A decade after the demise of Lehman Brothers and Washington Mutual heralded the Global Financial Crisis, this White Paper examines how infrastructure, as an asset class, fared during the crisis and its aftermath, and how a subsequent financial downturn might affect infrastructure investments.
Introduction

The past few months have seen a number of retrospectives around the two largest bankruptcies in US history, Lehman Brothers and Washington Mutual in September 2008, and the lessons learnt from the subsequent Global Financial Crisis (GFC). After several years of relatively strong economic growth, concerns are once again rising that the global economy may be headed for a downturn. Financial market volatility, the length of the upswing in the economic cycle in many advanced economies, and the removal of unprecedented expansionary monetary policy are just a few of the catalysts being considered by market analysts for a potential economic downturn.

The next GFC: Economic history may not repeat, but it often rhymes

The GFC prompted a synchronized downturn in the global economy, not observed since the Great Depression almost a century ago. The effects of this downturn are still shaping economic performance and policy, and have left a lasting impact on markets and investors.

The years leading up to the GFC were characterised by strong returns on risk assets in what was a relatively stable environment for economic growth – a situation not too dissimilar to the experience of recent years (but arguably with fewer excesses than a decade ago). The GFC experience demonstrated how quickly a positive economic environment can deteriorate; therefore it is useful to consider what happened then, and what could happen in coming years and the implications for investors.

In the aftermath of the shock to markets in September 2008 following the failure of Lehman Brothers, the US economy contracted by 3.0% year-on-year ("yoy") by the end of 2009, its worst performance since 1949. Due to the dramatically increased integration of financial markets and global economies, the crisis also prompted the global economy to contract 3.5% yoy. Moreover, inflation, which had been accelerating significantly leading into the crisis, subsequently receded rapidly into a potential deflationary environment. Global liquid growth-asset markets sold off aggressively in response to not only the recessionary outlook, but also as global financial markets seized up and liquidity evaporated. Flow to safe-haven assets, including government bonds and cash, increased materially. Policymakers had to respond aggressively with fiscal and monetary policy changes, introducing regulation to allow economies to recover.

Graph 01 and 02 illustrate the shock-like impact of the GFC on world GDP and inflation, and the resulting globally synchronised monetary policy response.

Summary

- Though possessing strong defensive qualities, infrastructure was not immune from the dramatic changes in the macro environment and markets brought about by the Global Financial Crisis (GFC).
- We believe infrastructure assets that weathered the storm relatively well did so through pro-active asset management to mitigate evolving potential headwinds.
- The lessons learned out of the GFC were wide-ranging and plentiful, and these potentially provide valuable insight into ways to mitigate the risk of future economic downturns.
A decade on and advanced economies, in particular, have experienced long and drawn out economic expansions characterised by near-potential growth and below-target rates of inflation. For the most part, especially outside of the US, monetary stimulus has been required to support growth, and this remains the case a decade later.

Central bank stimulus has also been supportive of markets. This was particularly true in recent years when the economic stars aligned to have monetary stimulus growth above trend, but accompanied by few signs of rising inflation. However, this changed in 2018 as growth began to desynchronise and geopolitical concerns came to the fore. Markets and economists alike have become increasingly concerned as to the prospects for growth in 2019 and 2020, with at least a slowdown in growth foreshadowed – with more bearish observers fearing recession. Markets and economists alike have become increasingly concerned as to the prospects for growth in 2019 and 2020, with at least a slowdown in growth foreshadowed – with more bearish observers fearing recession. With economies carrying more public and private debt than the pre-financial crisis period, fiscal metrics still in deficit and monetary policy clearly having less scope to support economies, the policy response will likely have to be a combination of the orthodox and unorthodox.

There seems little doubt that central banks would be forced to keep or return interest rates to near-zero, resume Quantitative Easing and consider concepts such as “helicopter money” (monetising government debt) to support their economies should the cycle deteriorate significantly. While the above scenarios are still uncertain, it is useful to examine how investors may best position themselves should they expect the outlook to deteriorate further.

The challenge for institutional investors is how to position for a potential downturn (a topic that is regularly explored in IFM Investors Economic Updates1) while still looking to maximize returns. Traditionally, investors have moved from equities to government bonds and cash to seek refuge from a recessionary episode. We believe, however, using the GFC period as a real world example, that non-financial assets such as unlisted infrastructure, that have low correlation and volatility compared to listed markets, can potentially provide a better risk-return outcome in the event of a downturn. We are not asserting such a course is appropriate for every investor given potential risks around liquidity, but we believe there is clearly a place for alternative assets to diversify portfolios away from traditional asset class allocations.

The GFC and the infrastructure asset class

The GFC led to a range of adverse economic and financial issues that impacted all asset classes. Although unlisted infrastructure can exhibit an inherent robustness for reasons outlined below, this asset class was not immune from being buffeted by the external investment environment.

Graph 03 compares the performance of unlisted infrastructure since 2005 (the Preqin Infrastructure Index2), listed market indices (MSCI World Equities and S&P Global Infrastructure, both in developed markets) and the J.P. Morgan Global Aggregated Bond Index.

Graph 03
Comparison of Total Returns: Unlisted Infrastructure vs Other Asset Class Benchmarks


1 Available from the IFM Investors Insights section http://www.ifminvestors.com/insights
2 The Preqin Unlisted Infrastructure Index is calculated on a quarterly basis using data from Preqin’s Infrastructure Online product, comprising data from over 200 unlisted partnerships, and representing capital raised of over US$230 billion.
3 Preqin Unlisted Infrastructure Index commenced December 2007.
Table 01 displays the total return and Sharpe ratio (a measure of return-to-risk) of these indices post-GFC. Key observations are:

- The listed indices, including listed infrastructure, suffered more significant corrections during the GFC period than those experienced by unlisted infrastructure, which did show corrections but of a smaller magnitude and with somewhat of a delayed response. Historically, listed infrastructure is more strongly correlated to the broader equity market than unlisted infrastructure;
- In the post-GFC period, unlisted infrastructure has outperformed the listed indices, entailing superior total and risk-adjusted returns (Sharpe ratio);
- The global bond index demonstrated low volatility during and since the GFC, but has produced a relatively weak return below the current risk free rate benchmark, resulting in a negative Sharpe Ratio; and
- The Preqin index shows relatively low volatility, with a post-GFC performance.

The essential nature of the unlisted infrastructure asset class

The characteristics IFM Investors associates with core infrastructure that give these assets the tendency to weather economic storms better than financial or listed assets include:

- Provision of essential services to communities, across energy, water, transport, communications and social infrastructure;
- A competitive position that involves high barriers to entry, monopolistic characteristics and lack of substitutes;
- Long-term, stable revenue streams, often inflation-linked and benefiting from economic growth;
- Investment-grade financing structures in capital intensive investments; and
- Strong margins with low demand elasticity and low operating leverage.

Nevertheless, unlisted infrastructure is not immune from exposure to market risk factors. The onset of the GFC impacted infrastructure in predictable ways (from lower economic growth, lower inflation and contracting credit markets) as well as in some more surprising ways. This is illustrated in the following section, where we provide some anecdotes about our own experiences in this asset class, and some of the asset management actions taken to protect our investments.

It is also noteworthy that not all infrastructure investments and funds remained robust coming out of the GFC. The primary reason that investments failed was due to inappropriate financing structures involving excessive leverage, in the face of revenues which underperformed pre-GFC forecasts.

IFM Investors’ asset management actions during the GFC

IFM Investors had seven unlisted infrastructure assets at the time of the 2008 GFC downturn. (See Figure 01.) Today, IFM Investors retains its holdings in Dalkia Łódź, a Polish district heating plant (a subsidiary of current investment Veolia Energia Polska); Colonial Pipeline, a refined products pipeline in North America; Arquiva, a leading UK communications infrastructure company, and UK water utility Anglian Water Group. Additionally, IFM Investors was invested in North American Energy Alliance (NAEA), a power generation portfolio in the northeast of the US (subsequently named Essential Power, divested June 2016); Wales and West Utilities, a gas distribution network operator in the UK (divested October 2012); and Duquesne Light, an electricity distribution company in Pennsylvania (divested May 2017).

IFM Investors sought to position its investments ahead of any potentially significant adverse event that may have impacted the inherent value of an asset. What was important was that the assets were still doing what we expected good quality, core infrastructure assets to do; namely to operate on a relatively consistent basis, regardless of the wider economic dynamic.

Table 01

<table>
<thead>
<tr>
<th>PERFORMANCE (SINCE 31 DEC 2009)</th>
<th>RETURN (P.A.)</th>
<th>SHARPE RATIO</th>
</tr>
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<tbody>
<tr>
<td>Preqin Infrastructure Index (unlisted)</td>
<td>10.22%</td>
<td>3.27</td>
</tr>
<tr>
<td>MSCI World (developed market listed equities)</td>
<td>7.61%</td>
<td>0.37</td>
</tr>
<tr>
<td>S&amp;P Global Infrastructure Index (listed)</td>
<td>5.78%</td>
<td>0.26</td>
</tr>
<tr>
<td>J.P. Morgan Global Bond Index</td>
<td>2.13%</td>
<td>-0.11</td>
</tr>
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</table>

The key market factors and the extent to which they had an impact on the selected case study assets are described in Table 02. The broadly defensive nature of infrastructure as an asset class, combined with the strong operating performance of these specific assets, helped to underpin the management activities that were required to address the emerging and post-GFC issues. The asset management responses that were undertaken also helped to ensure we had strong support from our end-investors, co-investors and in our banking relationships. In our experience, it is also important to acknowledge that IFM were not subject to any redemption requests with respect to global infrastructure during the GFC period. While we understand some investors would have had need to call on additional liquidity at that time and would have realised cash from more liquid investments, there was (and still is) a general recognition that infrastructure is an illiquid asset class. Here, we believe the alignment between a manager and investor is crucial, as both must be cognisant of the long-term nature and the sustained, active asset management infrastructure philosophy required to manage through a financial downturn.
Ten years on and lessons learnt

Learnings from the GFC prompted IFM Investors to take steps to improve infrastructure investment structures and processes, in order to better protect the portfolio in the event of future downturns. The lessons learned concerning maintaining portfolio resilience through a range of economic conditions include:

- Performing investment analysis with expanded sensitivity analysis and stress testing – For IFM Investors, this included the development of proprietary InFRAME portfolio analysis framework;
- Ensuring prudent levels of leverage using laddered debt maturities – IFM Investors’ global (ex-Australia) portfolio had an average-weighted tenor of approximately 14 years with an average leverage of 33%;
- Capitalising on locking in long-term fixed interest rates during times of monetary policy easing – IFM Investors assets have refinanced debt to take advantage of the low rates environment;
- Avoiding direct commodity price exposure – Commodity prices can exhibit relatively high price elasticity with a tapering of demand. At IFM Investors, we no longer hold merchant generation assets (NAEA/Essential Power was divested in June 2016);
- Maintaining relationships with reputable counterparties (contractual and banking) and are well positioned to weather macroeconomic challenges – If credit markets tighten, these relationships can assist in refinancing maturing debt;
- Improving portfolio diversification across assets, sub-sectors and geographies – Over the past decade, IFM Investors’ global (ex-Australia) infrastructure portfolio has increased significantly in diversification across geographies, subsectors and revenue types. (See Figure 01.)

**TABLE 02** MARKET FACTORS AND ASSET MANAGEMENT RESPONSES DURING THE GFC

<table>
<thead>
<tr>
<th>MARKET FACTOR</th>
<th>SELECTED IMPACTS</th>
<th>ASSET MANAGEMENT RESPONSES</th>
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<tbody>
<tr>
<td>Slowdown in economic growth/demand</td>
<td>At Colonial Pipeline, lower shipped fuel volumes were expected, however revenues were more resilient than anticipated. Less efficient refining capacity closed in the US Northeast, presenting an opportunity for greater refinery shipments from the Gulf Coast through Colonial. Although IFM Investors held no transport assets at the time, lower traffic volumes would normally be experienced by transportation assets through the GFC.</td>
<td>At Duquesne Light, an increased rate case was achieved in 2010/2011 to recover costs and lost revenue associated with lower forecast energy usage in the US and increased pension fund liabilities. While not yet owned by IFM Investors, it is worth noting that at Indiana Toll Road, pricing strategies employed through the GFC meant that revenue growth was maintained through that period.</td>
</tr>
<tr>
<td>Fall in inflation</td>
<td>Anglian Water’s regulated asset base (RAB) is inflation linked and there was a risk of a prolonged period of deflation. A debt covenant related to the debt-to-RAB ratio was placed under stress. In addition, inflation-linked revenues were forecast to underperform.</td>
<td>IFM Investors had ready access to liquidity which it injected as additional equity into Anglian to protect debt covenants. Equity was repaid and the impact of the downturn was mitigated with a favourable rate case in 2010.</td>
</tr>
<tr>
<td>Refinancing and deleveraging</td>
<td>Debt spreads and yields increased dramatically during the downturn and peaked around March 2009, although spreads were offset by falling base rates. Combined with the restricted supply of debt financing, challenges existed for debt refinancing tasks, although all planned refinancings of IFM Investors’ assets were successful.</td>
<td>At Arqiva, distributions to shareholders were withheld to support the refinancing and deleveraging task. At Wales and West, IFM Investors’ prepared for a potential equity injection to refinance junior debt – but this was ultimately not required. A number of IFM Investors assets were prudently de-levered to support investment grade credit ratings.</td>
</tr>
<tr>
<td>Reduced commodity prices – particularly electricity</td>
<td>NAEA was affected by a reduction in actual and projected power and capacity prices, impacting the value of generation plants. At Colonial Pipeline, lower power prices were beneficial as power is the largest cost element to the business.</td>
<td>At NAEa, IFM Investors provided an equity injection, refinanced debt in the bond market and de-levered the business.</td>
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<tr>
<td>Decline in equity markets</td>
<td>Some Defined Benefit (DB) pension plans became under-funded due to the decline of asset values – requiring utilisation of cash resources. Independent valuers increased equity discount rates to reflect potential headwinds and negative market sentiment that were not fully reflected in the asset cash flows.</td>
<td>At Duquesne, IFM Investors injected equity to increase DB assets and maintain the company’s investment grade rating. At Arqiva, Wales and West and NAEA, the flow on effects from the GFC were initially unclear, so that asset-specific discount rate adjustments were made from September 2008.</td>
</tr>
<tr>
<td>Household economic stress</td>
<td>Greater debtors and bad debts experienced at utilities.</td>
<td>At Duquesne and Anglian, additional consumer-focussed billing and payment assistance initiatives were introduced.</td>
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</table>

*Net debt to enterprise value, as at 30 June 2018.*
What could another downturn look like?

Although there is some uncertainty as to what the next economic downturn will look like, we think it is important to consider a number of prototype downturn scenarios that recognise and indicatively quantify how asset performance may be affected if GDP growth falters.

The first scenario contemplates a prolonged downturn in global growth, accompanied by a drop in inflation and interest rates, somewhat akin to the GFC. The assumed changes in macro-economic conditions are influenced by an analysis of the impact of the GFC on OECD nations, as per Graph 05.

To create a practical example, IFM Investors’ methodology for scenario analysis considers the change in the expected gross IRR over a five-year period for its own global (ex-Australia) infrastructure portfolio. For our “Growth Crisis” scenario we assume that GDP is 2% below expectations for five consecutive years (comparable to the GFC where the average drop over five years to the GDP trend was approximately 1.8% p.a.). We assume this is accompanied by 1% lower interest rates and 1% lower inflation versus expected levels over the five-year horizon, accompanied by an estimated reduction in equity discount rates in line with how we anticipate a typical independent valuer would take a change in interest rates into account

To illustrate this, Table 03 sets out the indicative macro movements associated with the Growth Crisis scenario and two other shock-like economic downturn scenarios:

- **Policy Failure** – central bank policy failures lead to sustained higher real rates despite weak growth and inflation; and
- **Stagflation** – a pick-up in inflation and real rates despite weak economic growth.

The variations from the base case assumptions are applied uniformly over five years, but can be viewed as indicative of an average change over the five-year period. Note that departures from the base case in inflation and GDP growth will lead to a permanent difference in prices and economic growth beyond year five, respectively.

Each macro key driver causes an incremental change in the five-year IRR for the sample portfolio. Although any benefit from geographic diversification is not taken into account in this analysis, the outcomes of the three growth downturn scenarios lead to relatively constrained outcomes (e.g. up to approximately 3% p.a. lower returns than expected) in the context of the sample portfolio’s target.

In addition, infrastructure portfolios may also be positioned to benefit from geographical diversification. Our observation here is that the strength of geographical diversification can be demonstrated when we run plausible macro-economic scenarios across our sample portfolio, where the diversity in country-specific forecasts leads to a range of projected gross portfolio returns within an estimated 1.0% of the expected base case return over five years. For example, under a scenario where US policy-led trade barriers give rise to increased US inflation accompanied by weaker global growth, having a global diverse asset base could mean that projected improved performance of US-inflation linked assets may offset some of the softening of economic assets elsewhere in the global portfolio.

Further information on key drivers of performance and scenario analysis can be found in IFM Investors’ publication, *Infrastructure investment in a rising interest rate environment*. 

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**TABLE 03**

<table>
<thead>
<tr>
<th>SCENARIO</th>
<th>GDP GROWTH (P.A.)</th>
<th>INFLATION</th>
<th>SHORT-TERM INTEREST RATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth Crisis</td>
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<tr>
<td>Policy Failure</td>
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<tr>
<td>Stagflation</td>
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Source: IFM Investors. For illustrative purposes only and does not represent actual results. The size of the bars is indicative of the relative average impact over 5 years (green positive, red negative)
Concluding Remarks

Asset valuations were affected following the massive market disruption a decade ago. The unlisted infrastructure asset class demonstrated, and in our view continues to exhibit, defensive investment characteristics of relatively low volatility and sustained long-term returns.

We believe one of the critical elements to sustaining performance through a potential downturn is the ability to maintain an infrastructure portfolio that is diverse across multiple subsectors and geographies. Agile and active asset management strategies have proven to be critical in order to mitigate both real-time and foreseen risks, such as those that were encountered in the GFC.

Finally, we believe it is critical that investors in infrastructure recognise that it is an essentially illiquid asset class. As a result, we believe managers should be selective in accepting new investors, ensuring that there is a necessary alignment with the long-term investment strategy and pro-active asset management philosophy required to successfully invest in infrastructure.

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