake in the NSW electricity distributor, Endeavour Energy.
- Dexus has raised \$200 million for its wholesale Airport Fund which is offering stakes up to \$130m in Melbourne and Launceston airports.
- In other airport news, institutional clients of Igneo capital are looking to offload a 12.5 percent stake in Brisbane Airport.
- Energy Australia's parent, China Light and Power, is reportedly exploring opportunities for its stake in the business (and, in particular, to secure a capital partner to assist with the funding of replacement generation for its existing coal assets). Macquarie Capital has been touted as a potential partner – effectively replicating the Origin/Brookfield tie up.
- Blackrock has raised \$500m from a range of investors including CEFC and NGS for its Waratah Super Battery Project (estimated cost circa \$1bn) which won a grid support tender by the NSW government last year.
- There are media reports that Thames Water is under significant financial pressure and may delay the publication of its accounts. The UK water sector has been under pressure with tightening regulatory settings and the impact of rising base rates.
- Global Infrastructure Partners is reported to be considering a sale of its stake in Pacific National – the largest provider of rail freight in Australia.
- Australian Super is reported selling stakes in two Foresight managed Australian infrastructure funds (formerly ICG Diversified Infrastructure Trust and ICG Energy Infrastructure Trust) as part of a clean up stakes acquired via fund mergers. The fund stakes are reported to be sold to True Infrastructure.

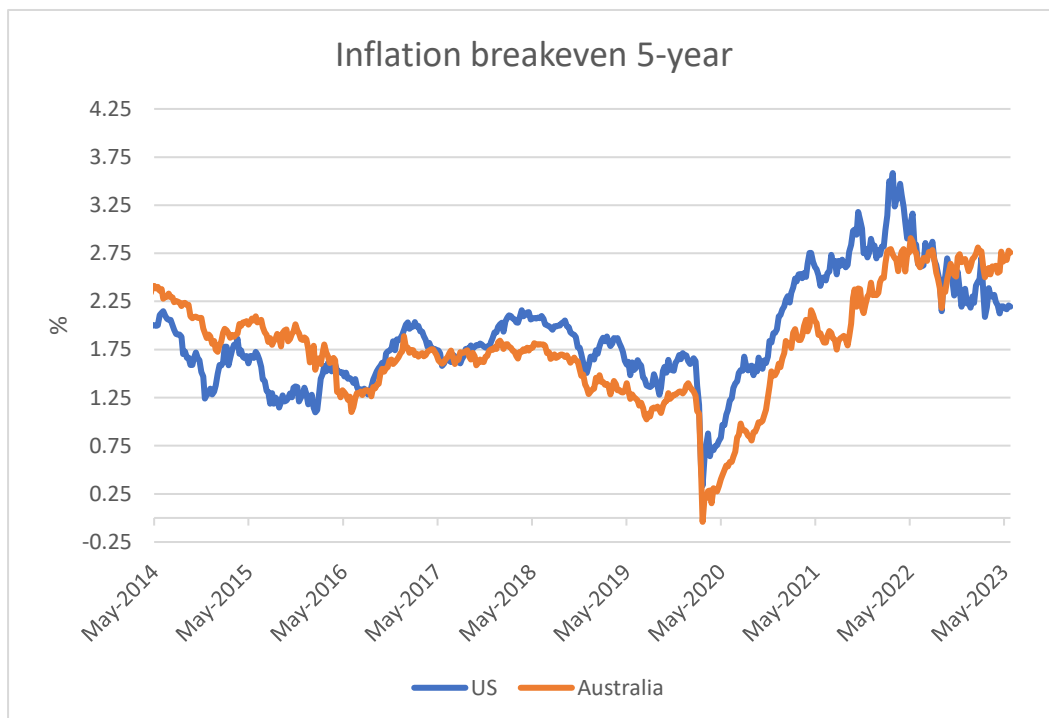
Sources: Refiniv Eikon, AFR

Inflation, the market is saying this time is different...

Inflation as you all know has been riding high.



But what you really care about is where are we going from here. I don't have a crystal ball, but the market is saying its going down in the near term. The market, based on five-year inflation break-evens (which shows the average inflation rate over the next five years, where nominal bonds and inflation linked bonds earn the same returns), has market pricing implying inflation will relatively quickly fall to policy bank target ranges (that is 2%-3%).



Source: Refinitiv Eikon

We expect that inflation will steady and likely fall given the roll-down effect as last year’s high inflation prints roll out of rolling 12 month headline figures - but are we returning to the RBA benchmark target of 2-3% any time soon? This benchmark has been hammered into us for time and memorial - well at least since Burnie Fraser was head of the RBA (and I was in my high school economics class) before he moved into his glamour “influencer” days for Industry Super.

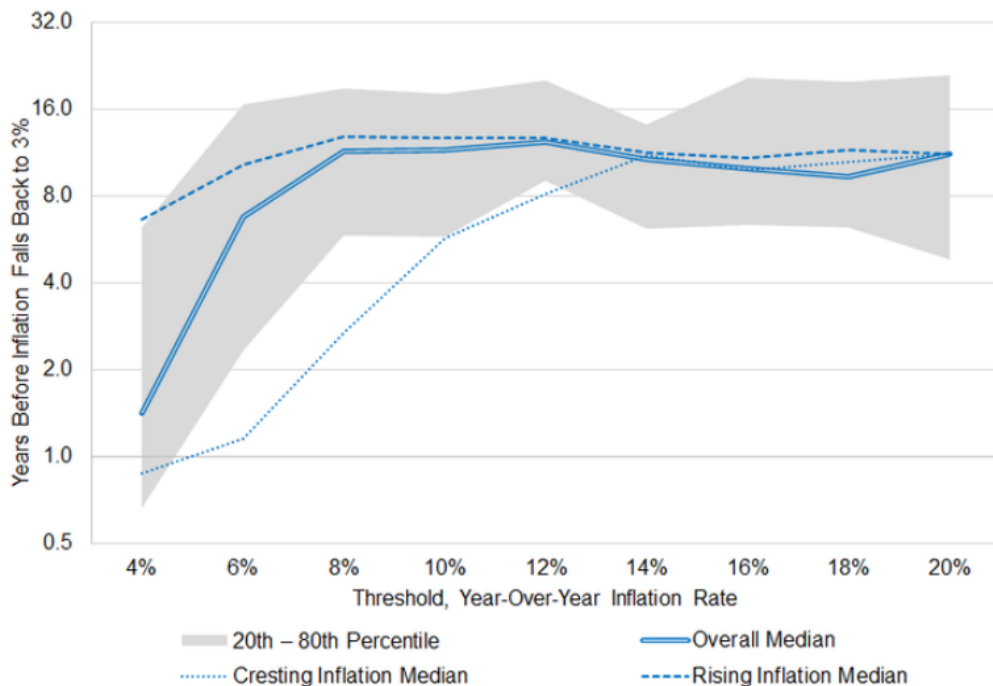
A recent study by Arnott, R. and Shakernia, O. 2022 title *History Lessons: How “Transitory” is Inflation?* looked at the behaviour of inflation after it rises above certain thresholds and how long it lingers – and the results are not good! What they found is that inflation takes far longer to recede than most realise.

The study analysed all cases where inflation surged above 4% in 14 OECD countries from 1970 to 2022. The paper didn’t look at causes for why inflation was elevated, nor did they evaluate policy response effectiveness – simply once past a given threshold – how long did it take for inflation to fall. They looked at inflationary surges through the lenses of 2% intervals – there were 52 instances where inflation went above 4%, of which six went above 20%.

Arnott and Shakernia (2022) observed a pattern that when inflation went above the 4% threshold, in 32 out of 52 instances, inflation reversed and never reached the next threshold of 6%. In these instances, the median time for a return to 2% was 2.5 years. But once it passed through 6%, inflation tended to be sticky and the medium time to return to 2% was 10 years!!

In terms of bringing inflation back to 3% (upper end of the RBA target band) and perhaps a level most people could accept, the results are still not great. If inflation went past 4%, but never hit 6%, the study found that median timeframe to return to 3% was 18 months. However once inflation went past 6% (where Australia is today), the median timeframe to return to 3% was 7.5 years.

Figure 3: Number of Years Until Inflation Reverts Below 3%, since January 1970

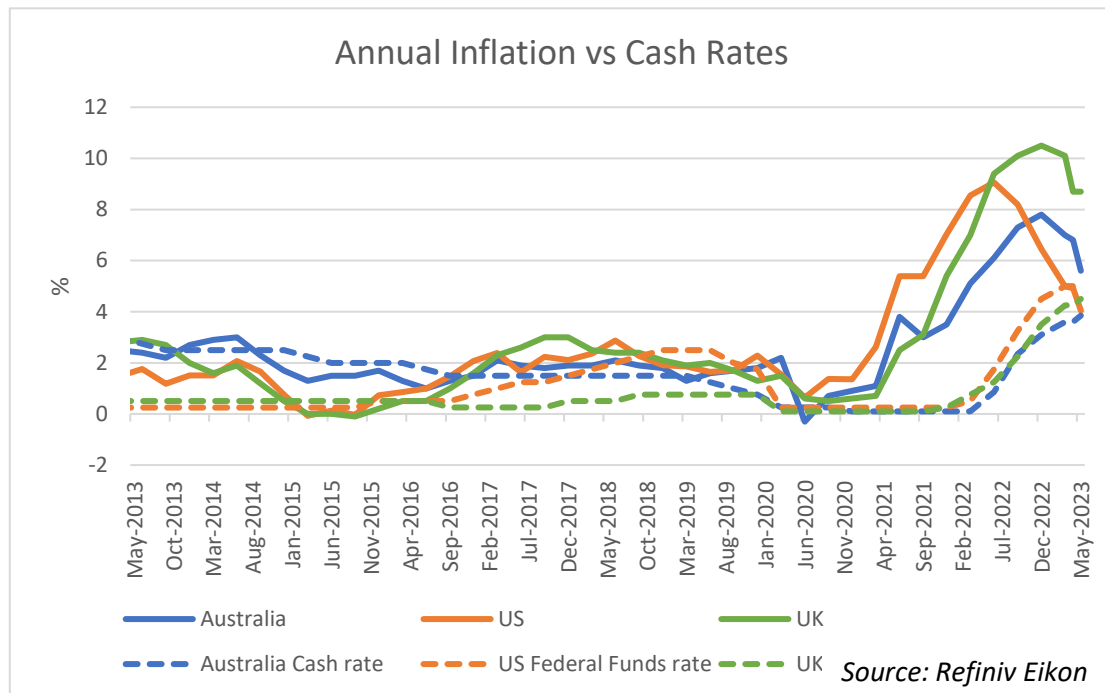


Source: Arnott and Shakernia (2022)

The US hit 8.5% back in June 2022 and has halved inflation in a year – according to the study this is a ‘best quintile’ outcome relative to history. Hopefully Australia can be as lucky, certainly Wednesday’s inflation print is in the ‘right direction’.

We’ve had successive interest rate increases for the last 18 months (the fastest rate in history) – and there are certainly signs in the economy that this is starting to take effect (e.g. consumer discretionary spending). Arnott, R and Shakernia do address the impact of policy rate increases in their paper citing a study by Havranek and Ruskan (2013) of 198

instances of policy rate hikes of 1% of more in developed countries – with the effect being that for every 1% increase in the policy rate, there was a 2-4 year lag for 1% decrease in inflation.



For infrastructure investors (debt or equity) inflation is central to our valuation/pricing models – we need to take a long-term view, from what Infradebt generally observes, most market participants assume a long-term inflation rate of 2.5% - far below where we find ourselves today . To the extent projects have CPI linked revenues, higher inflation relative to forecast will benefit projects (operating costs will be higher, but as infrastructure projects have high operating margins, the impact is more than offset through higher revenues). However, higher inflation also implies higher interest rates, which means higher borrowing costs and higher equity discount rates. If we look to inflation break-evens (see earlier chart above), the market is effectively calling for a recession – this would be the key mechanism that would get inflation back down quickly. However, if this recession doesn't materialise or isn't as severe/prolonged as the market expects, this will mean that policy rates will remain elevated (compared to recent history) for longer and this will/should feed through into valuations.

Western Australian Electricity Market vs National Electricity Market – Different Rules Same Challenges

*I'll get over you, I know I will
I'll pretend my ship's not sinking
And I'll tell myself I'm over you
'Cause I'm the king of wishful thinking
(King of wishful thinking)
I am the king of wishful thinking
Go West, 1990*

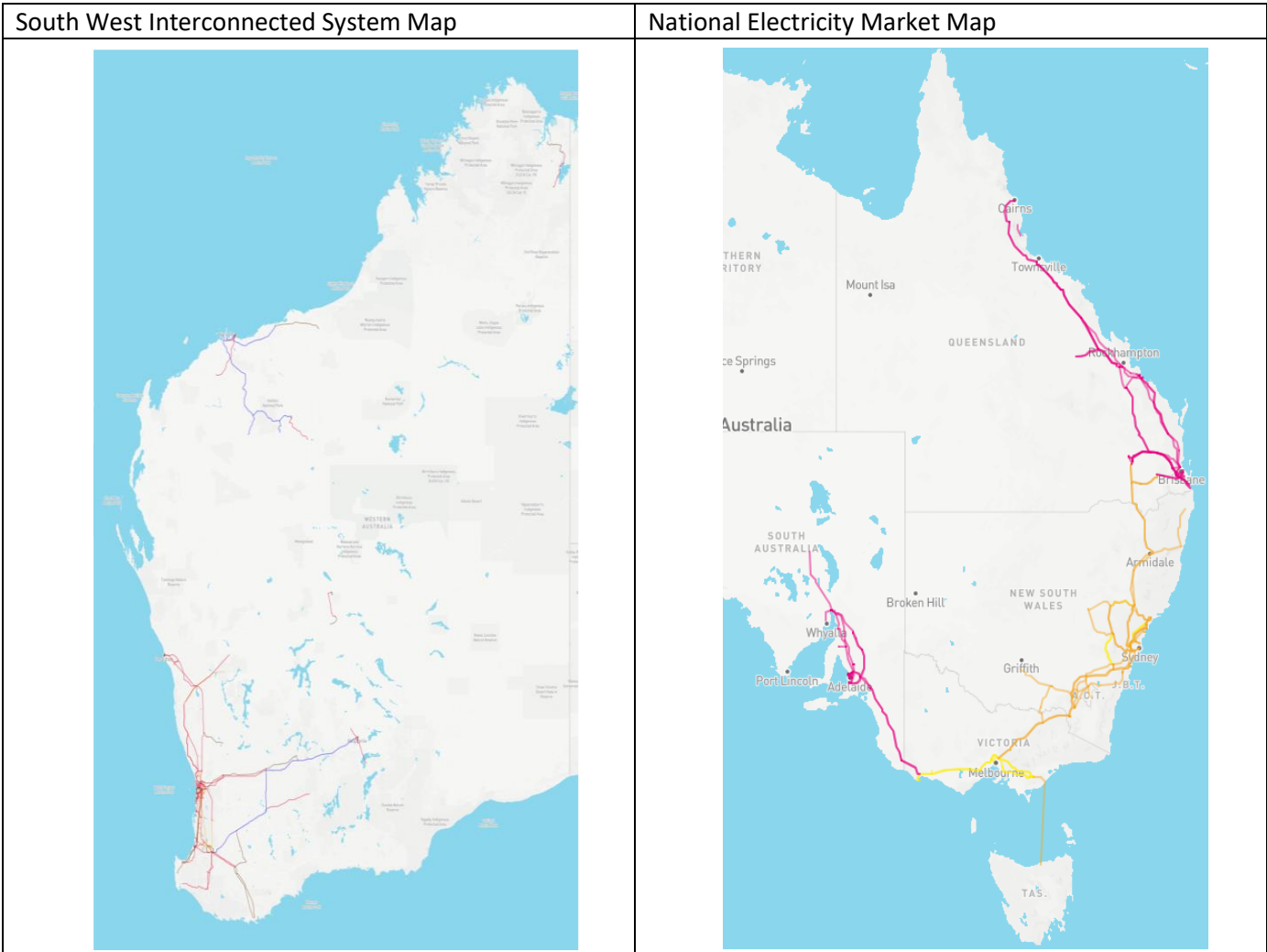
They like to do things differently over in Western Australia compared to the rest of the country. While most people focus on daylight savings or Sunday trading hours, it doesn't stop there, the WA electricity system is also completely different.

By population, the WA electricity system is dominated by the South West Interconnected System or SWIS. This grid covers Perth and the surrounding region going as far east as the goldfields. However, as the chart below shows, it actually only covers a small portion of the state (by area) with the smaller towns and regional centers outside the SWIS on microgrids provided by Horizon Power (a state-owned entity that is responsible for electricity delivery outside the SWIS). Beyond town power the Pilbara mining operations are substantial load centers in their own right so have onsite generation.

The SWIS has no interstate links – the sheer distance from Perth to SA, and the resultant line losses, make interstate links uneconomic.

Geography aside the key players in the WA electricity market are:

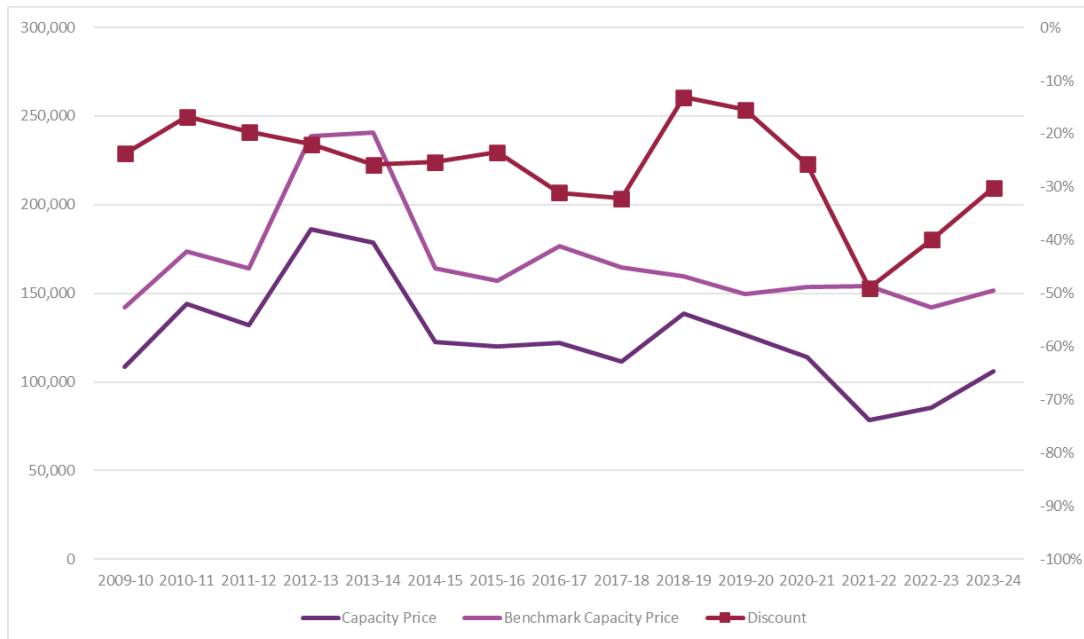
- **Western Power:** the sole transmission and distribution provider (eg poles and wires). They control grid connections and are regulated by the Economic Regulation Authority (the equivalent of the AER in the NEM)
- **Synergy:** a WA Government owned electricity retailer. They are the largest owner of generation in WA with circa 50% of generation capacity. They have an effective monopoly over residential customers (100% market share) and serve more than 50% of small business customers. They are the largest retailer by a country mile.
- **AEMO** – market operator same as for NEM but under different rules.



The biggest difference between the WEM and the NEM is capacity payments. The capacity market mechanism is focused on ensuring there is sufficient generation (capacity) to meet peak demand. Under the WEM rules, generators have two principal income streams rather than one (plus LGCs for renewable projects). Projects earn capacity credits based on an assessment of the dispatchable capacity they provide to the grid. For traditional fossil fuel fired generators, these credits are issued on a 1 credit for 1MW of capacity basis. For renewable generators, it is more complicated. Renewable generators are issued capacity credits on a proportionate basis based on an assessment of the correlation of their output with periods of peak demand. This is estimated by looking at the average level of generation by that generator over the last five years during the 12 highest half hour periods of demand for “Load for Scheduled Generation”. This is defined as underlying electricity demand net of supply provided by intermittent generation (ie wind and solar).

By definition, periods of high load net of renewable generation tend to occur at periods of low renewable generation. For example, the relevant time periods in 2021-22 were all between 5:30pm and 7pm in summer (December, January and February). The result of this is that wind and solar generators get relatively small amounts of capacity credits. For example, the 40 MW Greenough River solar farm was only issued 4MW of capacity credits for the 2023-24 years, and the 22MW Collgar wind farm was issued 25MW of capacity credits for the 2023-24 year. Capacity credit issuance for renewable generators has trended down over time and, so represent a small revenue stream for renewable generators. By contrast, there are number of gas peaker projects whose principal revenue source is capacity credit payments and only operate extremely rarely.

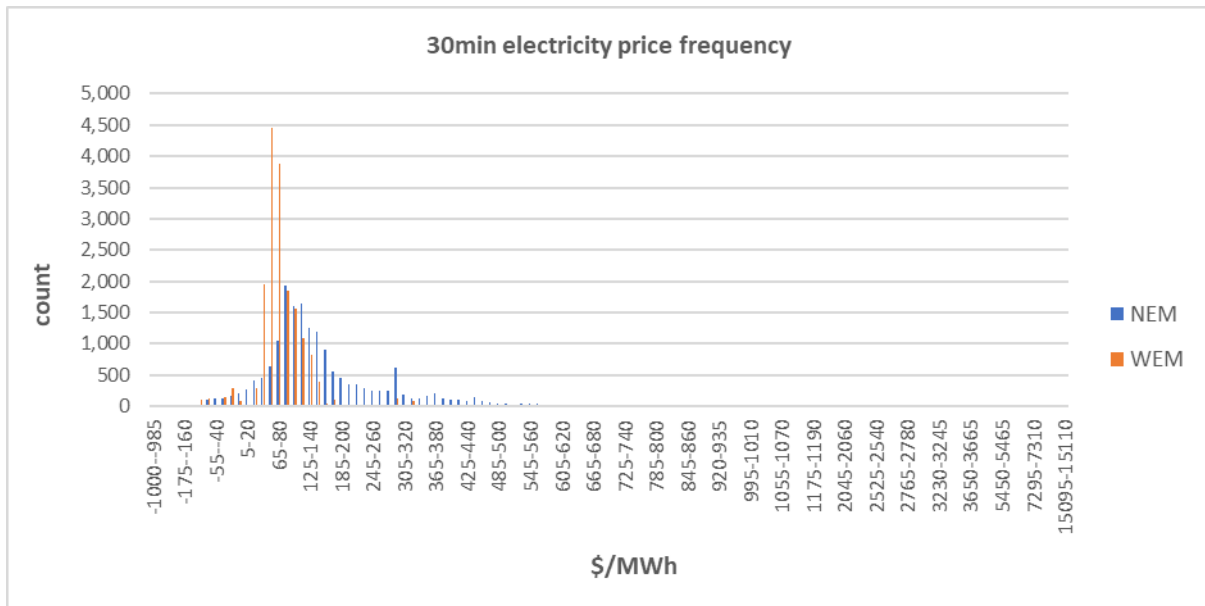
Generators that receive capacity credits can sell these credits for capacity credit revenue. The price of each credit is set in two stages. The first step is the benchmark capacity credit price – which is the notional revenue required to sustain capex and fixed opex for a benchmark 100MW gas fired peaker. This is calculated by the WA Economic Regulation Authority each year. The second stage focuses on the number of capacity credits issued compared to the target level of capacity sought by AEMO given demand forecasts. This works through the application of a sliding scale. If actual capacity exceeds target capacity, the capacity price falls and if there is 10% excess capacity the actual capacity credit price is reduced to half of the benchmark price. Conversely, if target capacity is higher than actual, then the maximum actual capacity credit price is 1.3x the benchmark price. This results in capacity credit revenue that is highly sensitive to excess capacity. Historically actual capacity credits have average 26% below the benchmark price over the last 15 years (see chart below)



In summary, under the WEM rules, capacity credits provide a direct compensation for dispatchable capacity and the design of those rules has been structured to favour fossil fuel plants, and more recently, batteries.

The other half of the market design is the spot price for electricity (called the balancing price in the WEM compared the pool price in the NEM). The balancing price is determined on a half hourly basis in a broadly similar fashion the NEM. The key difference is that while the NEM spot price can vary between *minus* 1,000/MWh and \$14,700/MWh, the WEM balancing price is capped between *minus* 1,000/MWh and \$324/MWh. The net of this is that maximum prices in the WEM are massively lower than the NEM. This reduces any opportunity for generators to earn large amounts of revenue from dispatching at rare peak price events. In theory, generators are compensated for their capacity via the capacity credit mechanism, and the pool price is more focused on providing a reward for marginal operating costs.

The chart below shows the frequency histograms on NEM pool prices vs WEM balancing prices over the 12 months to May.



Source: AEMO Data

The histograms highlight that WEM price outcomes are much more clustered than for the NEM, with no long right tail of rare but very high price outcomes. The table below further draws out the differences. In simple terms, WEM balancing prices are:

- Lower, both on average and for the evening peaks
- Less right skewed

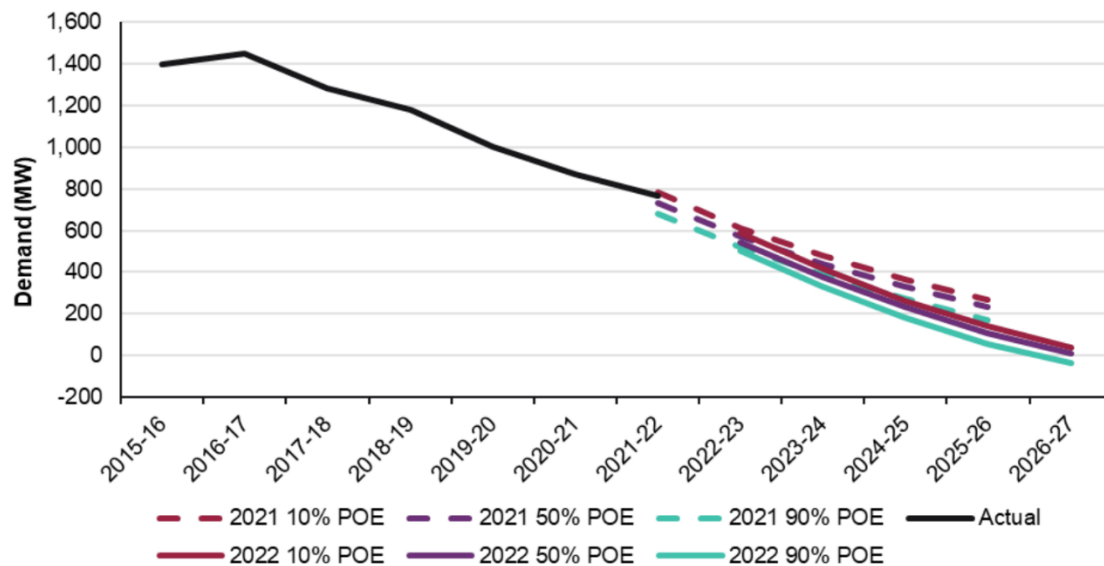
(\$/MWh)	WEM	NEM (NSW)
Average Price	74.99	169.48
Bottom Quartile	53.17	88.11
Top Quartile	94.26	201.53
Top 5%	138.45	432.15
Simple average 9am-3pm	49.79	105.98
Simple average 6pm-8pm	116.82	293.15

there are a few other notable differences between the WEM and the NEM, including:

- single policy framework. Like it or hate it, a key advantage of the WEM is that there is a single government that makes the rules and owns the key players (Western Power and Synergy). This avoids the mish mash of different State Government and Federal Government influences in the NEM
- Cheap gas. Under the arrangements that underpin the various North West shelf gas export facilities, there is an obligation for gas exporters to reserve gas for domestic users (and gas fired generation is a large share of the fossil fuel fired segment of the electricity market). These reservation policies effectively provide relatively large volumes of cheap (by east coast standards) gas for electricity generation. The rules for the WEM have been built around gas fired generators (e.g. full entitlement to capacity credit revenues).
- Expensive coal. While there is currently significant coal fired generation in WA it is in a fundamentally different competitive position compared to east coast coal. WA coal has been unprofitable versus gas for some time (for example, Bluewaters Power Station has been in financial difficulties for a number of years). This is driven by a poorer coal resource in WA. For example, there is no coal export industry in WA, currently the only coal mined in the state is for power generation. The WA Labor government has a plan to shut all coal plants by 2029 but it could happen more quickly given the commercial pressures on these operators – see below.

- **Rooftop generation.** While grid scale solar is a very small market segment in the WEM, with only a handful of solar farms in the state, residential rooftop solar is massive, partly driven by relatively high electricity prices and favourable feed in tariff regimes. The growth in rooftop solar is expected to result in forecast minimum demand going negative (ie during periods of minimum demand, all electricity requirements could theoretically be met with just rooftop solar with no need for any grid scale fossil fuel fired or utility scale renewable generation) by 2026-27. For example, see below for the latest forecast of minimum demand from AEMO’s statement of opportunities report for WA.

Figure 18 Minimum demand and 10%, 50%, and 90% POE minimum demand forecasts under the expected demand growth scenario compared to actuals, 2015-16 to 2026-27^A



A. Actual minimum demand for 2021-22 is a year-to-date value, based on data as of 31 March 2022.

Source: AEMO

The key issues for renewable investors in the WEM is the coal shutdown. The existing coal fired generation in the WEM is likely to be shut relatively. The WA government is trying to manage this process from an electricity system stability perspective, as well as trying to deliver an orderly and just transition for the workers involved. This is part of the reason behind the flood of battery announcements in WA over the past few months.

However, for renewable investors, how this is managed and the consequences for electricity prices are critical. A key point to watch is that every time that a government steps in and provides direct subsidies outside of existing market frameworks, those interventions result in lower revenues and reduced incentives to invest for every existing market participant who doesn’t benefit from those subsidies.

Thus, while government intervention can be well intentioned and directed at real problems, it can often spill over into other areas causing unintended consequences. Within this issue, a key market to watch is the capacity credit market. There will be a substantial exit of existing capacity credit owners as part of the coal shutdown. If mobilising capital to replace this capacity requires subsidies outside of the capacity credit mechanism, that would be a sign to me that that mechanism isn’t working as intended.

This brings me to my last point – the WEM interventions provide important analogues for the NEM (and many other electricity markets globally). There are a range of interventions in play or mooted for the NEM right now – e.g. the LTESAs in NSW, recreated the SEC in Victoria, Offshore wind in NSW and VIC, the Federal Government’s Capacity Investment Scheme and the *Rewiring the Nation* program. All policies have good intentions behind them, but there will be a range of unintended consequences with winners and losers.

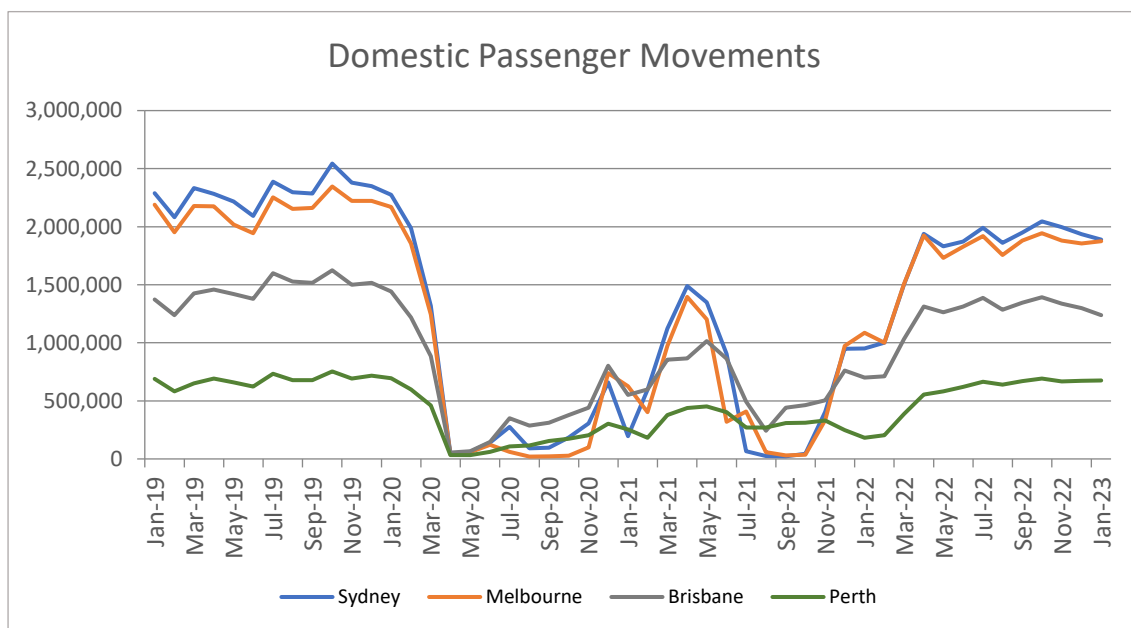
The boom bust cycle of airlines

Historically airlines have gone insolvent on a regular basis (Ansett, and more recently, Virgin!). The airline business involves a large upfront cost to buy aircraft and build networks. They then compete fiercely on price. Downturns (or pandemics) happen and the reduction in travel volumes is unable to sustain the high-cost base of airlines, particularly challenger airlines. There are also times when airlines earn outsized profits, particularly at the start of the cycle when capacity is constrained and revenues grows faster than costs.

Since the dark days of Covid, and the temporary shutdown of the airline industry, Qantas has incurred cumulative losses of about \$4 billion. They also received \$2 billion in assistance from the Federal Government to stay afloat. From a consumer perspective (and personal experience) the airline industry seems to be generating outsized profits with higher ticket prices and a low-quality customer service experience (particularly at Qantas). What exactly is happening?

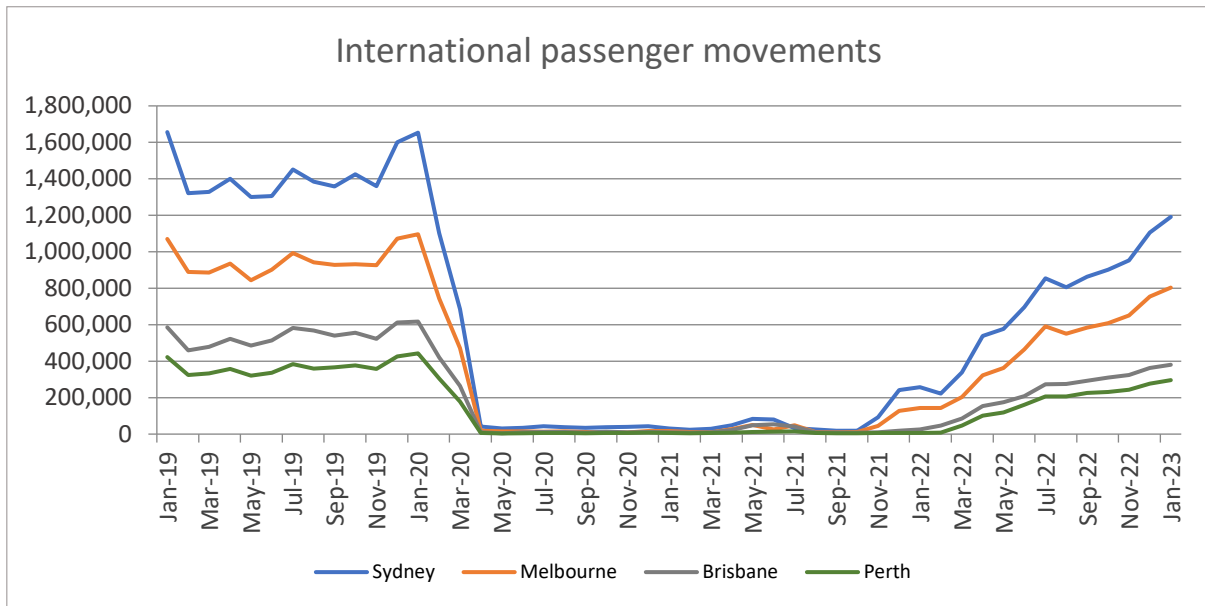
When the airline industry shut down the first response was to lay off large numbers of staff and to put aircraft in long term storage until the pandemic ended. Over time passenger numbers have normalised, although we are still at domestic passenger levels that are 75-85% pre Covid. However, whilst demand surged as Covid restrictions lifted, staffing levels were far below needed to service the 75% demand and some airlines asked executives to show up for baggage services.

With the new normal of working from home and corporate meetings on Teams/Zoom, this may be a new structurally lower base – domestic passenger numbers have flat lined over the last six months.



Source: Bureau of Infrastructure and Transport Research Economics

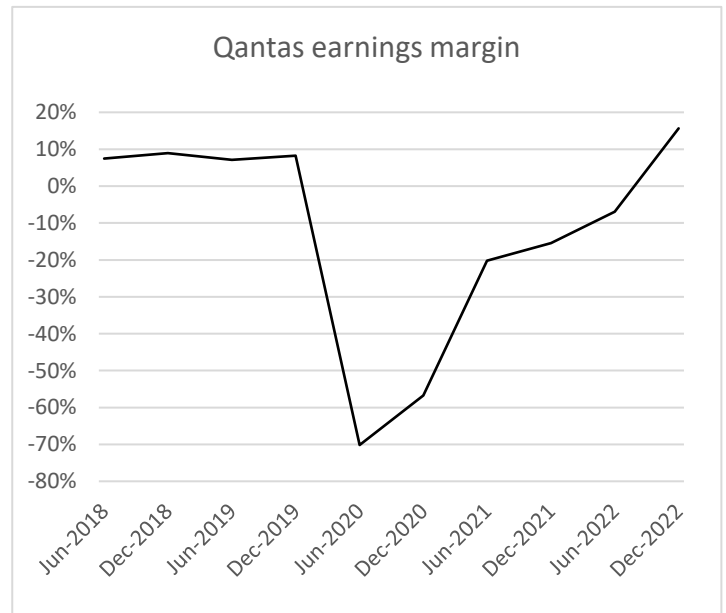
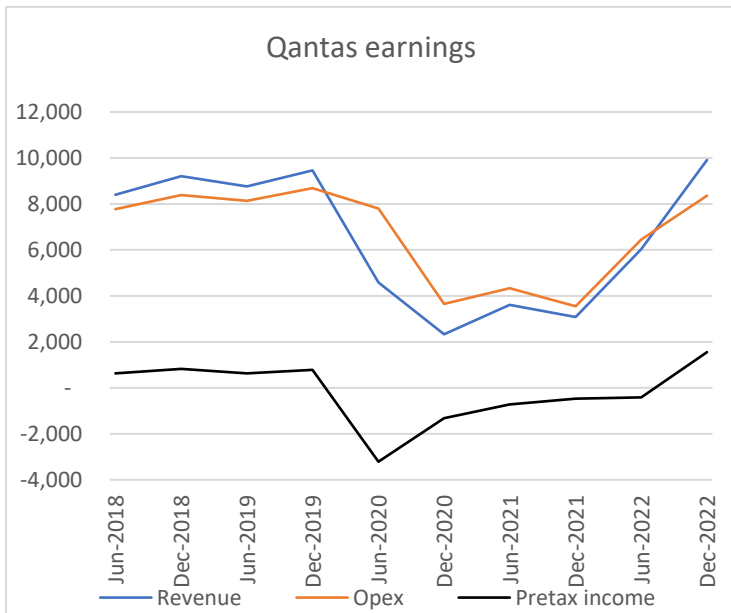
For international travel numbers, there has been a steady growth in passengers as airlines have lifted international capacity. Unlike domestic passenger numbers, growth has not flatlined yet and we are at about 65-75% of the pre-Covid numbers.



Source: Bureau of Infrastructure and Transport Research Economics

Overall though, the return of demand has outpaced the growth in supply (capacity). That is, airlines have been slow to restore/reinstate fleet sizes and the frequency of services and, hence, the number of people looking to book flights has rebounded significantly more quickly than the number of seats available. For the airlines, some of this is probably intentional and some is co-incidental (the fact that Covid shutdowns ran much longer in China than in other countries and that Chinese airlines used to provide a substantial share of international capacity – particularly at lower prices). This has led to higher air ticket prices.

How are the airlines fairing in this environment? The following is a chart of Qantas’ pre-tax earnings and its operating margin.



Source: Qantas half year and annuals reports

Historically, Qantas has had an operating margin of 7-8% – in its last reported earnings it was 16%. Demand is relatively inelastic at the moment with many people keen to travel after years of lockdowns. We would expect margins to converge to the long run averages as consumers respond to the higher prices over time (and perhaps with a slowdown in travel demand due to a central bank induced recession to contain inflation!), or more capacity enters the market in

response to high prices. Either way, the cycle will eventually turn the other way with revenues falling faster than operating costs.

Alan Joyce has certainly timed his exit well – whilst profit margins (and customer complaints) are high!

For our readership (infrastructure investors), in contrast to airlines, airports have historically earned very high operating margins of 50-75%. Like airlines, airports have high upfront capital costs. But unlike airlines they do not compete on pricing, being in general monopoly assets. What does effect airports is passenger volumes, and as noted above, we're yet to return to pre-covid volumes.

Vale Markowitz/Goodenough

Finishing our newsletter on a sad note, we would like to acknowledge passing of Harry Markowitz and John Goodenough in the past few days.

The Markowitz Model (1952) which underpins much of modern portfolio theory, was a huge step forward in the theory of building optimal investment portfolios. Markowitz's key insight was to focus on the aggregate performance of the portfolio, rather than the risks of individual securities and, hence, capture the benefit of diversification and uncorrelated investments. This insight underpins much of superannuation fund portfolio construction and, in the case of Infradebt, underpins some of our portfolio strategies (eg solar vs batteries have anticorrelated returns).

Harry Markowitz was 95.

John Goodenough was an American materials scientist who is credited with the invention of the Lithium Ion battery (patent granted in 1980). While Lithium Ion batteries are relatively new in utility scale applications – they have been in use within consumer electronics since the early 1990s (for the battery history buffs, the first commercially available lithium ion battery was in a Sony Handycam Camcorder. For the millennials/Gen Zs, a camcorder is a device for recording videos that existed prior to the invention of the mobile phone).

John Goodenough was 101.