Global Matters 26

Global listed infrastructure – ‘Buy’ time looming?

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4D infrastructure

A Bennelong boutique

The COVID-19 pandemic has very likely pushed the international economy into recession and cut a swathe through global equity markets. From 21 February through to the end of March 2020, the US S&P 500 equity index was down 23.2% and the MSCI World index was down 23.1%.

Listed infrastructure has certainly not been immune to this value erosion, with the infrastructure indices down 18-32% over the same period. This price weakness could continue for a while yet, until it becomes clearer that health authorities around the world are getting on top of the outbreak. However, it is important to remember that infrastructure is a very long duration asset with a 5-10+ year investment horizon. Indeed, once we move past the worst impacts of the virus and the world's economy returns to a more stable environment, infrastructure, in all its forms, will be integral to the economic recovery and returning society to 'situation normal'. There is no global growth recovery without roads, railways, pipelines, power transmission networks, communication infrastructure, ports and airports.

In this paper Sarah Shaw, Chief Investment Officer and Global Portfolio Manager from 4D Infrastructure, revisits listed infrastructure's unique and compelling characteristics, outlining why 4D continues to love the sector and why we believe it will be central to the global economic recovery when it comes. Sarah then provides an overview of how far some of the key infrastructure sectors and stocks have fallen in the COVID-19 equity market sell-off. Blending these two thematics, and given the extent to which the market has already fallen, she concludes that we are indeed at the precipice of a real investment opportunity in listed infrastructure over the coming 6-12 months.

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1. Introduction

Infrastructure as an asset class is increasingly on the radar of investors and their advisers. In the face of the COVID-19 pandemic, we remain optimistic about the prospects for the global listed infrastructure (GLI) asset class in 2020 and beyond. Indeed, we believe infrastructure will be integral to the global recovery on the other side of the current health crisis.

2. GLI's key characteristics and driving global thematics

Infrastructure provides basic services essential for communities to function and for economies to prosper and grow. For us at 4D Infrastructure, this equates to the publicly listed owners and operators of ***essential services*** (regulated utilities in gas, power and water); and ***user pay assets*** (toll roads, airports, ports, rail where a user pays for the service).

Infrastructure's key characteristics

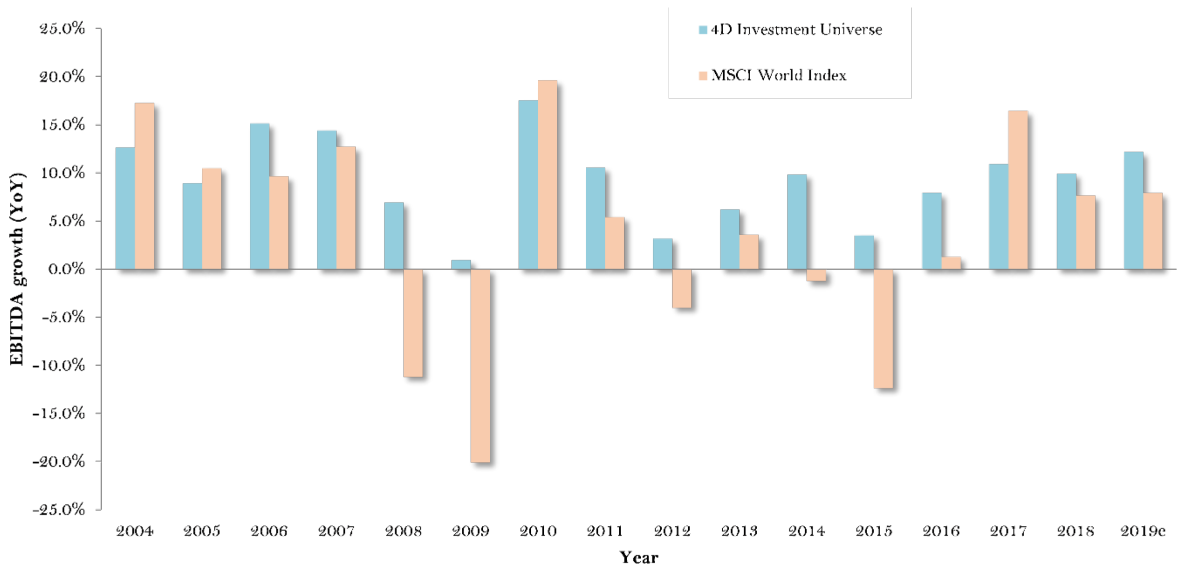
At 4D we look for assets with the following qualities:

- monopolistic market positions, or ones with high barriers to entry;
- returns under pinned by regulation or contract;
- a largely fixed operating cost base;
- high up-front capital costs and then very low ongoing maintenance spend;
- inflation hedges within the business;
- long dated, resilient and visible earnings and cash flows; and
- an attractive yield or potential yield.

It is the combination of the above attributes that sees infrastructure labelled a *'defensive asset class'* with generally lower volatility of earnings and higher yields than broader equities. It is these attributes that attracts investors, including ourselves, to the asset class.

History supports this earnings resilience or *'defensiveness',* with the 4D Infrastructure universe continually reporting positive annual earnings momentum (see Chart 1). This is since 2004 (when listed infrastructure was recognised as its own asset class), so covers periods of economic boom and bust including the debt driven global financial crisis (GFC).

Chart 1: Resilience of EBITDA growth



Source: Bloomberg Consensus & 4D Infrastructure

Two distinct subsets within the infrastructure asset class

Despite all infrastructure assets sharing many of the attractive defensive characteristics discussed above, diversity of sub-sector and region offers the opportunity to actively manage a portfolio for all points of the economic or market cycle. As noted above, infrastructure comprises two quite distinct and economically diverse asset subsets: *Essential Services* and *User Pays*.

Essential Services are the regulated utilities in the power, gas and water space. These assets are largely immune to economic shifts (up or down), as a function of them being:

- a basic need; and
- the structure of their regulatory environment, which measures returns independent of volumes.

These assets are more *'bond proxy'* in nature, particularly over the shorter term. They are more immediately adversely impacted by rising interest rates/inflation and are slower to realise the benefits of economic growth. At the same time, they are less exposed to economic contraction and benefit from lower interest rates. These assets are an attractive overweight investment in depressed economic environments, as they can offer earnings growth and yield support even in weak growth scenarios.

In contrast, ***User Pay*** assets are positively correlated to GDP growth and wealth creation. Typical *User Pay* assets are airports, toll roads, rails and ports, where users pay to use the asset. These stocks capture GDP growth via volumes and often have built-in inflation protection mechanisms through their tariffs. As interest rates/inflation increase over time, this macro correlation leads to earnings upside. This should then be reflected in the relevant stock price and performance. As such, these assets are well suited to growth environments or buoyant economic climates.

Therefore, listed infrastructure portfolios can be actively managed to take advantage of the economic cycle. While a diversified portfolio with exposure to both subsets is always optimal, in tough macro environments *Essential Services* are the preferred overweight as the earnings of these assets generally hold up well due to them being largely immune to the macro environment. In contrast, when there is a solid, growth-oriented economic backdrop *User Pays* are the preferred overweight.

Further, infrastructure offers truly global exposure with assets across developed Asia, Europe and North America as well as emerging markets. This allows investors to capitalise on in-country economic cycles and gain exposure to domestic demand stories. With economic trends currently diverging, certain regions offer better relative upside at present and we can position for this.

We believe infrastructure is truly unique as an asset class in offering this portfolio positioning flexibility.

The long-term structural investment opportunity for infrastructure remains intact

Infrastructure offers defensiveness with economic diversity as discussed above. These attributes, coupled with a significant growth opportunity, create a very attractive long-term thematic for the sector which is intact despite the near-term concerns of COVID-19.

There is a huge and growing need for infrastructure investment globally as a result of decades of underspend, and the changing dynamics of the global population.

Replacement spend

There has been a chronic underspend on critical infrastructure in virtually every nation over the past 30 years, if not longer, which was largely due to governments having other spending priorities. For example, during the GFC the priority was saving the global banking system – not replacing water mains. However, the infrastructure need is now critical. To put this in context:

- over 50% of London's water mains are over 100 years old;
- the 2018 Genoa bridge collapse in Italy has highlighted the age of much of the European transport infrastructure – it was a 'mere' 51 years old. Sadly, since then a further two Italian bridges have collapsed; and
- in the United States, close to 80% of the water pipes are over 30 years old and some are over 100 years old. In some cases, wooden water pipes are still being used by the global 'superpower' to service their communities' water needs.

The photos below are all examples of developed market infrastructure in dire need of investment.

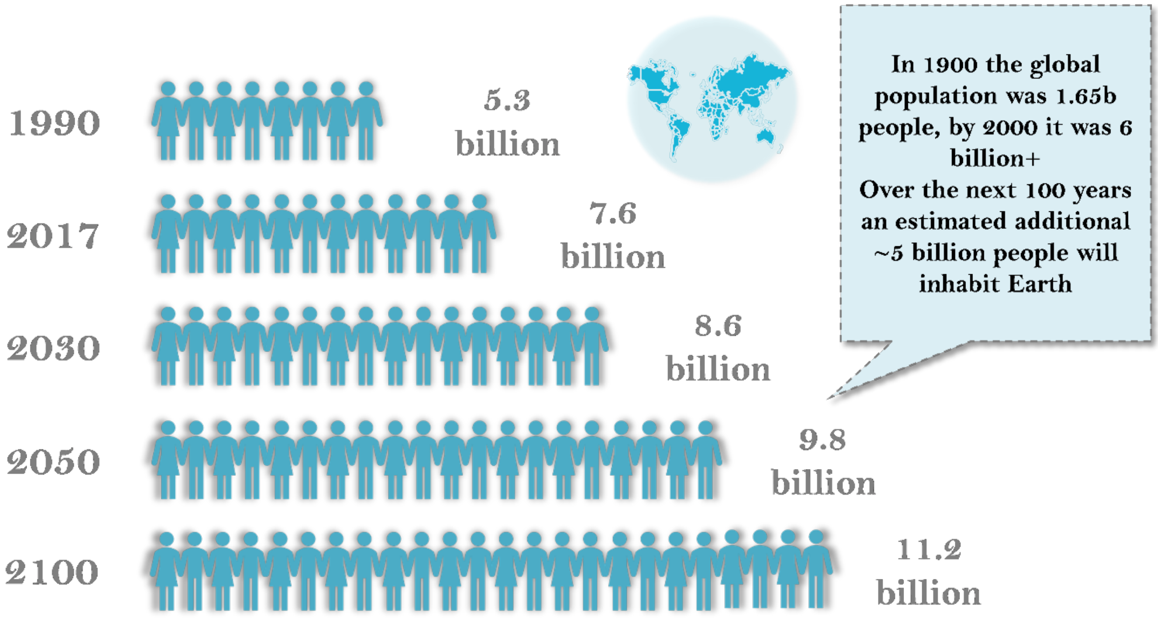
Source: Clockwise from top left corner - Colorado Springs Business Journal (warning sign), Cincinnati.com (bridge collapse), flintwaterstudy.org (aged water pipes), Daily Express EPA (Genoa Bridge collapse 2018), Time Magazine, John Minchillo (East Harlem gas explosion), deeptreckker (European water leakage)

Population growth & environmental considerations

The second driver of the need for infrastructure investment is quite simply population growth. In 1900 the global population was approximately 1.65 billion people, and by 2000 that number had grown to close to 6.1 billion – keeping in mind that some of the infrastructure we are still using today was built to service that 1.65 billion. By the turn of the next century, the global population is expected to be over 11 billion, underpinning the need for yet more spend. As a society we need to first play catch-up, and then invest for the future generations.

Importantly, much of this population growth is coming from the emerging world, where demographic trends are very supportive of economic evolution and infrastructure investment as discussed below.

Chart 2: Projected world population to 2100



Source: UN Department of Economic and Social Affairs, Population Division 2017

This population growth has also raised a number of environmental and climatic challenges that underpin the need for even more spend on infrastructure to ensure the sustainability of the planet. To that end, renewable energy and the coal-to-gas transition are thematics to which infrastructure investors can gain access.

Demographic trends support infrastructure investment

Longer-term demographic trends also further support the infrastructure asset class and the need for investment. While the COVID-19 pandemic may lead to a temporary pause in these thematics, we believe they will re-assert themselves once the crisis is behind us.

The emergence of the middle class, particularly in emerging markets (EMs), is a theme 4D finds very exciting at present, and one we believe will provide enormous opportunity for investors. Given the potential size of the middle class in EMs (China, India and Indonesia alone account for 40% of the global population), changes in spending and consumption patterns will have significant implications for global business opportunities and investment for decades to come.

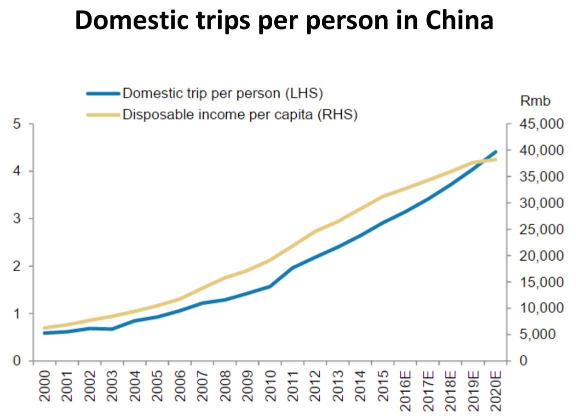
From an individual's perspective, as personal wealth increases in a country (reflected by a growing middle class) consumption patterns inevitably change. This starts with a desire for three meals a day, then moves to a demand for basic essential services such as clean water, indoor plumbing, gas for cooking/heating and power (all this requires infrastructure). With power comes the demand for a fridge or a TV, which increases the need for port capacity and logistics chains (more infrastructure). Over time this evolution progresses to include services that support efficiency and a better quality of life, such as travel – with a demand for quality roads (on which to drive that new scooter and then car) and airports (to expand horizons).

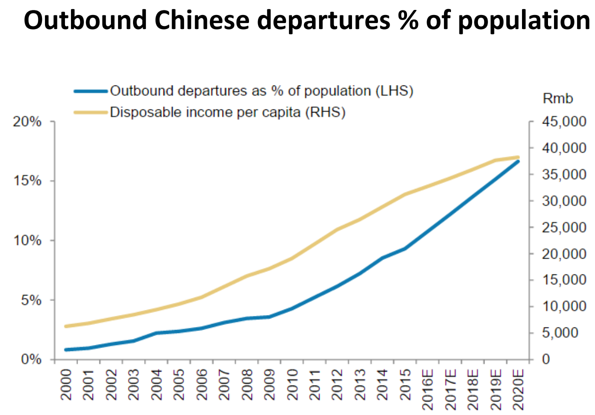
Importantly, one of the clear and early winners of the emergence of the middle class is infrastructure, which is needed to support the evolution. For example, at present only around 10% of the Chinese population has a passport (and less than 5% in India), yet pre COVID-19, airports globally were reporting record passengers driven by Chinese tourists. At the World Economic Forum in Davos last year, the CEO of Chinese travel provider Ctrip, Jane Sun, predicted the number of

Chinese passport holders would grow to 240 million by 2020. At the time, about 120 million Chinese citizens, 8.7% of the population, held a passport. And in our view this is just the start. The theme will re-assert post COVID-19.

Chart 3 shows that as disposable income has grown in China, so too has the amount of travel undertaken by Chinese residents, both domestically and overseas. While this chart is a little old, the trend has continued and post a COVID-19 blip we expect it will continue for years to come.

Chart 3: Rising disposable income/capita in China has had a positive impact on domestic trips/person and outbound departures

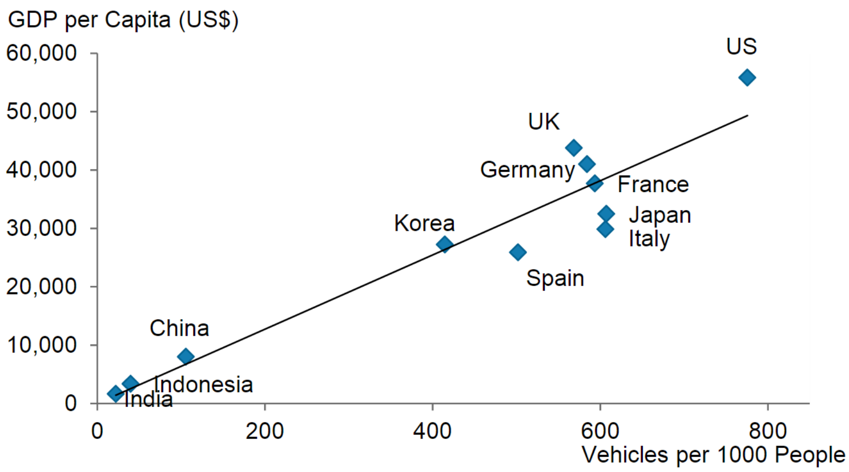




Source: Morgan Stanley Research, Blue paper: Why we are bullish on China, February 2017

A further example of the impact of an expanding middle class is the natural correlation between growth in GDP per capita and vehicle ownership, as shown in Chart 4. China, like India and Indonesia, still has a low level of vehicle penetration. However, as each nation's GDP per capita continues to climb, it can be expected that so too will each country's level of vehicle ownership. Car production can therefore be expected to be strong, as will the demand for new and improved roads.

Chart 4: China/India/Indonesia's auto penetration v other nations 2015



Source: Morgan Stanley Research, Blue paper: Why we are bullish on China, February 2017

From an infrastructure investment perspective, the consequences of this changing demographic are enormous. This includes the domestic demand story within the EMs by way of utility, communication and transport investments, as well as a growing need for new and expanded international (and domestic) airports, toll roads, port infrastructure and utility services more generally.

When you put all these factors together (developed market replacement spend, population growth largely driven by the EMs, and the emergence of the middle class in EMs), the need for global infrastructure investment over the coming decades is clear. It is also clear that governments, the traditional providers of infrastructure, are simply not going to be able to fully fund this need – thereby creating a huge investment opportunity for the private sector over the coming years. That opportunity is a key thematic to which investors can gain exposure, and a thematic not derailed by COVID-19 – in fact, it is in all likelihood increased.

3. COVID-19 – the response so far

What may economic life look like 'on the other side'?

The COVID-19 pandemic has very likely pushed the international economy into recession and cut a swathe through global equity markets. This value erosion could well continue for a while yet until it becomes clearer that health authorities around the world are getting on top of the outbreak and/or a vaccine is developed.

While the health crisis continues, increasing focus is turning to what economic life may look like on the other side. The IMF draws the analogy with a war, where there are two phases. *Phase 1* is the war, where the pandemic is in full swing with mitigation measures curtailing economic activity – this lasts at least 1-2 quarters; and *Phase 2* is the post-war recovery with the pandemic under control. The pace of this recovery will crucially depend on policies undertaken during the crisis. If policies ensure workers do not lose their jobs, renters and homeowners are not evicted, companies avoid bankruptcy, and business and trade networks are preserved, the recovery will occur sooner and more smoothly.

Another characterisation of *Phase 2* is whether we experience a *V-shaped*[1] economic recovery, where the economic policies implemented in *Phase 1* are effective in delivering the outcomes described above; a *U-shaped* economic recovery, where more pain is borne by society in the form of business closures, unemployment etc; or, *worst case*, a deep and prolonged recession or even depression.

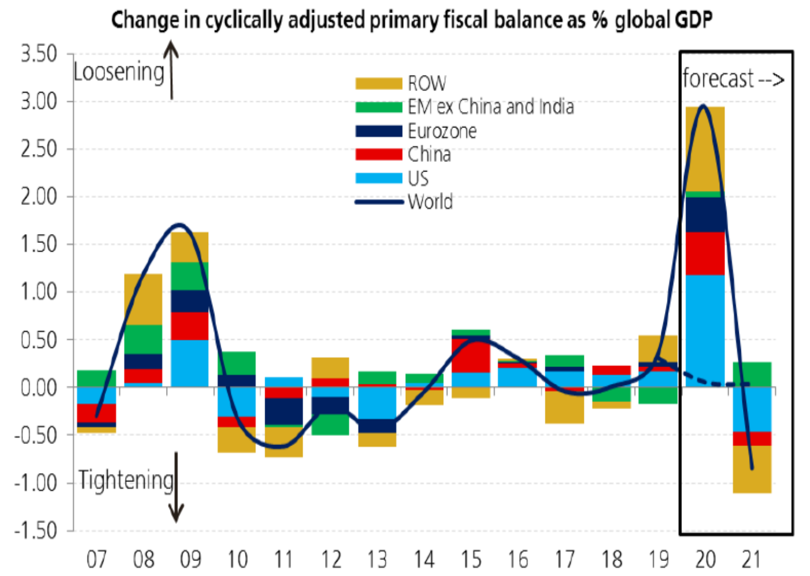
Government stimulus from all corners of the globe

What we do know is the economic response to the COVID-19 pandemic from governments and central banks around the world has been massive and continues to grow. For example, to date:

- UBS, in early April 2020, estimated ***the global fiscal boost in response to the COVID-19 crisis at 2.94% of global GDP***, compared to 1.66% during the GFC. Additional fiscal packages are expected;

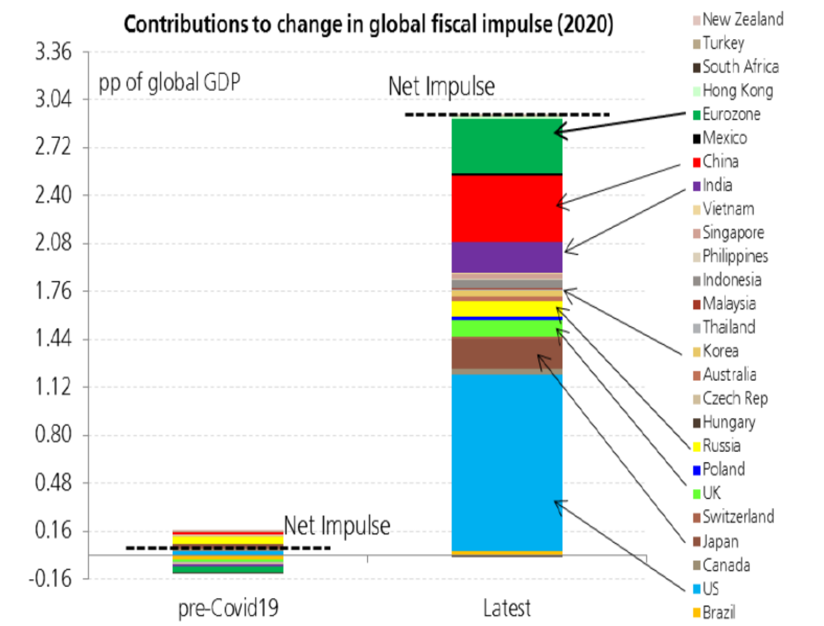
[1] The letter designation (V, U, L, W) to an economic recovery refers to the speed and shape by which certain economic indicators (such as GDP growth) recover from the slowdown. A 'V' shaped recovery suggests a strong, ongoing bounce-back in those economic variables; a 'U' shaped recovery is not as rapid; 'L' shaped suggests a prolonged period of no recovery – potentially a depression; and a 'W' shaped recovery is one categorised by a recovery, then a regression back to negative/low growth, followed by another bounce then regression etc. This is sometimes referred to as a 'double dip' recession.

Chart 5: Change in cyclically adjusted primary fiscal balance as a % of global GDP



Source: UBS, Haver, European Commission, CBO

Chart 6: Contributions to change in global fiscal impulse (2020)

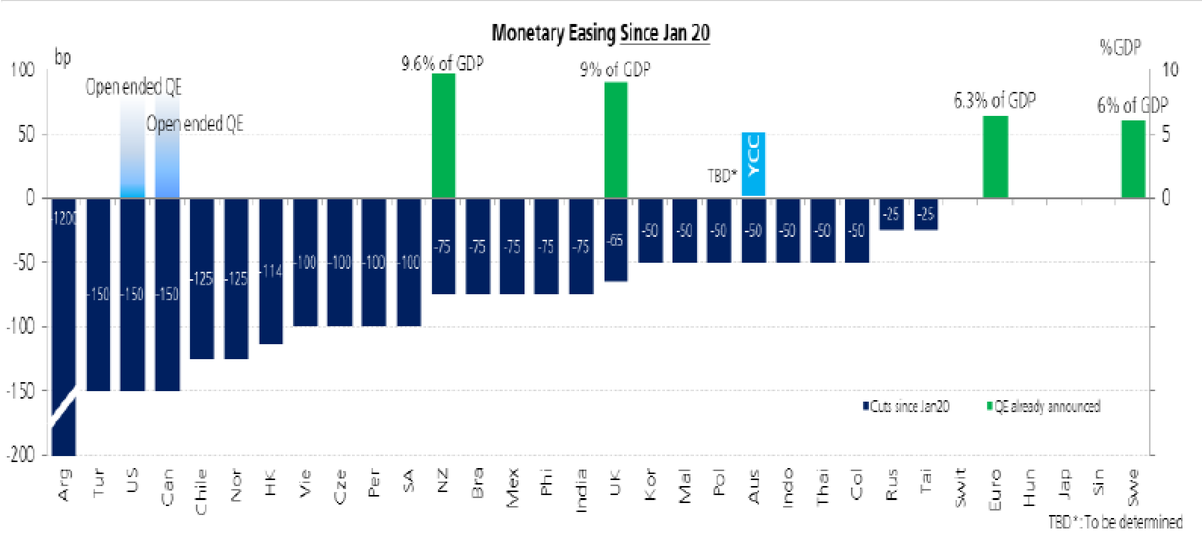


Source: UBS, Haver, European Commission, CBO

- As at 31 March, the ***US Senate had negotiated a nearly US$2 trillion emergency bill*** that aims to counter some of the economic toll of the COVID-19 pandemic;
- ***the US is already talking of another roughly $2 trillion package*** and President Trump is pushing for increased infrastructure spending as part of this new plan;
- ***leaders of the G20 major economies have pledged to inject US$5 trillion*** in fiscal spending in the global economy to blunt the impact of COVID-19 and *'do whatever it takes to overcome the pandemic'*;

- ***Germany has launched a program*** which roughly translates to ***'whatever it takes',*** which suggests the lengths it is willing to go to in order to support its economy and populous;
- ***in Australia, the government has already launched three tranches of stimulus*** which, as at the end of March, represented A$320 billion in economic support, or 16.4% of GDP;
- ***there has been a strong global monetary response*** with, for example, the US Fed cutting interest rates, massively expanding its repo operations and re-initiating QE with the purchase of US$500 billion in treasury bonds and US$200 billion in mortgage backed securities; and
- faced with interest rates at zero, ***a number of other central banks have launched new QE programs*** since January 2020.

Chart 7: Rate cuts and QE since January 2020



Source: UBS, Haver

While it is too early to tell what the above combination of policies will deliver, it appears to us that, collectively, governments are targeting at least a 'U' and preferably a 'V' shaped recovery. On 6-7 April 2020, Focus Economics surveyed 77 institutions. Most see a global recession lasting two quarters, with 88% expecting a 'U' or 'V' shaped recovery, 7% expecting an 'L' or 'W' shaped recovery, and 5% 'other'.

On 14 April 2020, the IMF released their updated global growth forecasts as shown in Chart 8 below. The IMF believes the *'Great Lockdown'* recession will be the steepest in almost a century and warned the world economy's contraction and recovery could be worse than anticipated if COVID-19 lingers or returns. In its first World Economic Outlook report since the spread of the virus and subsequent freezing of major economies, the IMF estimated that global GDP will shrink 3% this year. That would likely mark the deepest dive since the Great Depression of 1929-33. However, the IMF anticipates strong growth of 5.8% next year, but it cautioned risks are tilted to the downside. Much depends on the longevity of the pandemic, its effect on activity and related stresses in financial and commodity markets.

Chart 8: IMF Global growth projections

The COVID-19 pandemic will severely impact growth across all regions.

(real GDP, annual percent change)	2019	PROJECTIONS 2020	2021
World Output	2.9	-3.0	5.8
Advanced Economies	1.7	-6.1	4.5
United States	2.3	-5.9	4.7
Euro Area	1.2	-7.5	4.7
Germany	0.6	-7.0	5.2
France	1.3	-7.2	4.5
Italy	0.3	-9.1	4.8
Spain	2.0	-8.0	4.3
Japan	0.7	-5.2	3.0
United Kingdom	1.4	-6.5	4.0
Canada	1.6	-6.2	4.2
Other Advanced Economies	1.7	-4.6	4.5
Emerging Markets and Developing Economies	3.7	-1.0	6.6
Emerging and Developing Asia	5.5	1.0	8.5
China	6.1	1.2	9.2
India	4.2	1.9	7.4
ASEAN-5	4.8	-0.6	7.8
Emerging and Developing Europe	2.1	-5.2	4.2
Russia	1.3	-5.5	3.5
Latin America and the Caribbean	0.1	-5.2	3.4
Brazil	1.1	-5.3	2.9
Mexico	-0.1	-6.6	3.0
Middle East and Central Asia	1.2	-2.8	4.0
Saudi Arabia	0.3	-2.3	2.9
Sub-Saharan Africa	3.1	-1.6	4.1
Nigeria	2.2	-3.4	2.4
South Africa	0.2	-5.8	4.0
Low-Income Developing Countries	5.1	0.4	5.6

Source: IMF, *World Economic Outlook*, April 2020

However, it is important to remember that once we move into the economic recovery phase, infrastructure in all its forms will be integral to that recovery and returning society to *'situation normal'*. There is no global economic recovery without roads, railways, pipelines, power transmission networks, communication infrastructure, ports and airports. Accordingly, and given the market correction we have seen to date, we believe we are indeed at the precipice of a real investment opportunity in listed infrastructure over the coming 6-12 months as the global recovery unfolds.

Lower global interest rates: supportive of valuations and infrastructure 'bond proxies'

We have previously published several articles on our analysis of the relationship between infrastructure assets and interest rates, which we addressed briefly above and summarise as follows.

- In *rising* interest rate environments the traditional *Essential Services* assets, or *Regulated Utilities*, is the sub-sector within infrastructure that is most negatively impacted (at least over the short term). In many cases utility returns can be squeezed as interest rates move higher due to the regulated nature of their returns. For a *Regulated Utility* to recover the cost of higher inflation or interest costs, it must first go through its regulatory review process. This involves making submissions to the regulator, arguing that prevailing economic conditions have changed and that they should be entitled to recover those increased costs via increased rate charges to their client base. While a regulator is required to have regard for the changing cost environment the utility faces, the process of submission, review and approval can take some time. In addition, the whole environment surrounding costs, household rates and utility profitability can be highly politically charged. As a result, both the regulatory review process and the final outcome can at times be unpredictable.

- Further, utility stocks are often priced in the market based on the differential between their yield and the market's risk free (Rf) rate. Therefore, in a *rising* interest rate environment, as the Rf rate rises so too must the *Regulated Utility*'s market yield in order to maintain the Rf/yield relationship that the market seeks. All other factors held constant, this is achieved by a fall in the share price of the *Regulated Utility* asset while its dividend payout is held constant. This is the so called *'bond proxy'* relationship.
- In contrast, our analysis has shown that in *rising* interest rate environments *User Pay* assets tend to hold up reasonably well as they typically have built-in inflation protection in their concession deeds and are capturing the buoyant environment which has predicated the rate rise.

Of course, in the current environment we are in a period of *falling interest rates* or at least a period of *lower for longer*. Lower interest rates are supportive for all infrastructure investment. For the opposite reasons to the points we made above regarding *Regulated Utilities* in a rising rate environment, falling interest rates will be supportive of their earnings and share price as the gap between regulated returns and real costs widens (along with the yield dynamic).

All things equal, we also expect *User Pay* assets to hold up well in a low interest rate environment simply because their cost of funding and the Rf rate used by the market to value their future cashflows will both be lower which, using a traditional discounted cash flow (DCF) valuation methodology, translates into a higher stock price valuation. However, this is not an all things being equal environment, as COVID-19 will have a direct and sharp earnings impact on *User Pay* assets as quarantine arrangements play out. This will impact near-term earnings and create downward pressure on valuations. The lower interest rate environment will mitigate some of this valuation downside. We take a closer look at this dynamic in the appendix, but believe share prices have reacted drastically to the near-term earnings shock and we suggest have over-sold.

Are infrastructure companies feeling a liquidity squeeze?

Importantly, solid well-managed infrastructure companies are not feeling a liquidity squeeze at present, with reserves in place and balance sheets in strong starting positions (in many cases much stronger than prior to the GFC). Companies are communicating robust liquidity positions, including even the hard-hit airport sector, which should sustain them through COVID-19 into 2021 and beyond.

Prudently, some companies are cutting dividends in order to further improve available cash, as well as appease social expectations from domestic governments. However, these are not what we would call forced cuts but rather a sensible reaction to a very uncertain environment.

Management teams are also taking the opportunity of open credit markets and low interest rates to secure financing from both financial institutions and the bond markets to ensure ongoing liquidity through the COVID-19 period. Despite near-term uncertainty around economics and the duration of the pandemic, the underlying fundamentals of these assets remain attractive to debt investors which should go some way to reassuring equity investors. This is particularly true given that, during the GFC, debt markets were generally far better indicators of pending market problems than were equity markets.

There are numerous recent examples, across both utilities and user pay stocks, of successful debt raisings, including those below.

Recent debt raisings by GLI companies

Date: 2020	Transaction
26 March	French airport group ***ADP*** issued a total of €2.5 bn via 2 bonds – the first a 6.5 year bond for €1bn with a fixed coupon of 2.125% pa (300bps over mid-swap rate) and the second a 10-year bond for €1.5bn with coupon of 2.75% pa
31 March	US tower operator ***Crown Castle*** issued 2 bonds which together raised US$1.25bn – the first US$750m was for 10 years at a 3.30% pa coupon, and the remaining US$500mn was for 30 years at 4.15% pa
March	US utilities such as ***AEP Corp*** have raised US$1bn in credit facilities, ***Union Electric*** raised US $465mn in senior notes at a spread of 221bps/2.95% annual coupon
1 April	Spanish utility ***Iberdrola*** issued a 5-year Green Bond for €750mn at a spread of 115bp/coupon of 0.875% pa – this offer was over-subscribed by more than 11 times, which allowed the company to narrow the spread from a guidance range of 130-170bps
1 April	Spanish airport group ***AENA*** secured an additional €1.08bn in financing from various financial institutions for a period of between 1-4 years to sure-up its liquidity position – available cash and credit facilities now stand at ~€2.5bn
1 April	Canadian midstream operator ***TransCanada*** issued a 7-year C$2bn bond at a spread of 243bps over the Canadian Govt Bond, equating to a coupon of 2.98% pa. The company also narrowed the pricing from original guidance of +325bps
1 April	German utility ***EON*** issued a 7.5-year Green Bond for €750mn with an overall coupon of 1% pa/130bp spread, and was 8x oversubscribed
1 April	Australian toll road operator ***Transurban*** issued a €600mn 10-year bond priced 'below current debt maturities'
1 April	Australian listed toll road operator ***Atlas Arteria*** issued a €500mn 7-year bond at a spread of 150bp/coupon of 1.25% pa
9 April	UK regulated utility ***National Grid*** issued a £400mn, 20 year bond with a coupon of 2% pa

Source: 4D Infrastructure

Unlisted infrastructure revaluations versus listed equity falls – who has it right?

There has long been discussion in the market about the relative volatility of listed infrastructure assets compared to their unlisted peers. Interestingly, over short-time frames, the correlation between listed and unlisted valuations is often very low – keeping in mind that we are talking the same type of asset if not the same exact asset. However, over longer periods the correlation has proven to be higher. This is a function of listed equities being priced daily versus unlisted valuations which are adjusted less frequently (e.g. quarterly/annually), as well as some subjectivity allowed by managers/valuers of unlisted assets.

As a result of the COVID-19 global contagion, equity markets have fallen on average over 20%, with listed infrastructure down a similar amount, but with hard-hit sectors such as airports down over 35%.

Unlisted infrastructure players have also recently assessed the impact of COVID-19 and adjusted their asset valuations down, but by a much smaller percentage than the listed market falls. For example, press reports:

- Australia's *Unisuper* has cut the value of its holdings in unlisted infrastructure by 6% (this investment portfolio includes the Brisbane and Adelaide airports); and
- *AustralianSuper*, the nation's largest super fund, has cut the value of the unlisted assets on its books by 7.5% (which includes infrastructure).

We believe the real fundamental valuation impact on these assets of the COVID-19 pandemic is more closely aligned with the unlisted valuation shift. There is clearly a significant near-term earnings impact for some of the infrastructure sectors, namely airports, toll roads and other *User Pay* sectors that justifies a cut to valuations. However, the fundamentals of the stocks/sector suggest the listed market has completely oversold these assets on what 4D considers to be an event-driven earnings shock. We believe this will prove to be a buying opportunity for these assets if investors can look through the near-term earnings hit.

Take an airport as an example. The grounding of flights has an immediate impact on revenues and, given airports are a high fixed-cost business, the impact to the bottom line is even greater. This impact is clearly real and warrants a correction in valuations. What should that correction be? Any investor valuing an airport on a one-year price-to-earnings (PE) multiple will be slashing their target prices as the one-year earnings outlook of the airport is dramatically cut. However, as we said at the outset, infrastructure is a very long duration asset class, with a 5-10+ years investment horizon. Accordingly, 4D (along with other infrastructure investors) values these assets using a long-term DCF methodology to determine an intrinsic fair value for the stock. While a one-year earnings (cash flow) hit will impact this valuation, for 50/60/75-year duration assets a one-year hit does not justify a 35% drop in value. Our view is premised on the fact that this is an event-driven earnings shock, not a long-term structural industry shift. We believe that while COVID-19 is causing significant disruption and earnings impacts globally, it will resolve and life will return to a new normal. We also believe the long-term structural opportunity for airports remains intact and very strong – traffic will recover and with it, earnings.

We believe this widening value disconnect between listed and unlisted valuations represents a significant opportunity for listed infrastructure investors.

4. 'Buy' time looming?

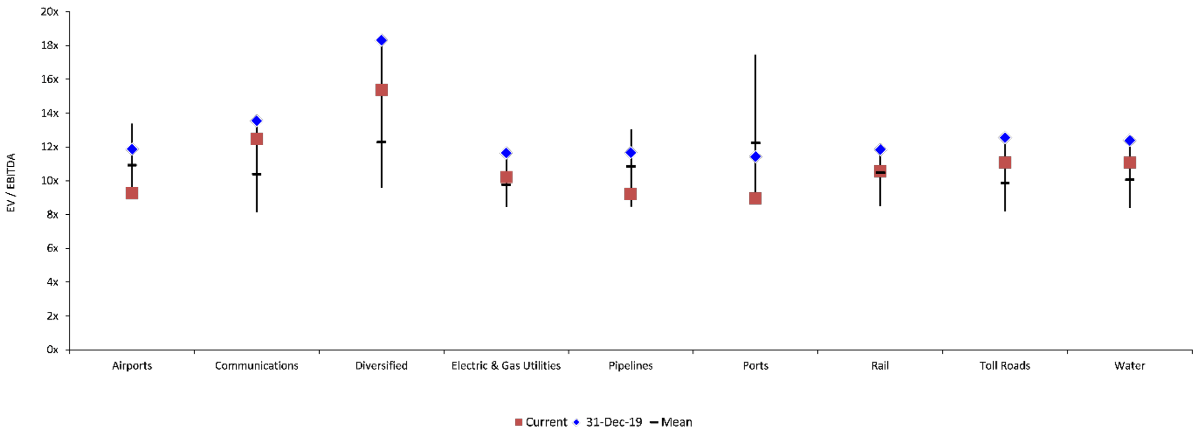
At 4D, we believe the combination of attractive fundamentals, long-term thematics (as discussed above), the COVID-19 response (also addressed above) and currently very attractive stock prices represent a unique buying opportunity for listed infrastructure.

Attractive entry point

While we believe the intrinsic value of infrastructure assets is best represented by DCF modelling, it is worth highlighting that, on a multiple basis, listed infrastructure stocks are trading at the low end of their historical trading ranges. As the charts below reflect Bloomberg one-year forward consensus data, we expect further earnings revisions to forecasts for certain sectors.

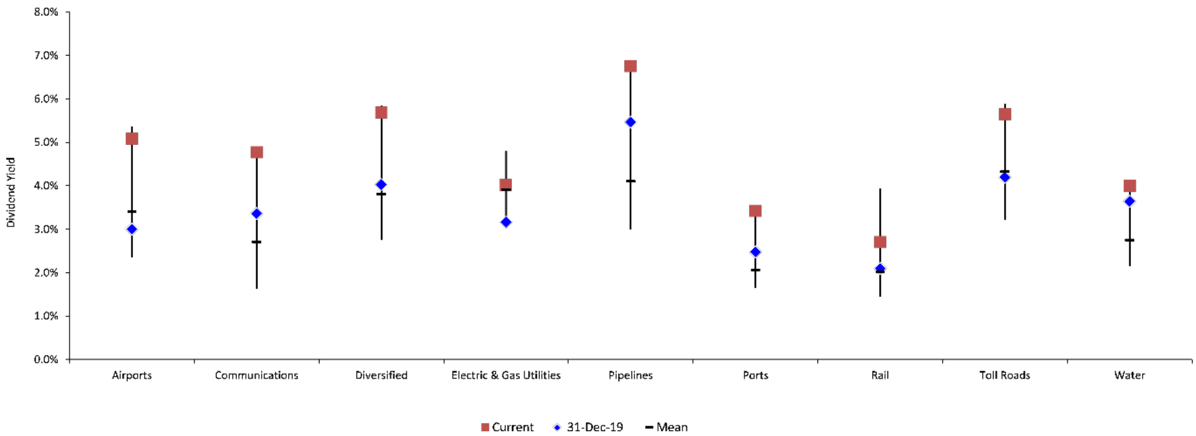
However, we do believe it highlights the attractiveness of the infrastructure universe at this point in time, which is further enhanced by the current dividend yields on offer reflected in Chart 10 below. This is particularly true when you consider where these sectors were sitting at 31 December 2019 (as depicted in the blue dots on the charts below relative to now, the red dots).

Chart 9: 10-year average EV/EBITDA multiples



Source: Bloomberg as at 31 March 2020, using 1-year fwd consensus forecasts & 4D Infrastructure

Chart 10: 10-year average dividend yields



Source: Bloomberg as at 31 March 2020, using 1-year fwd consensus forecasts & 4D Infrastructure

To illustrate the extent of the present investment opportunity, the 4D research team has provided a summary of the impact of COVID-19 on their coverage universe (see the appendix) in order to demonstrate just how much recent share price movements have impacted them and where the most attractive opportunities lie.

So, to bring all the above arguments together, we believe this is a time to refrain from panic, and employ what Berkshire Hathaway's Charlie Munger describes as *'sit on your ass investing'*, while taking advantage of any extraordinary opportunities the market might offer.

5. Conclusion

We believe the COVID-19 issue will pass, but not without obvious and significant personal and economic pain including its impact on global growth. Some of the world's best and brightest medical research minds are focused on developing a vaccine. The reward for success is likely high in both financial and global recognition terms.

The virus has clearly caused considerable economic damage and seen equity markets fall by over 20% to the end of March. However, we believe this has created a unique investment opportunity in GLI. Once the virus is contained and/or a vaccine developed, we believe the current pandemonium surrounding daily life will ease. While we have not yet reached that point, when we do the impact of the massive global monetary and fiscal policy response will show, driving up global economic growth. Global infrastructure will be fundamental to that growth, and we expect asset values to respond accordingly. As stated at the outset, there is no global growth recovery without roads, railways, pipelines, communication infrastructure, power transmission networks, ports and airports. These assets are currently offering very attractive value to investors willing to be patient and work through the ongoing turbulence that we are likely to see for a few months yet.

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Appendix – Why 4D believes the 2020 equity market sell-offs have been overdone

These tables highlight some of the investment opportunities we believe are emerging in the infrastructure sector as a result of the recent market sell-offs.

Equity Market Indices 21 February to 31 March 2020 Performance			
MSCI World Index (GDDUWI Index) [US$]	-23.1%	**S&P Global Infrastructure Index (SPGTINTR) [US$]**	-31.7%
US S&P 500 (SPX Index) [US$]	-23.2%	**4D Investment Universe (Equal Weight) [A$]**	-18.2%
Australian ASX 200 (AS51 Index) [A$]	-28.2%	**AUD/USD**	-7.3%
FTSE 50/50 Infrastructure Index (FGCIICAT) [A$]	-18.2%		

4D Infrastructure Sectors/Stocks February/March 2020 Performance*		
4D Sector/Stock Perf 21 Feb to 31 Mar 2020	**Commentary**	**Notes**
Global Utilities -20.1%	Global utilities have not been immune to the equity market sell off. We believe the sell off has been very much overdone. These assets offer earnings resilient to economic activity as a function of them being a basic need as well as the structure of their regulatory environment which measures returns largely independent of volumes/economic activity. Not to ignore the potential fundamental negatives though. Commercial and industrial customers could be impacted by lower demand reducing energy utilisation delivered by utilities which could temporarily reduce utility earnings, but this is a short term impact corrected by the regulatory model over time. We believe this is a buying opportunity for the sector but have looked at regional impacts and outcomes below.	Strong buying opportunity for pure play regulated Utilities as a result of limited economic exposure, and low/falling long term interest rates creating valuation upside.
Canadian Utilities -19.5%	Canadian utilities sell off over done: 1) quality of earnings with limited exposure to changes in GDP; and 2) growth in earnings tied to replacing aged infrastructure and accommodating changes in electricity/gas infrastructure (e.g. increasing renewables).	Buying opportunity in line with sector opportunity set.
US Utilities -21.1%	US utilities have been heavily sold off. US utilities have little direct exposure to reduced economic activity or GDP growth and there are other factors that, on balance, support US Utility valuations: 1) Lower energy/commodity prices as a result of COVID-19 are a pass through for utilities, so reduce customer bills while not impacting gross margins. Reduced customer bills should facilitate more investments and shareholder value (e.g. Sempra Energy has stated that reduced gas and energy costs will contribute to greater investment in the network, driving rate base growth (9% to 2024) and earnings growth); and 2) US Treasury bond yields are down (10yr @0.63%; 30yr at 1.24% as at 6 April 2020) which is supportive of Utility valuations.	Buying opportunity in a sector that has until recently looked relatively expensive. Extended low commodity prices would be supportive of customer bill headroom to facilitate further investment for those companies where fuel is a pass through.

European Utilities -21.0%	As with their North American peers, the European utilities look oversold despite strong earnings profiles largely immune to economic activity. Leading the sell off were the Italian utilities post COVID-19 arriving in the continent via Italy. The largest near-term risk to this sector is increased government intervention or social policy, e.g. the French government is pressuring companies to cancel dividends and in Spain a new social policy restricts utilities from terminating non-paying customers and has extended the social tariff. However, these measures will have limited impacts on valuations.	Buying opportunity for regulated assets.
E.g. Italian Utilities -23.2%	Italian stocks including utilities have sold off heavily as the country has struggled to get on top of COVID-19. The outbreak has been predominantly concentrated in the Northern Region, with Lombardy the worst affected. This region is the economic heartland of the country, responsible for ~50% of Italian GDP. The utility sell off feels like an overreaction by the market, given utilities: • have either no or very little exposure to economic activity and GDP. For example, pureplay utilities like SNAM have over 90% earnings from regulated activities and are largely insulated; • other utilities operate outside the badly impacted North (ACEA has over 80% regulated EBITDA in the capital Rome, which is located in the less affected south of the country but has not been immune to the sell off); and • the Italian Government has set up a €1.5bn fund to help customers meet utility bills which in turn supports utility cash flows.	Italian Utilities are looking very attractive at present. They benefit from a consistent regulatory framework, high rates of regulated returns, strong management teams and superior valuations supported by high yields. This is a fundamental buying opportunity.
EM Utilities -22.6% **E.g. Brazilian Utilities** -29.7% **E.g. Chinese Gas Utilities** -15.1%	The EM utilities have been mixed with those with: 1) commodity exposure; and/or 2) weaker balance sheets selling off dramatically, while those with strong balance sheets and supportive regulatory environments have held up better than the market. Brazilian utilities (as a group) look attractive, with earnings either contracted or regulated, government supportive of increased investment, privatisations on the agenda and balance sheets to support volatility and increased investment. They look significantly oversold. Have held up relatively well as China sees the light at the end of the tunnel as regards COVID-19. While the gas utilities reported volume declines of 10-12% in January and February, by the end of March indications are that volumes are rapidly recovering. While companies are anticipating a resurgence in demand, they are closely monitoring the global response and overall economic impact of COVID-19.	4D is looking for quality in an uncertain economic environment, so we continue to target those companies with strong balance sheets and regulated earnings.
Developed Asian Utilities -9.9%	Developed Asian utilities have held up pretty well relatively. As with global peers, Australian regulated utilities have earnings effectively underpinned by regulation and are not directly impacted by the COVID-19 outbreak. Interestingly the Hong Kong regulated utilities (HKEI & CLP) have also remained relatively resilient since the COVID-19 outbreak, despite the early impact.	Attractive entry points in Australia.
Canadian Midstream	Canadian midstream share price volatility is overdone due to perceived correlation with the oil price, which has been considerably weaker since late February, hitting $20 during March. Any volatility in	Recognising the likelihood of near- term volatility we see this

-48.2%	the oil price has limited fundamental impact on Canadian midstream because the majority of earnings are contracted. This is typified by 4D's portfolio holding in Enbridge, which has 98% of its cashflows contracted with 93% of its cashflows with investment grade counterparties.	weakness as an ultimate buying opportunity - Canadian midstream is more conservatively levered (than US peers) with a high proportion of earnings contracted. Monitoring closely.
US Midstream -41.6%	Huge sell-off in US midstream as a result of low commodity prices. Low commodity prices may directly impact some midstream companies' earnings if their contractual structures have commodity exposure. However, the stocks that 4D identifies for investment have significant protections, such as: 1) contracted, fee based earnings with little direct commodity exposure and often with minimum volume protections; 2) operate in preferred basins with low wellhead costs so producers continue to drill at low commodity prices; and 3) have stronger balance sheets able to withstand earnings shocks without the need to raise cash or reduce dividends. *Please refer to our recent Global Matters: The impact of the oil shock on North American midstream assets*	Ultimately a buying opportunity for midstream companies with strong yields and that have demonstrated earnings strength in previous low commodity environments (such as 2015-2016). However, it is clear that the overhang from low commodity prices (rather than earnings) will continue to affect share prices over the short/medium term, and while we see significant fundamental value we are monitoring the market moves closely before adding.
E.g. Cheniere Energy -33.8%	Cheniere has sold off significantly as a result of: 1) the fear of lower global LNG prices impacting earnings; 2) the possibility that counterparties will attempt to break/renegotiate contracts; and 3) diminished possibility of contracts for new projects being signed. Cheniere is protected by take-or-pay contracts, with little commodity exposure and investment grade contract counterparties, which typically covers 90% of Cheniere's LNG capacity on each train developed. As Cheniere delivers operational LNG trains early, volumes produced prior to the commencement of the contracting period are sold on global markets at prevailing prices. In 4Q19 reporting, Cheniere management outlined that 72% of Cheniere's current volumes were under contract, and the price for the remaining 28% of uncontracted volumes are hedged through 2020. The proportion of contracted volumes will increase over time as trains enter their contracting period until reaching the 90% contracted position. Cheniere management has insisted that their take-or-pay contracts are legally solid and there is no opportunity for off-takers to break them without compensation to the company. Recently, Naturgy indicated to Cheniere that it would not take a ship delivery but is still required to fully compensate the company under the contract. Cheniere is in continued discussions with potential customers in filling the remaining 2.2Mtpa of capacity unallocated on the proposed Corpus Christi Phase 3 development (total 10-11 Mtpa of capacity). This process may take slightly longer than expected, but shouldn't interrupt the delivery date which isn't expected until post 2023.	Despite Cheniere already being a top 10 position for 4D, this will represent a strong fundamental buying opportunity because: 1) there is nothing to suggest that counterparties can legally break existing contracts; 2) Cheniere is not exposed to low commodity prices throughout 2020, and only has around 20% exposure thereafter - it requires a prolonged period of low commodity prices to have any impact on earnings; and 3) business development for Corpus Christi Phase 3 is still progressing with only a small amount of capacity to fill to achieve Final Investment Decision (FID). There is plenty of time to do so with delivery not until post 2023.

Global Airports -38.2%	There has been a huge sell off in global airports on the back of COVID-19 as passenger volumes move towards zero for the immediate future as a result of quarantines and border closures grounding planes. This will have a fundamental impact on 2020 earnings profiles for the global airports, although some are impacted more than others at this stage of the virus contagion. This earnings impact will be compounded by any sustained economic deterioration as airports are an economically sensitive sector. On a positive note, lower commodity prices will provide some support to airlines (lower fuel prices) for a period. However, the sell off to date has been severe and we believe is an over-reaction. It must be remembered that these assets have very long concession lives, or are perpetuity assets, with strong balance sheets (on balance) and in some cases regulatory frameworks that will ultimately address the traffic deterioration within the regulated arm of the business (e.g. Mexico). To lose close to 40% of value is clearly a response to a short-term earnings shock, not fundamental value. Importantly, history tells us that when the 'event' resolves air traffic rebounds very quickly. This sector will remain volatile as the globe works through COVID-19, but is also offering incredible value at these levels.	Having stress tested models based on significantly reduced 2020 passenger volumes, we believe the sell off has been overdone. This is a fundamental buying opportunity for quality names that should see a significant re-rating once the virus is contained. We recognise there is likely ongoing short-term stock pressure and will monitor this and ultimately use the weakness to add.
Global Toll Roads -27.6%	Toll roads are economically sensitive stocks but are more domestically driven than airports. The direct impact of COVID-19 on the toll road sector comes from quarantine arrangements and as the virus leads to a sustained economic deterioration. On the positive side, truck traffic could increase in the short term (at expense of the consumer) if more online shopping activity results from restricted movement. As with airports though, toll road assets have long concession lives, and a near-term earnings shock does not warrant stocks losing ~30% of value.	Assessing individual stocks on a case by case basis, we see a buying opportunity within this sector.
Chinese Toll Roads -18.8%	Unsurprisingly, the Chinese toll road sector has been sold off on market sentiment coupled with investor concerns regarding the short-to-midterm traffic outlook. These were compounded on 17 Feb when the Chinese Ministry of Transport announced an indefinite toll-free policy for all vehicles nationwide amid the COVID-19 outbreak. Operators face an immediate liquidity crunch, with immediate zero cash inflow from road operations. The rationale behind the cut is to facilitate rapid work resumption and provide strong support for the stabilisation of the overall economic and social situation in China. The government has pledged supportive measures for the toll-road operators, though it's currently uncertain what form this will take and whether this will provide immediate financial support to toll-road operators. Our bear-case analysis assumes the toll-free policy lasts the entire current year (despite consensus views of the most extreme case being until June this year) and no compensation measures (despite government pledge), under which scenario we still see robust fundamental valuation metrics.	Buying opportunity. Even with the implementation of the toll-free policy, our internal stress testing highlights that the sector and our holdings have adequate balance sheet capacity and flexibility to absorb the current situation.
Global Ports -28.2%	This is a relatively small sector and as with other user pays has been sold off on fears of slowing global economic activity. Ports are sensitive to economic shifts and stock fundamentals need to be assessed on a case by case basis. To date we have not seen port closures, as unlike airports they transport goods, not people, and have not been responsible for the spread of the virus. The sector was already relatively cheap on concerns of a slowing global economy and the current situation has compounded the impact. Quality names have been oversold.	Stress testing of models with significantly reduced volumes from reduced economic activity sees the sector under-valued.

Global Rail -15.0%	The global rail sector is dominated by N.American rail and Japanese rail names with small exposures in other countries. Japan has felt the impact of COVID-19 early and this is reflected in the rail stocks, which rely on consumer volumes where quarantine will impact near-term earnings. In North America, economic concerns have been reflected early and we believe are overdone.	Fundamental preference for N.American rail and EM rail names.
North American Rail -22.2% **E.g. Kansas City Southern (KSU)** -27.5%	N.American rail share price volatility is overdone. N.America rail has sensitivity to both local and global GDP. N.America is exposed to imports due to intermodal volumes transporting containers from the port to inland cities (e.g. Chicago) and to exports due to transporting commodities such as grain, potash, coal, etc. Acknowledging N.American rail sector sensitivity and global economic indicators being relatively weak heading into FY20,we believe the recent sell off has been overdone. KSU share price is down 27.5% since 21 February. KSU is a US/Class I rail company with a trunk line along a longitudinal line between US and Mexico. Because of this, the majority of its volumes hauled are intra North America facilitating manufacturing (e.g. automotive, industrial) and energy (e.g. petroleum products) transport across North America (linking Canada, US, and Mexico). While it is difficult to quantify the impact of COVID-19, we expect KSU volumes will be negatively impacted the next few quarters. Quarterly volatility in volumes is commonplace in rail haulage due to supply chain issues and other exogenous variables (e.g. weather, strikes, etc). Importantly, COVID-19 will have no structural impact to the long run investment thesis.	Buying opportunity, no change in view, having already adopted a relatively defensive mindset on N.American rail going into FY20. KSU earnings should hold up due to: 1) advantages of rail over road on cost and security (especially in Mexico); 2) out-sourcing of manufacturing to Mexico due to lower GDP per capita; and 3) proximity to developed markets US and Canada. Hence, this is a buying opportunity although expect near-term volatility as growth outlooks shift.
Communications -16.3%	Communication infrastructure share price volatility is overdone due to earnings tied to: 1) demand for data (e.g. video telephony); and 2) with limited exposure to changes in GDP. We could actually see increased data usage as a result of the virus and associated quarantines, which could see earnings upside.	Significant buying opportunity, communications infrastructure earnings will have little or no impact from changes in economic activity.

** Local currency performance. Sector performance is the average stock performance for stocks in the 4D Core Investible Universe, in the indicated sector, over the indicated time period.*

Source: 4D Infrastructure

The comments in the table above are based on the opinion of the research team at 4D and have been prepared without taking account of your objectives, financial situation or needs. Please consult a professional adviser.