

How inflation-proof is infrastructure?

Inflation has not been a concern of late for investors. But rising prices could become an issue once again given that the US economy is at full employment levels and still growing strongly. In considering the effect of inflation on equities, investors might find that holding global listed infrastructure securities is one way to better protect a portfolio against inflation.

Inflation and asset values

Discounted cash flow valuation assesses the value of any asset as the discounted value of its future cash flows. When discounting cash flows to equity (which shareholders are most interested in), the appropriate discount rate is cost of equity (R_E). While there are variations to determine R_E it can be expressed as:

$$R_E = R_f + \beta(\text{MRP})$$

Here R_f is the available risk-free return (in practice, the yield on a long-term government bond), β is the asset beta (reflecting how sensitive the asset's returns are to the equities market) and MRP is the market risk premium (the additional return achieved by the equities market compared with the risk-free return).

A sustained increase in inflation will typically reduce the value of any company in two ways. Higher bond yields (pushed up by inflation) will increase R_f and thus R_E , reducing the value of future cash flows. The other is from a company perspective; input costs will increase and higher interest rates will increase borrowing costs reducing the level of cash flows.

To the extent that any company is unable to pass through increases in input or borrowing costs, inflation will hamper profits. The extent of the impact will be determined by the company's debt burden and the price elasticity of demand of the company's products or services. Few companies in competitive markets will be immune if inflation accelerates.

Inflation and infrastructure assets

The discussion in this paper assumes a strict definition of 'infrastructure'. Under our definition, two criteria must be met:

- i. The asset must be or behave like a monopoly. (A toll road, for example, faces competition from alternative routes but typically has pricing power and highly inelastic demand similar to a monopoly.)
- ii. The asset must be essential for a community to function.

This definition is important because assets that meet these requirements have predictable cash flows that make them attractive defensive assets.

The main sectors within infrastructure are utilities, toll roads, airports and communications (communication towers, satellites). Each sector exhibits different investment characteristics and reacts differently to inflation.

Utilities

Utilities include electricity transmission (high-voltage power lines) and electricity distribution (urban power lines) and gas transmission and distribution. In most countries, utilities are monopolies. Consequently, a government-appointed regulator controls the prices these entities charge.

The regulator will adjust prices charged by utilities to provide the utility with an appropriate return on invested capital. This process requires the regulator to take into account the changes to borrowing and construction costs, changes to operating costs and changes in value of the assets that utilities own.

The timing of these regulatory resets varies according to the jurisdiction. Generally, the reviews are done annually or at the request of the utility or community groups. The upshot is that the utility is afforded much protection against inflation.

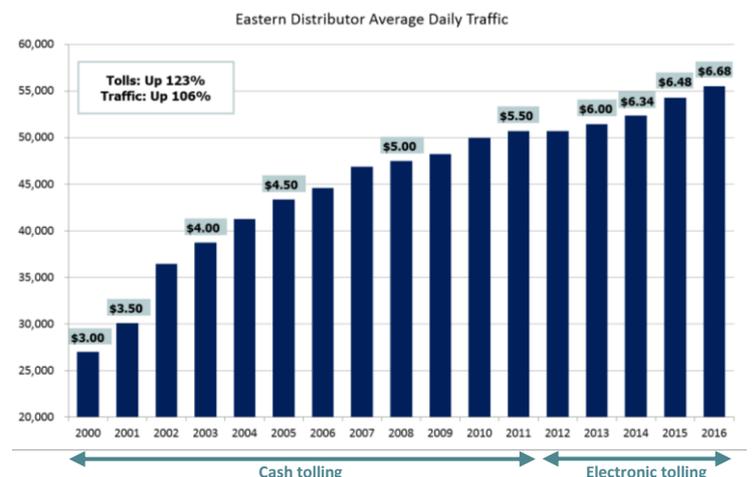
Toll roads

Around the world, the typical business model for a toll road is that a government agency enters into a concession agreement (contract) that entitles the toll road operator to collect tolls for a defined period and increase those tolls on a regular basis in a defined way. At the end of this concession, the road is returned to government ownership in a good state of repair.

In most markets, the toll road is not the only road route available to motorists (although water crossings are an exception). Consequently, the toll road is not a monopoly. However, the toll road generally exists because alternative routes are much slower.

The opening of a new toll road inevitably reduces traffic on the free alternative. But over time, the free alternative can become congested more quickly than the toll road. As that occurs, the toll road behaves more like a monopoly. Chart 1, for instance, shows how demand grew even as toll prices rose on a Sydney toll road between 2000 to 2016.

Chart 1: Price elasticity of toll roads



Source: MFG Asset Management, Transurban.

Note that the above data covers periods when cash tolling was in place. This resulted in tolls increasing in sizeable increments (i.e. 50 cents at a time) in a publicised manner. As toll roads transitioned to electronic tolling, tolls have risen more frequently (quarterly for some toll roads) with little fanfare and no apparent lowering of demand.

As mentioned, the basis on which tolls are increased is controlled by the terms of the concession agreement. There are only two toll roads (the M6 Toll in the UK and the 407 ETR in Canada) of any significance in the western world where the toll road operator has the discretion to boost tolls. All other concessions incorporate formulae that are generally related to inflation. Table 1 provides a typical cross section.

Table 1: Toll road concession agreements

Asset	Location	Basis of toll increases	Frequency
407ETR	Canada	At owner discretion	Discretionary
APRR	France	85% of CPI*	Annually
Atlantia	Italy	70% of CPI*	Annually
Chicago Skyway	USA	Greater of 2%, CPI or Nominal GDP per capita	Annually
CityLink	Australia	CPI	Quarterly
Eastern Distributor	Australia	Greater of 4.1% or basket of 67% AWE and 33% CPI	Quarterly
Indiana Toll Road	USA	Greater of 2%, CPI or Nominal GDP per capita	Annually
M5	Australia	CPI	Annually
M6 Toll	UK	At owner discretion	Discretionary
Western Harbour Tunnel	Hong Kong	CPI	Annually

*Plus an additional allowance for capex.

Source: Underlying operators. As at 30 June 2017.

As can be seen, the pricing mechanism for these toll roads compensates for any increase in inflation with minimal lag. Consequently, the majority of toll roads have the ability to respond to any acceleration in inflation.

But what about the effect of inflation on the costs of running a toll road? One of the key characteristics of toll roads that insulates them from inflationary impacts is their high profit margins (on an EBITDA basis). Table 2 shows the margin for toll roads located around the world.

Table 2: Toll road margins

Toll road	Location	EBITDA margin
407 ETR	Canada	87%
APRR	France	72%
Atlantia	Italy	61%
CityLink	Australia	77%
Eastern Distributor	Australia	75%
M5	Australia	85%
Western Harbour Tunnel	Hong Kong	91%

Source: MFG Asset Management, underlying operators. As at FY2016.

Another area where inflation can be felt is on capital expenditure. For most toll roads, capital expenditure on existing roads is minimal and generally limited to resurfacing and replacing crash barriers, etc. By way of example, Eastern Distributor Motorway, which owns the Eastern Distributor in Sydney (and is itself owned 75.1% by Transurban), generated A\$134 million in revenue in fiscal 2017 and only outlaid A\$7 million in capital expenditure over the 12 months. Such economics are typical of mature toll roads. Thus inflation is of little consequence for capital expenditure for this sector.

Finally, like most infrastructure assets, toll roads are generally more highly geared than most industrial companies. The impact of higher inflation on the debt costs of toll roads is covered later in this paper.

Airports

Airports need to be considered as two businesses. The 'airside' operations primarily involve the management of the runways and taxiways of the airport. Airside revenue is generated by a charge levied per passenger or a charge levied on the weight of the plane or a combination of both. In most jurisdictions, the onus is on the airport to negotiate appropriate charges with the airlines with some form of regulation as a fall-back position. This side of the operation therefore behaves much like a regulated utility. The other business is the 'landside' operation that involves the remainder of the airport. These operations cover three primary areas: retail, car parking and property development.

In most airports, the airport owner does not run the retail outlets. Instead, the owner acts as the lessor and receives a guaranteed minimum rental that is normally inflation linked plus a share of sales. These revenues are therefore protected from a jump in inflation.

The parking operations at the airport generally behave like a monopoly although there is some substitution threat; that is, passengers can use taxis instead of driving. As such, airports have significant ability to increase prices in response to higher inflation. In regard to costs, airport profit margins exhibit much greater variability than toll roads, as evident from Table 3.

Table 3: Airport margins

Airport	EBITDA margin
Sydney	81%
Auckland	75%
Beijing	49%
Copenhagen	57%
Brussels	59%
Zurich	58%
Rome	62%
Bangkok	60%
Venice	47%
Paris	41%

Source: MFG Asset Management, underlying operators. As at FY2016.

Efficient airports such as Sydney and Auckland are more insulated from faster inflation than those (typically European) airports that are struggling to reduce the workforces that were in place when they were privatised. (Even these less-efficient airports still exhibit higher margins than the average industrial company.)

Finally, airports also have the highest capital expenditure requirements of any of the infrastructure transport subsectors. Airside capital expenditure includes widening and extending runways and taxiways. It is generally only undertaken after consultation and agreement with the airlines and regulatory authorities. Over time, airside charges will rise to recover these costs.

Landside capital expenditure relates to increasing the retail, parking and general property leasing facilities. Higher inflation may change the financial viability of such capital expenditure but airports, having an unregulated monopoly in these areas, have the ability to increase prices to compensate for inflation.

Consequently, inflation is unlikely to have much impact on the value of an airport asset.

Other infrastructure assets – Ports and communications

Ports face economics similar to those exhibited by the airside operations of airports. Ports, however, typically face less regulation (or regulatory threat) and thus can increase prices over time to maintain margins. While communications assets such as mobile-phone towers may have some short-term exposure to inflation due to fixed-price escalators in contracts, ultimately these should be mitigated by their strong pricing power that stems from high barriers to entry and an inelastic demand profile.

Implications of high debt levels in infrastructure

Due to the relatively robust and long-term nature of the revenues produced by infrastructure assets, many infrastructure companies can obtain relatively cheap long-term debt. Many infrastructure companies today are well protected from higher rates because they have taken advantage of low interest rates over the past five years to lock in cheap debt for long periods. Atlantia, for instance, which controls much of the Italian motorway system, in January 2017 sold

750 million euros of bonds with a nine-year maturity at a rate of just 1.63% p.a. Zurich Airport recently raised 350 million Swiss francs of bonds with a 12-year maturity at a rate of 0.6214% p.a.

As already discussed, regulated utilities can recover the cost tied to a rise in inflation through the periodic regulatory process. This generally includes the costs of servicing higher interest rates on their debt, thus exposure to interest rates will be limited to the length of time between reset periods. But other infrastructure sectors do not enjoy such automatic linkages. In light of this, management of most infrastructure companies normally swap their floating-rate debt obligations for fixed-rate debt, thereby eliminating (at least until the swaps terminate) any exposure to short-term increases in interest rates. Consequently, the majority of infrastructure companies are well protected from higher inflation.

Table 4: Debt levels and hedging of infrastructure subsectors

Sector	Gearing ¹	% Hedged ²
Toll Roads	65%	87%
Airports	47%	77%
Ports	28%	n/a
Utilities	57%	87%
Water Utilities	67%	96%
Energy Infrastructure	61%	90%
Railroad	50%	100%
Satellite	46%	46%
Telco Towers	65%	50%
Other	65%	100%
Average	56%	83%

¹ Proportionate Debt / (Proportionate Debt + Equity Value).

² Proportion of debt interest rate hedged for next 2 years Magellan Infrastructure Fund portfolio as at 30 June 2017.

Source: MFG Asset Management, underlying operators.

Conclusion

Infrastructure is an attractive investment due to its inflation-linked revenues, low operating costs and consequent high margins. The relatively high levels of debt carried by infrastructure assets are prudently managed and often hedged, muting exposure to movements in interest rates. These characteristics provide an attractive platform for investors seeking a haven in an inflationary environment.

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