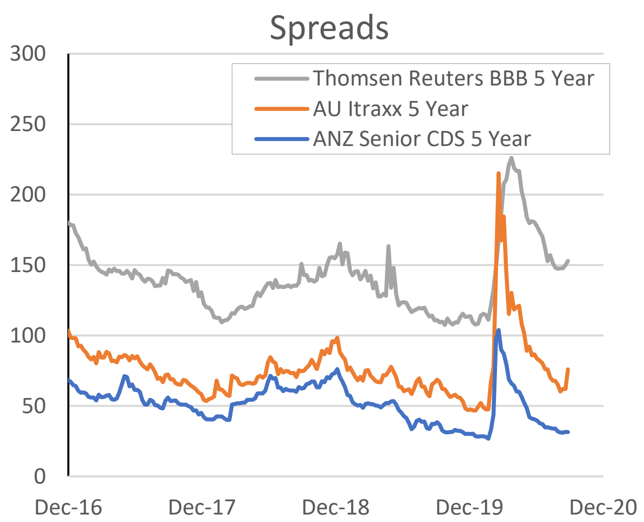
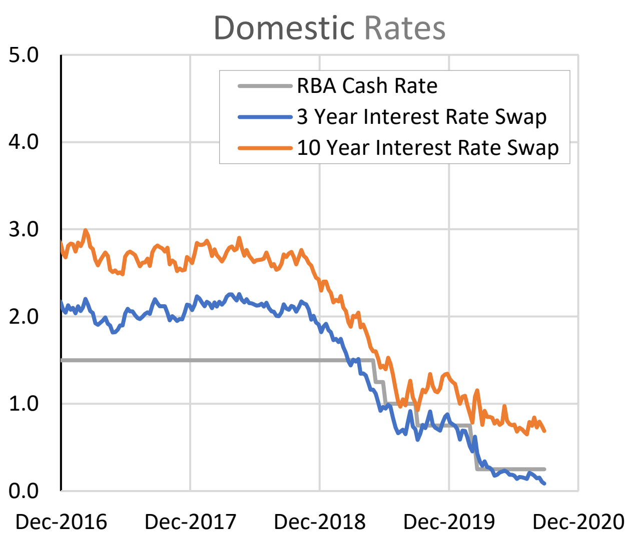
Introduction

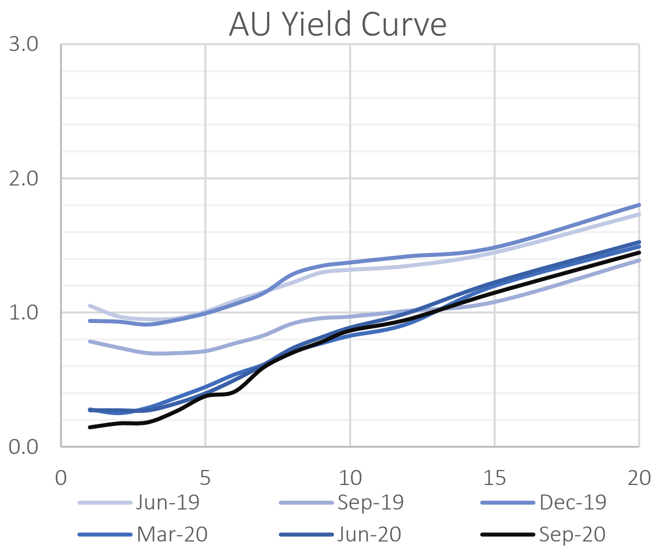
Welcome to another Infradebt newsletter. It's been a fairly quiet quarter in terms of deal activity in the infrastructure space. Spreads and base rates have hovered at the around the same levels and there hasn't been too much excitement in equity markets. For Australia the next few quarters will be telling, with the wind down of government support and forbearance rules – will we see private sector demand step-up to fill the gap?

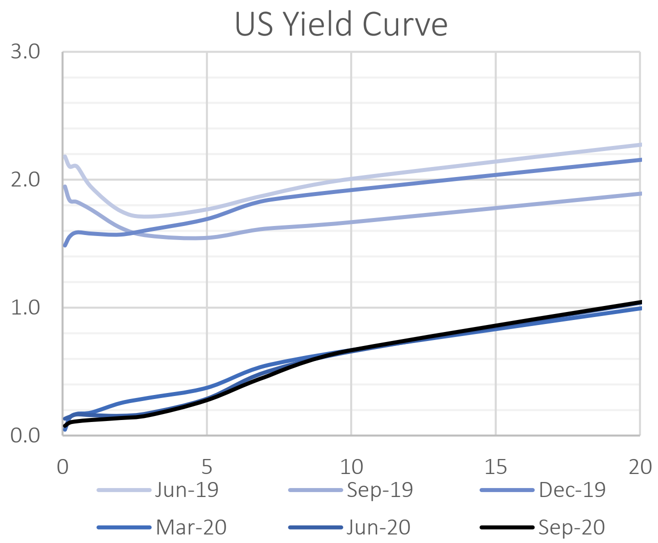
This quarter we have four pieces for you. The first considers the recently announced 'gas led recovery' strategy and analyses the economics of gas. We then review our predictions as we headed into the Covid crisis – what we got wrong or right. And finally, we take a look at discount rates and duration.

Markets update









New issuance and refinancing

There wasn't a lot of transaction activity this quarter.

Date	Borrower	Instrument	Size ($m)	Term (Yrs)	Currency
June	Elliot Green Power	Loan	235	3	AUD
June	SEA Gas Pipeline	Loan	450	4	AUD
July	Helena Water/Mundaring PPP	Loan	220	7	AUD
July	Murra Warra II Wind Farm	Loan	420	5	AUD
August	Mortlake South Wind Farm	Loan	165	3	AUD
August	Ausgrid	Loan	600/200	3/7	AUD
August	Ausgrid	Bond	182/546	4/7	AUD
August	Ausnet	Bond	72/51/131	10/15/20	AUD

Equity and other news

- Sydney Airport has raised $2 billion via a 1 for 5.15 pro rata accelerated renounceable entitlement offer at a price of $4.56 to reduce debt from $9.1 billion to 7.1 billion (reducing net debt to EBITDA from 6.8x to 5.3x. As of writing there has yet to be a recovery in passenger numbers which are tracking at 3% of the equivalent passengers in 2019. The Victorian Covid-19 wave looks to be under control and there is some optimism domestic travel will increase in the near term.
- Iberdrola has acquired 97.7% of Infigen Energy which includes the 20% stake owned by UAC, effectively giving it full control of the company. Iberdrola is looking to increase its presence in Australia and has separately announced its investment in stage 1 of the Port August Renewable Energy Park.
- Murra Warra Wind Farm 2 reached financial close in August. The project is 209 MW and has a PPA with Snowy Hydro. Partners Group are the equity investors with seven lenders in the bank group including the Infradebt Ethical Fund.
- The ACT Government has announced the two successful bidders of its fifth round of renewable reverse auctions. The first successful bidder is Neoen with a 100 MW of wind farm in stage 1 of the Goyder Renewable Energy Zone in South Australia and a 14 year fixed offtake price of $44.97/MWh. The second successful bidder is Global Power Generation with the 100MW second stage of the Berrybank wind farm in Western Victoria at a 14 year fixed offtake price of $54.48/MWh. The tender requires proponents to commission a utility scale battery in the ACT. Neoen will build a 50MW battery and GPG a 10MW/20MWh battery. Both batteries will be located in Canberra.
- The 162 MW Columboola solar farm in Queensland reached financial close. The project has a long term PPA with Queensland Government owned CS Energy that is supplying the power to a club of Queensland Universities. Hana Financial will invest $120 million equity and a bank group will invest $200 million.

A gas lead recovery from Covid-19 – Pipe dream or Hot Air?

First apologies for the two dad jokes in the one headline – but how often do you get a chance like that😊!

The past few weeks have seen a flurry of headlines regarding a gas lead recovery. Including a proposal for new pipelines, a new gas hub styled on the "henry hub" for natural gas in the US and even including potentially a new 1,000 MW gas fired power station in the Hunter to replace the capacity lost when the Liddel coal fired plant is closed by AGL.

Like much of Australia's electricity policy – these proposals owe more to ideology than good policy.

In this context, it is useful to delve into the potential role of gas fired generation within Australia's electricity supply mix. You can think of electricity in two components – bulk energy (aka baseload) and dispatchable energy. Bulk energy is the majority of the electricity used the majority of the time. The key feature of bulk energy is that it needs to be cheap. Dispatchable energy is sources of supply that can be ramped up or down to respond to peaks in demand (or for that matter shortfalls in supply – such as when the wind isn't blowing, or sun isn't shining).

Gas is not, and never will be, an economically competitive source of bulk energy. The cost hierarchy for bulk energy is renewables, then coal and then gas. The emissions hierarchy is renewables, then gas with around half the emissions of coal, and then coal. Variable Renewable Energy (VRE) simply dominates. Where potentially gas had a role 10 years ago as a transitional fuel. Gas potentially had a role 10 years ago as a transitional fuel (when emissions could have been reduced by reducing coal usage in the 2000s) prior to the scaling up of VRE – that opportunity has now passed. If you want cheap bulk energy – VRE is both the cheapest source and zero emissions – new build gas-fired power stations have no role for bulk energy.

To illustrate this, the following table shows the levelised cost of energy for a combined cycle gas plant based on a $6/GJ gas cost.

Gas CCGT	Low	High	Units
Capital Cost	$ 933.33	$ 1,733.33	$/KW name plate
Capacity Factor	75%	50%	
Annual Generation	6570	4380	KWh/KW
Life	25	25	years
WACC	6.00%	6.00%	
Pmt	$73.01	$135.59	$pa per KW name plate
Capital Cost	**$ 0.01**	**$ 0.03**	**per KWH**
Gas Price	6	6	per GJ
Gas Price	$ 0.02	$ 0.02	per KWH
Efficiency	50%	50%	
Fuel Cost	$ 0.04	$ 0.04	
O&M	$ 0.01	$ 0.01	
Total Cost	**$ 0.06**	**$ 0.08**	per KWH
Fuel Share of Total Cost	67%	51%	

At $6/GJ gas, a gas CCGT has a levelised cost of $0.06-$0.08/kWh. The compares with $0.05-0.06/kWh for VRE. For example, the ACT recently signed a PPA with Neoen at $0.045/kWh (fixed nominal) for its latest SA project.

The key problem for gas plants is that gas is just too expensive. It is well over 50% of the levelised cost. For a gas plant to operate at 0.05/KWh – that is to be price competitive with renewables – it would need a gas price of $1.26-$4.01 per GJ (using the scenarios above). While gas prices might get down to that in the middle of the Covid-19 energy price slump – it just isn't realistic to assume prices will be that low for the 25 year life of a new build gas plant (particularly including the impact of future carbon taxes/emissions restrictions).

That leaves the potential opportunity for gas as a source of dispatchable energy. That is, using gas fired peaking plants to support electricity use in the evening peaks and for instances where VRE supply falls short.

In this role, gas faces two main competitors[1]:

- Flexibility from legacy coal plants. Over the next decade or so, electricity supply in Australia will continue to be dominated by coal. These plants are not as flexible as gas peakers. That is, they find it difficult to ramp up or down quickly (and increased ramping may result in more frequent breakdowns and outages), but they are not completely inflexible. This means the sunk cost we already have in coal plants is likely to be a low marginal cost source of dispatchable capacity over the next decade or so. In particular, where a new gas fired plant needs to have a strategy for recovering its capital cost – an existing coal plant does not.
- Battery/pump hydro storage. These are technologies that can take excess VRE energy during periods of high production and deliver it during periods of peak demand/low VRE production. Batteries are likely to be most competitive for short durations – ie shifting daytime solar into the evening peak. Pump hydro looks more competitive for long-durations – that is dealing with seasonal demand peaks as well as extended periods of low wind. The key challenge for anyone investing in a new gas fired plant today is that batteries are likely to get cheaper. For the investment to make sense, it needs to be competitive versus batteries not just today, but over the next 20-30 years.

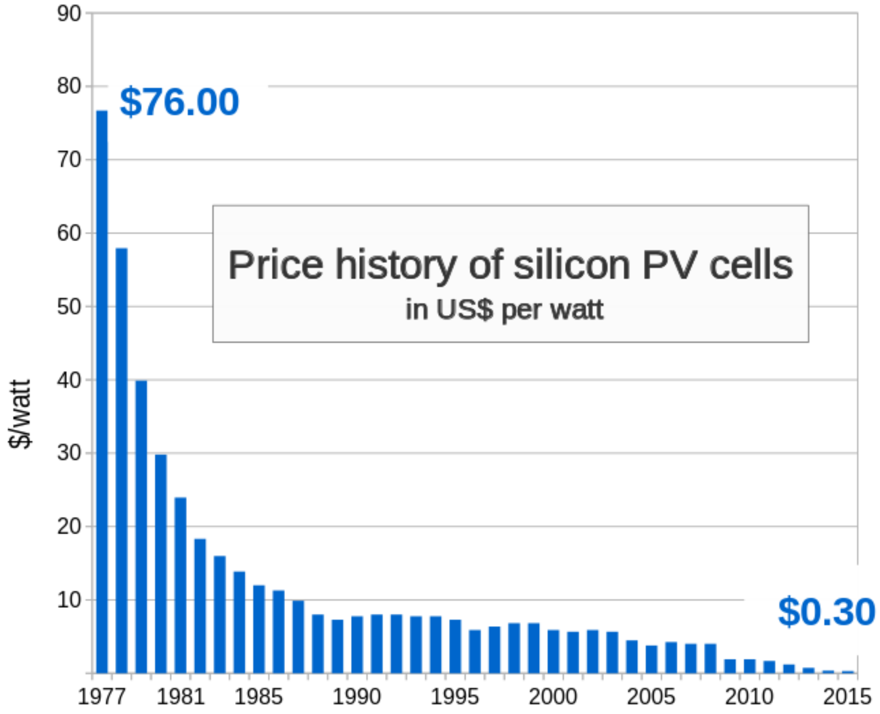
To illustrate this the following tables compares the economics of an open cycle gas peaker with a 2 hour battery as a source of 2 hours of daily dispatchable capacity. To keep the tables straight-forward, the analysis of the gas peak assumes a gas price of $6 per GJ. However, it is important to recognise that gas only represents around a third of the cost of a gas fired plant. The majority of the cost is driven by the cost of capital. In particular, even if gas was free, a gas fired plant needs to earn $0.10/KWh to $0.14/KWh to cover its capital cost.

Gas Peaker	**Low**	**High**	**Units**
Capital Cost	$ 933.33	$ 1,266.67	$/KW name plate
Capacity Factor	8%	8%	
Annual Generation	730	730	KWh/KW
Life	25	25	years
WACC	6.00%	6.00%	
Pmt	$73.01	$99.09	$pa per KW name plate
Capital Cost	**$ 0.10**	**$ 0.14**	**per KWH**
Gas Price	6	6	per GJ
Gas Price	$ 0.02	$ 0.02	per KWH
Efficiency	33%	33%	
Fuel Cost	$ 0.07	$ 0.07	
O&M	$ 0.01	$ 0.01	
Total Cost	**$ 0.18**	**$ 0.21**	per KWH
Fuel Share of Total Cost	37%	31%	

The battery analysis considers two examples. One based on today's battery prices. The second is based on a battery price of $200/KWh (which is in line with broadly accepted forecasts of where automotive battery prices are likely to

[1] A third source of dispatchable energy is demand response which is beyond the scope of this article because it is difficult to estimate the marginal cost of adjusting demand.

get to over the next decade). While a 50% or so fall in battery prices may seem ambitious – it is actually quite achievable in the context of renewable energy scale economies. Specifically - in the case of batteries – Infradebt has seen the capital cost of utility scale batteries fall by around 50% over the last two years. And for a longer-term example see the history of solar cell costs in the chart below. .



Source: Bloomberg New Energy Finance & pv.energytrend.com

Battery	**Today**	**Future**	**Units**
Capital Cost	$ 450.00	$ 200.00	per KWH of Capacity
Peak to Capacity Ratio	50%	50%	
Capital Cost (per KW peak)	$ 900	$ 400	per KW peak
Discharge Hours	2	2	hours
Cycles Per Year	365	365	days
Throughput	730	730	Hours
Life	10	15	Years
WACC	6.00%	6.00%	
PMT	$122.28	$41.19	
Capital Cost	**$ 0.17**	**$ 0.06**	**per KWH**
Feed power	0.05	0.02	per KWH
Efficiency	88%	88%	
Fuel Cost	$ 0.06	$ 0.02	Per KWH
O&M	$ 0.01	$ 0.01	Per KWH
Total Cost	**$ 0.23**	**$ 0.09**	per KWH
Feed Power Share of Total Cost	24%	25%	

In simple terms, the cost of dispatchable power from a battery, at $0.23/kWh in this example, is currently higher than the 25 year levelised cost of a gas peaker ($0.18-$0.21/kWh). However, the cost advantage is reasonably small – at 10-20%. And importantly, this analysis focuses solely on peaking capacity/energy arbitrage (supply of energy at peak demand), it completely ignores revenues derived from Frequency Control and Ancillary Support (FCAS) services (grid stability services). As the Hornsdale Power Reserve shows, FCAS revenue can be meaningful – in the first two years revenues have exceeded the cost of the Hornsdale battery (https://ieefa.org/big-battery-in-australia-proves-profitable-as-neoen-recovers-capital-costs-in-just-two-years/). If the forecast battery price of $200/KWh is achieved, then the battery would smash the peaker with around half the levelised costs. And interesting enough, the price of vehicle batteries (a good proxy for utility scale storgare) is circa AUD230 kwh today according to Bloomberg New Energy Finance (https://about.bnef.com/blog/battery-pack-prices-fall-as-market-ramps-up-with-market-average-at-156-kwh-in-2019/).

This underpins my expectation that a gas peaker built today won't get to operate for its full operating life. This is important – if you reduce the operating life assumption for the gas plant to 10 years – its levelised cost increases $0.25 to $0.31 (or $0.17 to $0.24 on a capital cost only basis). That is, if you acknowledge the likelihood that the gas plant will have a short operating life, then batteries are already cheaper as a source of dispatchable power.

And it is for this reason that the Government's pro gas agenda is likely to receive a lukewarm reception from investors. In particular, a new gas plant is likely to require a subsidy from government, where new batteries are being developed on a subsidy free basis.

If the government wanted to kick start the delivery of dispatchable power (and get ahead of the inevitable coal plant retirements over the decades ahead) they would be better to:

- Invest effort in getting the market design right to reward those who deliver sustainable dispatchable capacity to the market. Under the current energy only market it is difficult for market participants to be appropriately rewarded for dispatchability. Importantly, any market mechanism needs to focus on appropriate signals for sustainable dispatchable capacity. That is distinguish between subsidising existing fossil fuel plant (ie rewarding capital that is already sunk) versus providing appropriate price signals for new dispatchable capacity.
- Run availability payment auctions for new dispatchable capacity that are aimed at bringing forward new investment in dispatchable capacity. These could involve a range of technologies from utility scale batteries, pump hydro, fleets of household level batteries or even demand response. **That is, spend government money on bringing forward the future, rather than handouts to bring back the past – perhaps David Rowe's cartoon from the AFR illustrates it best**

Covid-19 and infrastructure six months on

It was six months ago that team Infradebt was just settling into working from home and putting the finishing touches on our March quarter newsletter. An article in that newsletter gave our take on how we expected Covid-19 to impact Australian infrastructure assets. Six months on, some things have changed – we are back working from the office for one. It is interesting to look back at our predictions and see how we did.

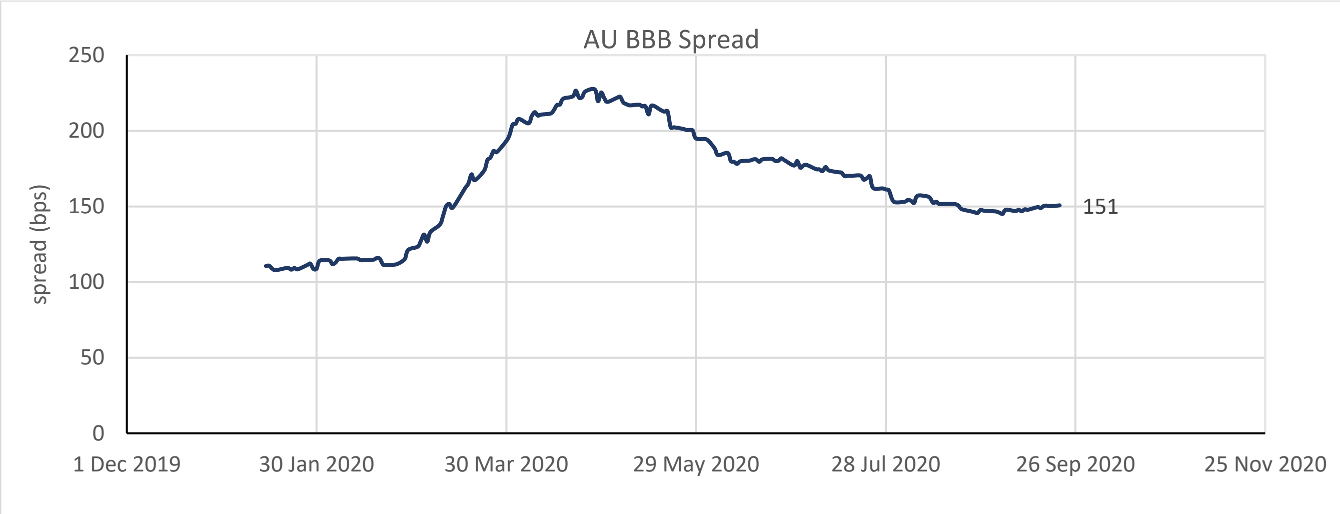
At the time, we saw Covid-19 impacting infrastructure projects as two overlapping shocks:

- A revenue/volume shock – as COVID19 shutdowns (and the associated economic downturn) hit volumes/revenues. The most classic example of this would be the hit to passenger volumes from the virtual shutdown of the airline industry.
- A credit shock as lending conditions for all assets (not just infrastructure) tighten resulting in higher credit margins and lower leverage levels.

Within this framework we ranked PPPs, regulated utilities and highly contracted energy assets at the low risk end of the spectrum and placed patronage and merchant energy assets at the high risk end.

By and large, this framework has worked. The key points we would make are:

- The hit to volumes/revenues for patronage assets – particularly airports – has been larger and longer than we would have expected. The extended imposition of state border controls isn't something we contemplated. These have had a massive impact on domestic passenger travel (both business and leisure). This has resulted in a much more substantial hit to passenger numbers for airports than we would have predicted. In our view, some of this is likely to be permanent, as meetings that previously were undertaken face to face are replaced with video conferences. Once borders re-open, face to face business meetings will resume. However, I think there will be a permanently higher bar for a meeting to justify the time and cost of an interstate trip, and this means that business travel won't return to previously levels quickly. Clearly the extent and speed of a return for international travel will depend on medical technology (ie testing, vaccines and treatments).
- The credit shock has been smaller and shorter than we expected. In March and April, credit markets (and financial markets in general) were quite disorderly with credit spreads blowing out (see charts under markets update above). However, there has been a tremendous policy response to Covid-19. This response covers:
  - policy interest rates - cut to near zero, with yield curve control in Australia and a restart of QE offshore;
  - intervention in credit/funding markets – for example, the RBA facility to support banks providing SME loans, or in the US the Fed's purchase of investment grade bonds and ETFs; and
  - fiscal policy – programs to support employment and spending (ie Jobkeeper) as well as the broader efforts to prevent a wave of insolvencies (for example, encouraging mortgage payment holidays and eviction moratoriums).
- These efforts have mitigated the credit shock and prevented – despite the largest recession since records began – a spike of insolvencies (which usually is associated with a spike in credit margins/credit rationing). In fact, in the 13 fortnights to 6 September there were 8,262 bankruptcies 20% lower than in the prior 13 fortnight period. Time will tell whether this outcome is a spectacular example of timely government intervention or a King Canute style exercise in delay. However, at the moment, credit spreads have recovered, and while somewhat higher than pre-Covid, are not at painful levels. In particular, given the fall in base rates, most borrowers would face lower all-in interest rates compared to pre-Covid.



Risk Free Rates

In past recessions/financial crises, falling long-term interest rates have provided a substantial cushion to infrastructure asset valuations. Where the crisis has hit revenues, volumes and credit costs, these impacts have been mitigated by falling long-term interest rates boosting the value of the long-term cash flows inherent in infrastructure assets. For example, in the GFC 10 year bond rates fell by around 300 basis points compared to pre-crisis levels.

Our March quarter article didn't dwell on this issue, but given the low level of interest rates, and in the absence of negative interest rates in Australia (which I wouldn't rule out – but I think the RBA are trying to avoid), it reduces the capacity for base rates to act as a shock absorber for infrastructure valuations in the current crisis. Base rates have fallen by around 40 basis points compared to pre-crisis levels (1.3% to 0.9%). This will help – but is small compared to previous episodes.

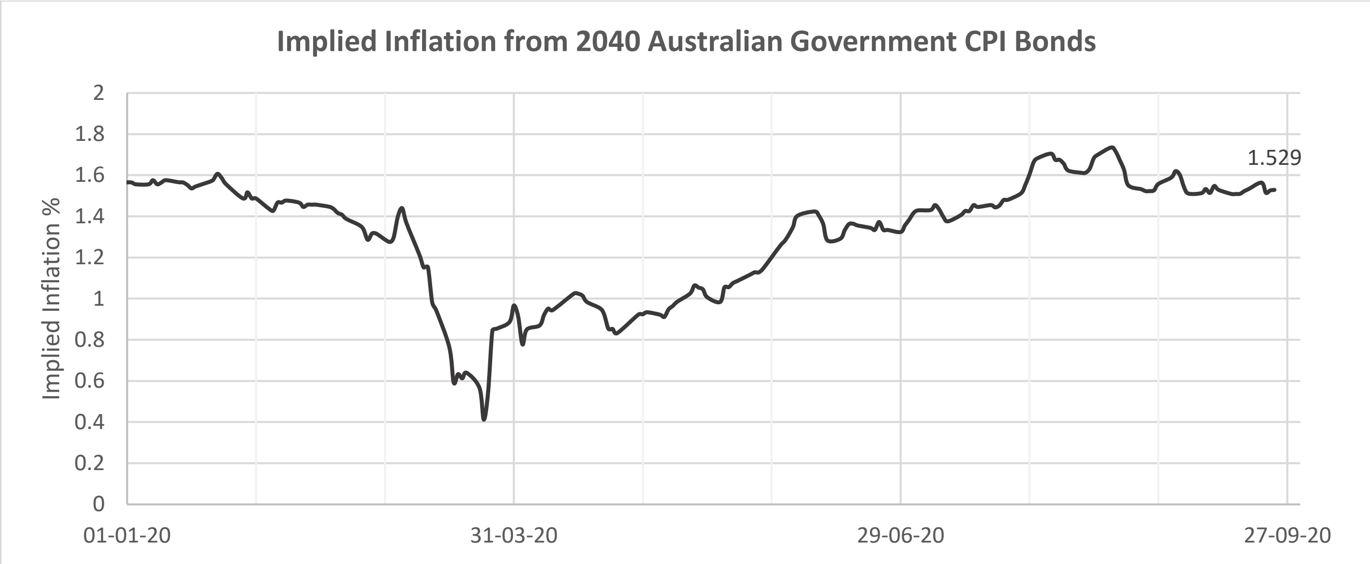
Inflation

Most infrastructure assets are positively exposed to inflation (for a detailed discussion see the article discussing this topic in our June 2020 newsletter). That is, revenues are indexed to inflation and higher rates of inflation lead to higher cash flows.

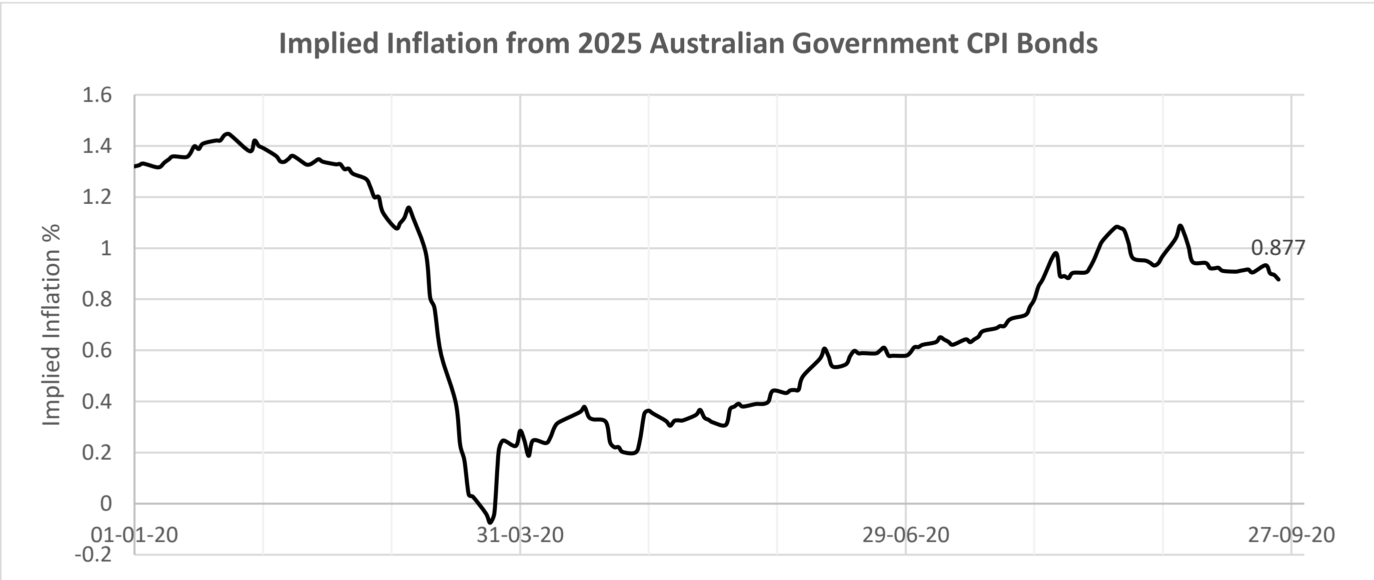
The short-term impact of Covid-19 has been sharply deflationary, with the June quarter CPI falling 1.9% quarter on quarter (or minus 0.3% on rolling 12 month basis). This is the largest quarterly fall in the CPI in the 72 years of the series.

However, it is important to recognise that the government decision to make childcare free during the pandemic had a substantial impact on the CPI. This effect, combined with the fall in petrol prices, is the main reason CPI was negative. The impact of the childcare decision will largely net out over the quarters ahead – given the government has already unwound this decision.

Taking a longer-term view, market breakeven inflation expectations – using the 2040 CPI bond as a proxy - collapsed from around 1.5% pre-Covid by more than a percentage point to around 0.4% at the peak of the crisis. However, they have basically fully recovered since.



It is interesting to note that the market is still pricing in a difference between near-term versus long-term inflation, with the five year breakeven inflation rate only 0.9% (and still significantly below pre-Covid levels). This is consistent with the current output gap/unemployment position providing a substantial deflationary headwind for the next few years. Infrastructure investors should be prepared for near-term revenue disappointments – particularly given that most financial models we see assume inflation runs consistently at 2.5%.

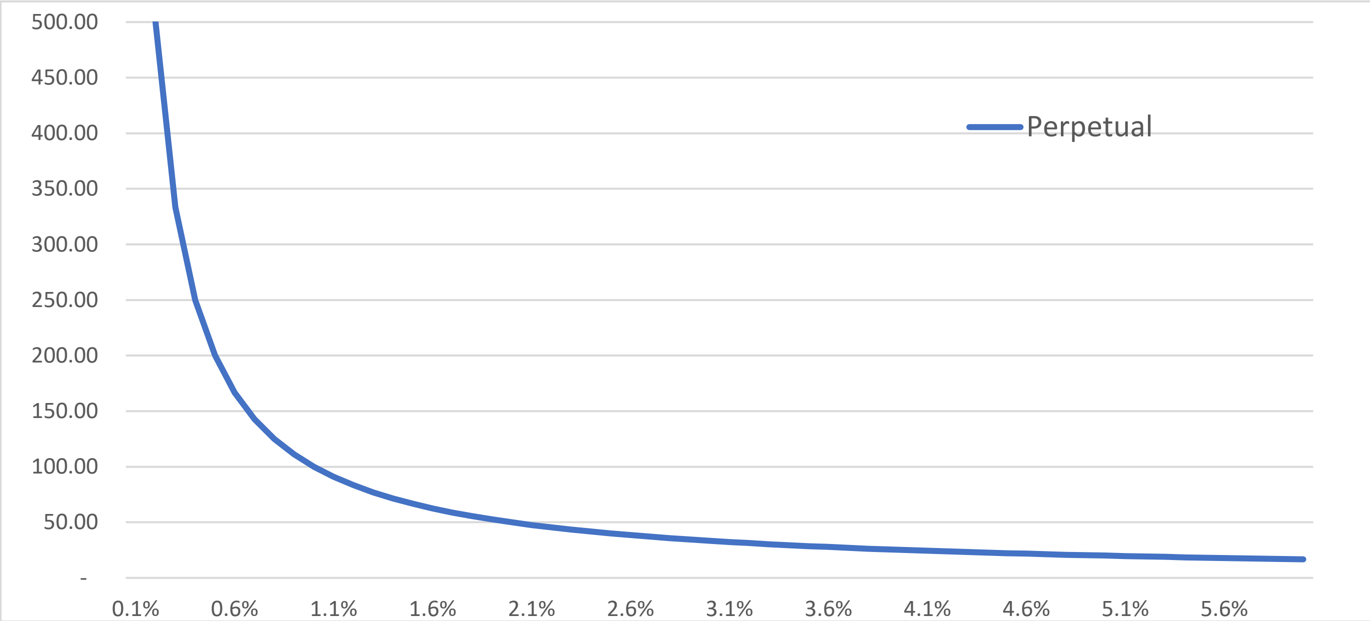


Duration discount rates and the grumpy views of a middle-aged man….

Over the past few years investors have become obsessed with the record low level of interest rates. Interest rates are the fundamental building block of assessing asset values. Lower interest rates mean future cash flows are more valuable. Thus, lower rates mean higher asset values. This sensitivity of asset values to changes in interest rates, called the 'duration' by bond investors, is increasing. That is, the lower rates are, the more sensitive asset values become to a further fall in interest rates. By this method, ever increasing asset values can be justified by lower and lower interest rates.

Most discounted cash flow (DCF) valuation models for listed equities or infrastructure assets are based on a period of detailed forecasts (perhaps for 10 or 20 years) and then a terminal value assumption. That is, most models assume companies continue forever and include a terminal value estimate based on a perpetual steady state dividend stream at the end of the explicit forecast horizon. That is, the value of the company/asset implicitly is the value of a perpetual income stream. The chart below shows the value of a $1 per year perpetual at a range of interest rates. Note how the value explodes as interest rates approach zero!

Value of $1 per annum Perpetual

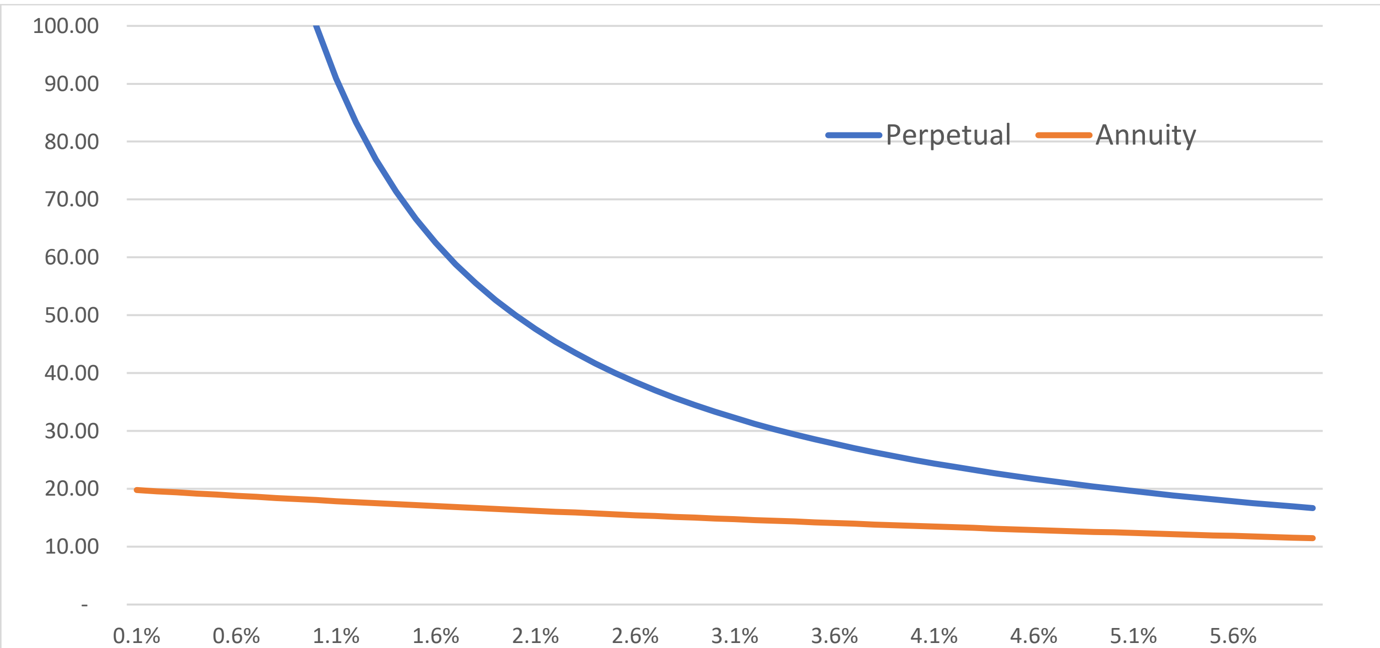


But what if the best mental model isn't a perpetual? What if the asset/company has a finite life? This might be a certain finite life – eg a PPP. Or it could be an uncertain finite life. That is, a particular business model might produce attractive profits for a while – but at some point, in the future a better mouse trap will be invested and the profits go to zero. For example, horse-drawn cart manufacturers might have made nice steady profits for a while and then those profits ended when the car was invented.

Thus, a better mental model for the value of a company might be the value of an annuity of uncertain length rather than a perpetuity.

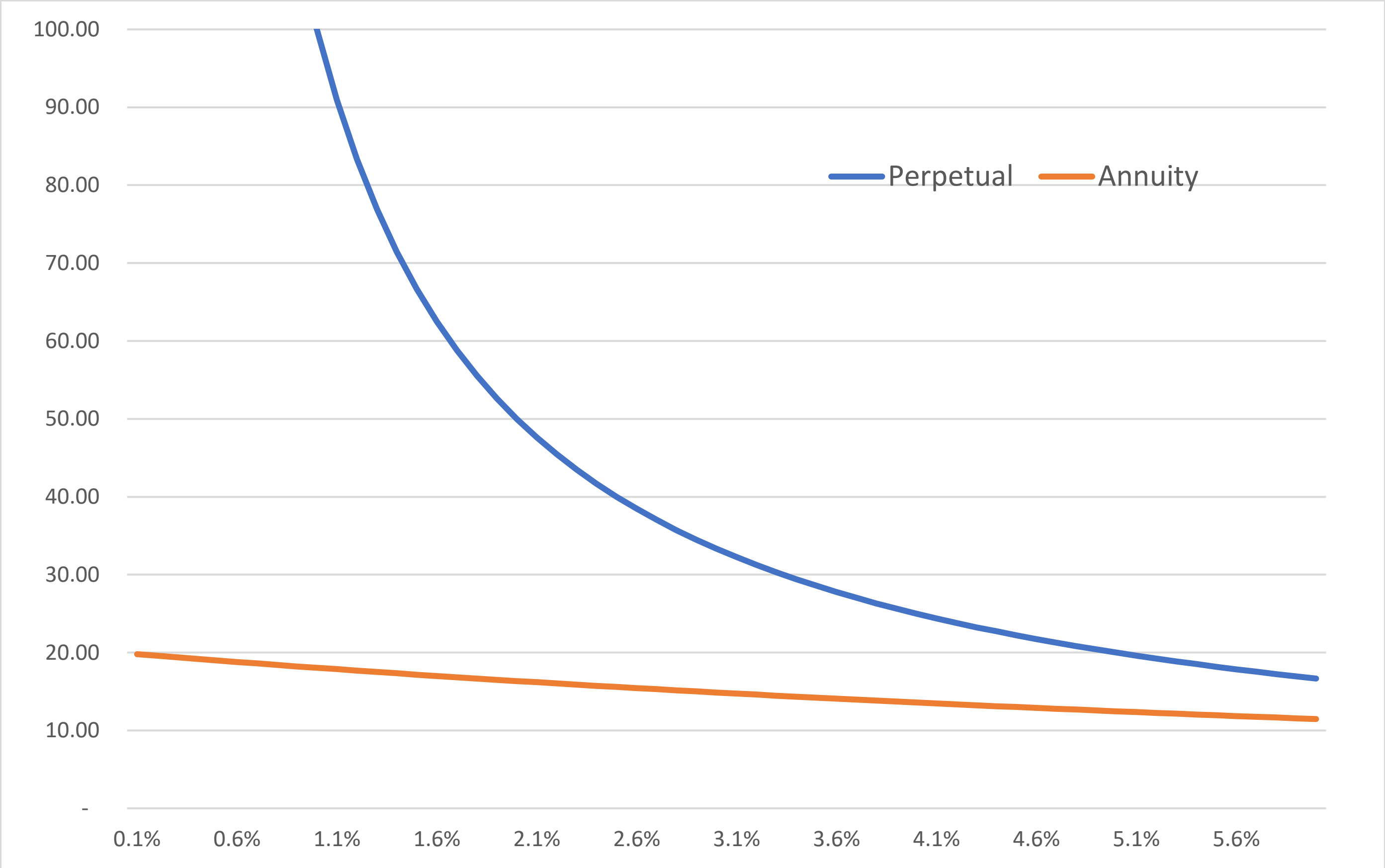
This would have big implications for interest rate sensitivity.

Value of $1 per annum Perpetual vs 20 Year Annuity



While the duration of a perpetuity is unbounded (as the payments go on forever and if interest rates are lower enough its value is infinite) the duration of an annuity is bounded (as it can never be worth more than the simple undiscounted sum of all the payments).

Duration of a Perpetual vs an Annuity



So what?

This matters because perhaps we are:

- overconfident in projecting cash flows and profits long into the future (despite the inherent uncertainty of technological progress and competition)
- overestimating the impact of falling discount rates on valuations
- putting too much focus on short-term yield/growth (ie the flow) and not enough focus on whether the aggregate value of a company is justified by its lifetime future cash flows (ie the stock).

What are some real-life examples in infrastructure? Perhaps consider it through the lens of *stranded asset risk* – what discount rate is appropriate to apply to a coal terminal, or alternatively gas infrastructure (eg gas pipeline or LNG train)? I highlight these two assets because they have two headwinds – technological and environmental/regulatory risk. What assumptions do you make about the stability of future cashflows? Using gas specifically, will the demand in the future be the same as today? Could hydrogen and/or the switch to storage technologies eviscerate gas demand? I feel reasonably confident about volumes for the next 10 years, but after that I'm much less certain.

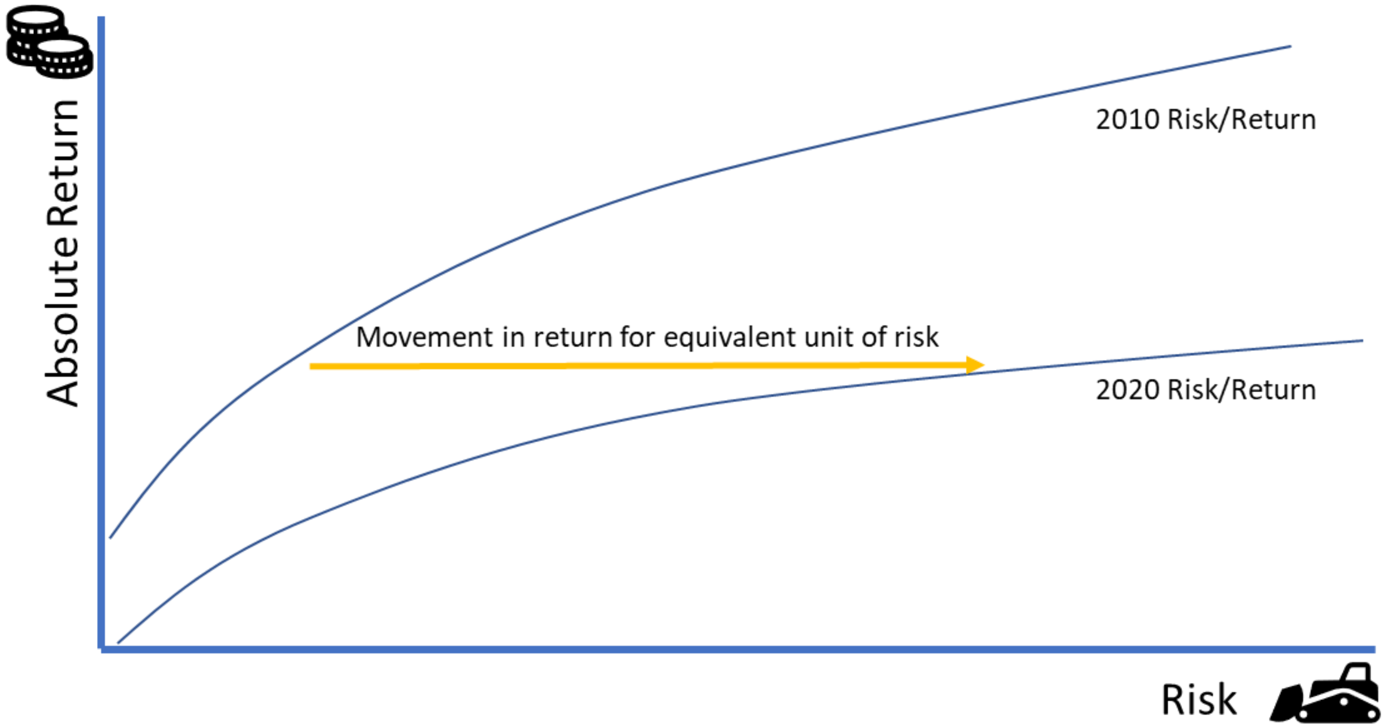
When I started working, infrastructure discount rates were 10% plus, what you assumed in years 15 onwards didn't really matter – it represented a trivial share of overall project net present value. However, at today's discount rates your views on issues long into the future have a big impact on valuation and investment decisions. That is, in a world of low interest rates, if you mistake an annuity – that is a stranded asset – for a perpetuity – you have made a massive mistake.

But then maybe I am just a grumpy middle-aged man dreaming of the time when bank accounts offered interest rates higher than inflation.

Chasing yield at the zero bound

A common analogy for a range of yield chasing strategies is “picking up pennies in front of a steam roller”. While this expression is used pejoratively – all investors, except possibly the most conservative – make risk return trade-off decisions. That is, they make decisions to chase higher returns at the cost of increased risk. In fact, today where cash rates are essentially zero, investors need to take risk to get any return at all!

This article, rather than getting bogged down on whether investors should chase yield or not (or for that matter to what extent) instead, is going to focus on a different question. That is, for different defensive investments, in today’s crazy interest rate environment, how big are the pennies and how big is the steamroller?



Measurement of risk return trade-offs can involve a wide range of statistical measures from simple means and standard deviations, to correlations, sharpe ratios, semi-standard deviations and so on. Rather than taking this approach, this article takes a simplistic approach. Across a range of asset classes I look at:

- yield to maturity;
- GFC drawdown – that is, peak to trough fall in market value during the 2007-09 global/great financial crisis period; and
- Covid-19 drawdown – that is, peak to trough fall in market value during market ructions of March/April 2020.

It is important to note this choice of measurements narrows the range of defensive asset classes that can be evaluated under this approach.

Yield to maturity (the return on a debt investment assuming it is held to maturity and doesn't default) is only defined for debt instruments. There is no yield to maturity for equities! Thus, this article only considers debt like defensive assets – there are no infrastructure equity or property investments in my defensive assets bucket.

The universe is further narrowed by the short time period of the Covid-19 market event. To have a meaningful assessment of drawdowns, the range of asset classes considered needs to be limited to traded instruments with reasonably high frequency valuations (preferably daily). Investments that aren't marked to market can't be sensibly assessed in terms of a drawdown over a couple of months. Over a time period this short, the stability of unlisted asset valuations may be a measurement illusion.

Sector	Yield/Yield Pickup (%)	Duration	GFC Drawdown (%)	Covid19 Drawdown (%)	Covid-19 Drawdown/yield Pickup
Cash	0.1%/0.0	0.0	0.0	0.0	
Australian IG Floating Rate Notes	0.5/0.4	2 years	-57.7%[2]	-9.3	23 years
Australian IG Corporate Bonds	1.5%/1.4%[3]	3.9 years	Positive Returns	-6.2%[4]	4.4 years
Australian Bank Hybrids	3.7%/3.6%[5]	NA	-26.6%[6]	-17.1%[7]	4.8 years
Global IG Corporate Bonds	1.5%/1.4%[8]	7.1 years	Positive Returns	-18.7%[9]	13.4 years
High Yield Bonds	4.4%/4.3%[10]	3.4 years	-27.9%[11]	-24.7%[12]	5.7 years

The table highlights that many yield chasing strategies suffered substantial drawdowns during Covid-19 – with losses often many multiples of the additional yield on offer. While in many cases, the strong rebound in markets has seen these losses quickly recovered, they are a painful reminder of the risks involved.

Interestingly, there is quite a variation in risk-return across the various sectors. For example, Australian corporate bonds *only* lost 4.4 years excess returns, compared to the much more distressing 13.4 years drawdown for global investment grade credit.

But why? What are the key drivers that make some asset classes more dangerous than others? While inevitably different people might have different views on what represents a 'safe' source of additional yield, it is worth looking at a couple of key drivers. To get to this – you will have to forgive me – but there is some maths.

[2] UBS Credit FRN 0+ Index
[3] Vanguard Australian Corporate Fixed Interest Index ETF (VACF.AX)
[4] Vanguard Australian Corporate Fixed Interest Index ETF (VACF.AX)
[5] Solactive Australian Hybrid Securities Index
[6] Elstree Hybrid Index (as Solactive Hybrid Index has inception date of 1/1/2012)
[7] Solactive Australian Hybrid Securities Index
[8] Vanguard International Credit Securities Index (Hedged) ETF (VCF.AX)
[9] Vanguard International Credit Securities Index (Hedged) ETF (VCF.AX)
[10] Ishares Global High Yield Bond (AUD hedged) ETF
[11] US JNK ETF
[12] Ishares Global High Yield Bond (AUD hedged) ETF

$$\frac{\text{Drawdown}}{\text{Return}} = \frac{\text{Spread Duration} \times \text{Spread} \times \text{\% Ch in Spread}}{\text{Spread}}$$

$$= \text{Spread Duration} \times \text{\% Ch in Spread}$$

There are two key drivers of risk – spread duration and the percentage volatility in spreads.

Spread duration is easy to understand. The market value of longer term instruments is more sensitive to changes in yields. For a given change in yields – the price of a 10 year bond is going to move roughly twice as much as a 5 year bond.

Proportionate spread volatility is more complicated. Why would different assets demonstrate different proportionate spread volatility?

To try and understand this it is important to remember why the spread exists. Spreads exist to compensate investors for the incremental credit risk and liquidity risk of an instrument. Thus, it stands to reason that instruments with more stable credit and liquidity risk should have more stable credit spreads.

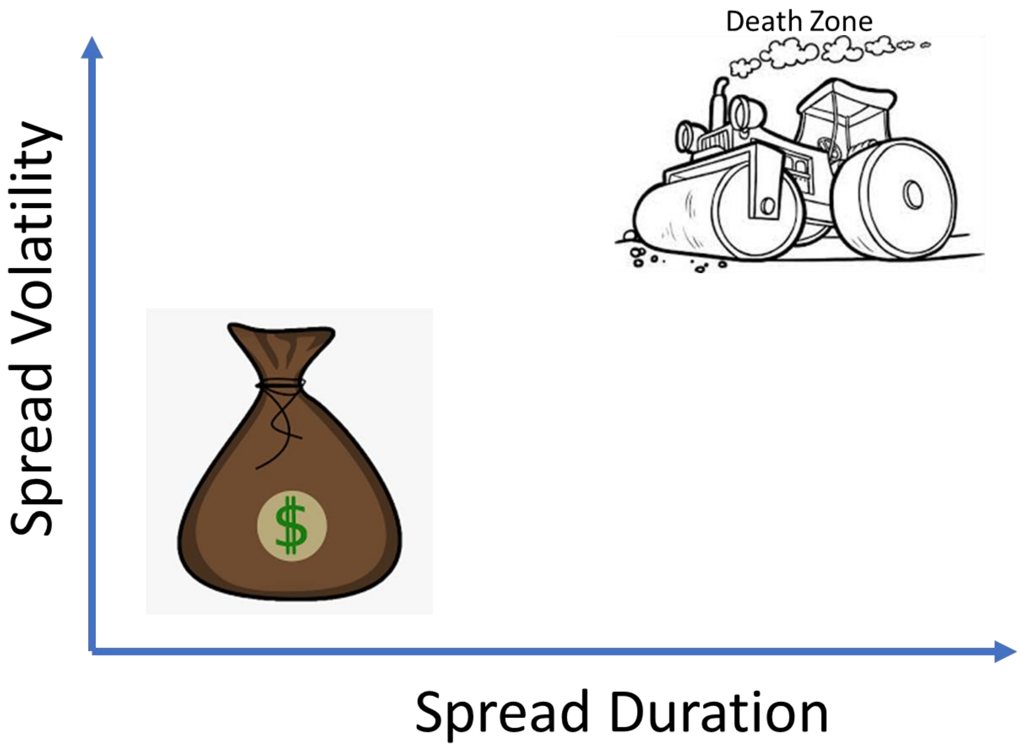
To provide examples of this –

- Structured credit. For these assets, credit risk can depend on the performance of portfolios of underlying risks and securities can be effectively be leveraged to pool outcomes (think of position of BBB tranche versus a AAA tranche in the same pool). For these securities, it is not surprising to imagine a non-linear increase in credit risk during a downturn and, hence, above average proportionate spread volatility.
- Catastrophe bonds. In theory these should be the perfect uncorrelated asset – the incidence of national disasters should be uncorrelated with market downturns. However, this misses the impact of liquidity. Liquidity is related to complexity and catastrophe bonds are highly complex instruments with a narrow investor base. Thus, during a market downturn, when liquidity spreads gap wider, complex/illiquid assets suffer disproportionately.

Bringing this all together, the most attractive yield assets, under this risk/return definition, are going to be those assets with:

- Relatively low duration; and
- Relatively stable credit spreads.

Or, for those who prefer a diagram, the best risk/return trade-offs are to be found in assets that are in the lower left-hand corner of this diagram.


Death Zone
Spread Volatility
Spread Duration