

# Infrastructure Research Paper

23<sup>rd</sup> September 2009

## The changing global infrastructure investment landscape

- The infrastructure investment sector, like most asset classes, has been tested throughout the global financial crisis. Investment strategies, gearing policies and fund structures within the asset class have all been re-evaluated.
- Conversely, the response to the crisis has highlighted the critical role that infrastructure plays in underpinning economic growth and development, as well as the need for greater private sector provision of infrastructure given the increasingly strained fiscal position of governments at all levels.
- In the short term, constrained capital markets and a moderate economic backdrop will present opportunities from vendors who are distressed, changing business models and/or adjusting to increased regulation. While public funding will partly fill the void created by reduced private capital availability, there remain opportunities for well capitalised investors.
- In the medium term, the infrastructure sector will reinvent itself, with more robust investment models emerging. This will result in new investors being attracted to infrastructure. Other sector tailwinds will include improving economic conditions and the announced government stimulus spending on infrastructure.
- The long term will be characterised by a greater distinction between developed and emerging market dynamics, as well as a reversal of the earlier shift toward public sector investment. Key opportunities will also arise from structural themes such as the transition to a low-carbon economy, urbanisation and energy security.
- Infrastructure as an asset class is here to stay. Looking at the road ahead, the challenge will be to negotiate these changing dynamics. How will the infrastructure model evolve in future? How will it perform in different capital market and macroeconomic conditions? What role could infrastructure ultimately play in investor portfolios?



## 1. Introduction

This paper aims to explore the broad outlook for the global infrastructure sector. We identify three distinct periods, defined not only chronologically, but also by the nature of investment opportunities arising in these periods.

The purpose is not necessarily to predict the timing and extent of these trends with any precision, but rather to simply highlight that diverse opportunities exist. As a guide, we expect the short term to correspond to 0-18 months, the medium term 18 months-five years, and the long term five years and beyond.

One of the distinguishing characteristics of infrastructure as an asset class is its long term nature. This is the primary motivation for peering beyond the current gloom and considering the structural drivers that will boost the sector in the long run. The point here is that while the current period may represent an opportune time to increase investment in the sector, there are compelling reasons to suggest this should be a permanent shift rather than a temporary tilt.

## 2. The short term: constrained markets

### Investment environment

Constrained markets define the immediate period ahead. Both debt and equity markets were affected in the aftermath of the global financial crisis - growth in bank lending globally fell to its lowest level in a decade, while at least US\$5 trillion of institutional investors' equity capital was wiped out.<sup>1</sup>

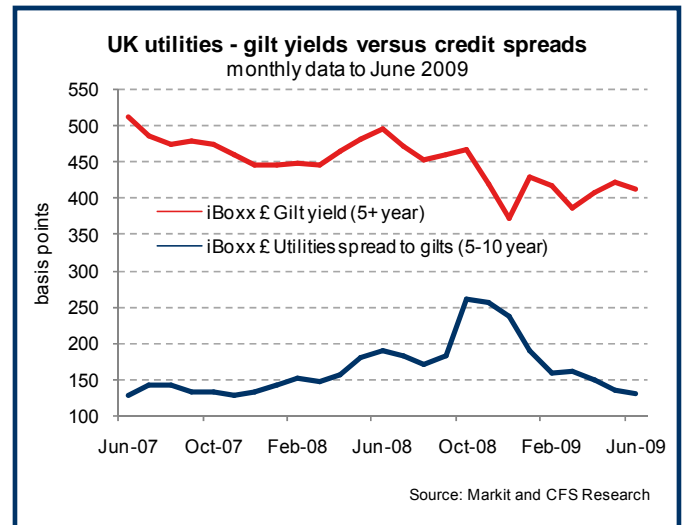
### Debt and equity markets

Overall debt costs have risen in some regions and infrastructure sectors, with the increase in credit spreads outweighing the fall in underlying reference rates. For assets in these sectors, refinancing risk represents a significant challenge - according to UBS, global listed infrastructure companies must refinance 27% of their net debt in 2009 and 2010.

However, the overall cost of debt in some infrastructure sectors has remained stable or has even fallen relative

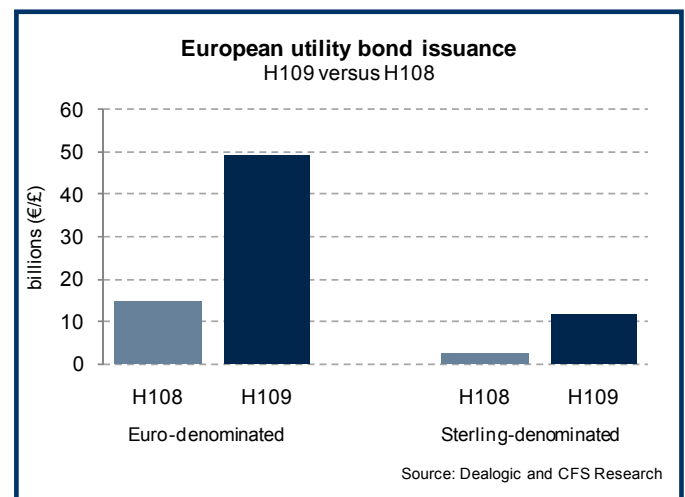
to pre-crisis levels. Figure 1 illustrates the situation in the UK, where spreads for utilities have fallen recently, leading to a lower cost of debt overall.

Figure 1



Utilities have fared better than more cyclical, GDP-correlated infrastructure sectors, reflecting their defensive nature and relatively lower gearing. In the listed sector, the ratio of net debt to EBITDA for non-utility infrastructure stocks is over 5x, compared to around 3x for utilities, and less than 1x for general equities.

Figure 2

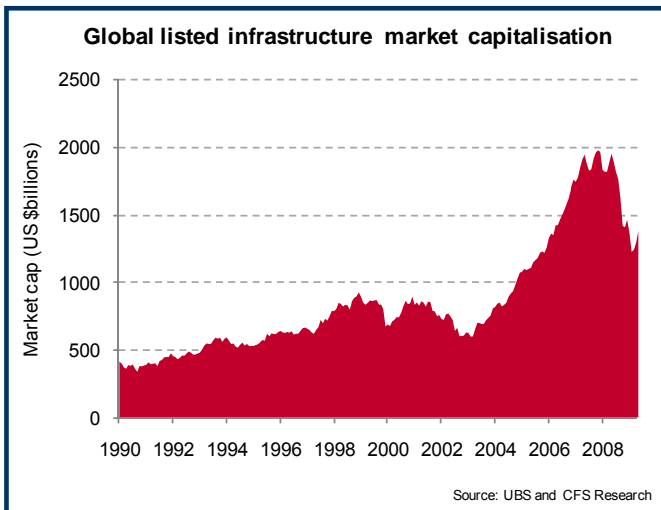


As a result, many utilities have still managed to secure debt financing through bond issues, with European utilities being particularly active. Indeed, investment grade utility bond issuance over H109 was higher for both Euro and Sterling denominated bonds, as highlighted in Figure 2. We expect that bond issuance will continue to be a relatively important source of debt financing as bank lending levels remain subdued in the short term.

<sup>1</sup> IFSL estimates.

Turning to equity markets, the market capitalisation of the global listed infrastructure sector shrank by over US\$700 billion from its peak in December 2007 to its trough in March 2009, as highlighted in Figure 3. This, in turn, has made investors more cautious about providing new equity capital to the infrastructure sector.

Figure 3



Unlisted funds worldwide are also finding it more difficult to raise capital from institutional investors. According to data provider Prequin, by the middle of 2009, only US\$3.5 billion had been raised by three funds achieving a final close, compared to a total of US\$36.6 billion over 2008 from 35 funds.

Part of the reluctance to commit new equity capital reflects a change in investor preferences, after being disillusioned with the debt-heavy, financial engineering model of infrastructure that has been prevalent over recent years. Instead, investors are moving toward a different model, characterised by:

- lower fees, with performance evaluated over longer time horizons
- better alignment of interest between the fund and investors, removing features such as inflexible management contracts
- lower gearing levels at the fund level
- greater focus on active asset management, as opposed to financial engineering, and
- more appropriate matching of fund structures (eg open-ended, closed-ended, listed etc) with underlying assets.

These changes, which are concentrated at the fund level rather than the asset level, should better align the risk profile of the asset class with the defensiveness of the underlying infrastructure assets.

Finally, existing unlisted infrastructure investors may be limited in their ability to invest new money into the asset class due to short term portfolio constraints. For example, an investor is likely to be overweight infrastructure and other illiquid asset classes simply by virtue of the larger decline in listed equity markets. Investors wishing to commit further capital will either need to wait for a sufficient equity market recovery and/or review their strategic asset allocations.

### **Public sector finance**

Another dimension to the current infrastructure financing landscape has been the greater role played by public sector finance. In particular, as private sector funding for higher-risk Greenfield projects has retreated, governments have had to fill the void. Examples of action on this front include:

- In January 2009, the French government announced a plan to make nearly €18 billion available for infrastructure PPPs through a combination of direct debt financing as well as a government guarantee for bank lending to PPP projects.
- In March 2009, the UK government established a scheme for co-lending on up to £13 billion worth of Private Finance Initiative (PFI) infrastructure projects that are unable to raise sufficient debt finance.
- In Australia, government authorities are looking at ways to make investment in public private partnerships (PPPs) more attractive to institutional investors such as superannuation funds. Areas reportedly being considered include risk-sharing arrangements for Greenfield projects, direct lending for mega deals, and grants for other large projects (between A \$500 million and A \$1 billion).
- The Brazilian government is planning to provide up to US\$2.5 billion in emergency loans to companies investing in State-sponsored infrastructure projects; while in the US, the creation of a US\$250 billion fund - available for projects of regional or national significance - is being explored.

Non-commercial lenders such as the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD) have also been an important source of debt finance. Examples of activity over the first half of 2009 include:

- The EIB providing finance for the £320 million M80 motorway PFI in Scotland. The margins provided by the EIB were significantly lower than those provided by the commercial lending syndicate.

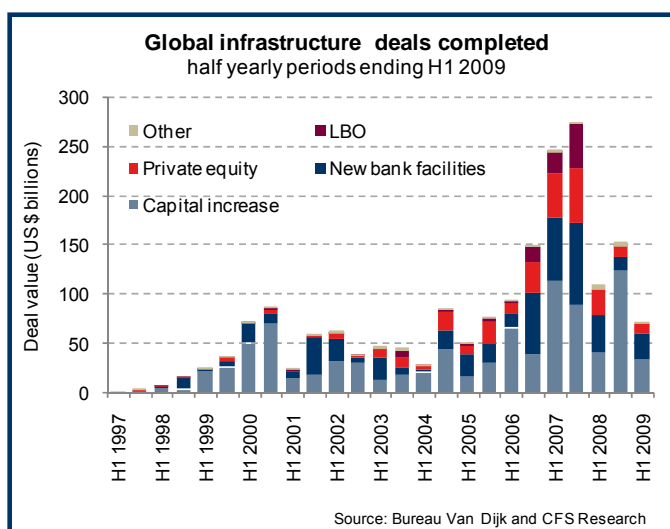
- The EIB providing refinancing for a Dutch LNG pipeline project in March 2009.
- The EBRD lending €70 million to Croatian state-owned gas company Plinacro to acquire a new gas storage facility in May 2009.
- The EIB lending a first instalment of €500 million to the 370 km high speed rail network between Valencia and Madrid. Nearly 40% of the project finance is being provided by the EIB and EU grants, compared to a more typical level of 10%.

It is important to note that while on the one hand governments will play a more active role in the provision of Greenfield infrastructure due to the greater employment potential of these 'shovel-ready' projects; they must also consider selling existing mature infrastructure assets to the private sector. This forms one of the sources of investment opportunities discussed later.

### Impact on transaction activity

The reduced availability of capital has had an impact on infrastructure transaction activity; which, as Figure 4 highlights, has fallen significantly. The disappearance of leveraged buy-out (LBO) deals, sharp reduction in other private equity transactions and contraction in new bank lending are all indicative of the difficulty of raising finance to close transactions in the current environment. Larger (>US\$1 billion), non-core infrastructure deals have been particularly difficult to close.

Figure 4



On the other hand, the record amount of 'capital increases' in H2 2008 (which refer to equity raisings only), combined with the record bond issuance

highlighted in Figure 2, suggest that there is still significant capital available to the infrastructure sector.

One of the high profile deals that have failed to reach financial close or have had difficulties in the bid process was the landmark US\$2.5 billion sale of Chicago's Midway Airport. The sale was cancelled in April 2009 after the winning consortium failed to secure financing for the deal.

Across the Atlantic, the sale process for London's Gatwick Airport – ordered by regulators in March 2009 – has also experienced issues. Following a warning by ratings agency Standard and Poor's that any bid structure with debt equivalent to more than 50% of Gatwick's regulated asset base (RAB) would only receive a BBB- rating, a consortium was forced to seek additional equity, and subsequently withdrew from the bidding process. A second consortium's bid was rejected due to concerns around its financing package. The remaining bidder is yet to finalise an agreement with all the banks in its debt consortium, casting doubt over the entire sale process.

The price expectations gap between bidders and sellers and uncertainty around macroeconomic conditions have also contributed to reduced deal flow, particularly for GDP-correlated assets. Notable examples include:

- The seller of Gatwick Airport, Ferrovial-owned BAA, was originally seeking bids of as much as £2 billion when it began the sale process in September 2008. However, revised bids from two of the final consortia fell in the range of £1.36-£1.4 billion – even below the airport's regulated asset base (RAB) value of £1.58 billion.
- Australian group Babcock and Brown Infrastructure (BBI) initially planned to sell a 29.7% stake in its Euroports business for €121.5 million in December 2008. However, the terms of the transaction were renegotiated in July 2009, with a 40% stake offered for €141.5 million. The revised price, described as 'reflective of the current market' by BBI, took into account the lower cargo volumes expected as a result of weaker economic conditions, as well as the prospect of the closure of a nearby steel mill.

Looking ahead, we do not expect the current impasse between buyers and sellers to persist. Bid/ask spreads will close as financing conditions improve, and as financially distressed asset owners are ultimately forced to sell assets. As a result, we expect transaction activity to pick up in the short term as further opportunities materialise. These are discussed in the next section.

## Investment opportunities

For well capitalised investors, we see three key sources of investment opportunities in the short term. Note that these are not exclusively short term opportunities – fiscal pressure and regulation in particular are likely to be ongoing medium term opportunities as well.

### *Fiscal pressure on governments*

National, state/provincial and municipal governments worldwide are experiencing fiscal pressure, as the following examples attest:

- The Polish government is pressing ahead with a €8.7 billion privatisation programme, which includes key utilities Enea, Tauron, PGE and PAK, by the end of 2010. The sale is designed to reduce the country's public debt levels to below 60 percent of GDP, in line with the EU's Maastricht Treaty.
- In June 2009, the Queensland government announced it would privatise A\$15 billion worth of infrastructure assets, including Queensland Rail's coal freight business, the Port of Brisbane and the Abbot Point Coal Terminal. In the months preceding the announcement of its asset sales, Queensland had its credit rating cut by Standard and Poors'.
- A number of US cities have been exploring privatisation options in addition to Chicago. Pittsburgh City Council is exploring the lease of its parking garages to pay for the city's underfunded public pension, while Milwaukee is considering a long term lease of its water utility to help finance a projected US\$90 million budget shortfall in 2010.

### *Corporate divestments*

These may be strategically-driven, financially-driven, or both. Some recent examples include:

- In May 2009, two North Carolina electric power generation assets were sold to financial investors after their private equity parent filed for bankruptcy.
- In Europe, debt-laden utility Iberdrola has undertaken asset sales in order to deleverage as well as reduce non-core activities. These included the sale of a 25% stake in two regasification plants for €200 million to RREEF in July 2009.
- Spanish toll road developer Cintra's divestment of its stake in a car parking subsidiary for €451 million in June also relinquished €51 million of bank debt. The sale of the non-core asset also streamlined the group's operations. Cintra, in turn, has agreed to a merger with Ferrovial.
- A strategic refocus, coupled with the €8.5 billion acquisition of Nuon in February 2009 prompted

Swedish-based utility Vattenfall's decision to sell its German electricity transmission network.

### *Regulation*

Within the European utilities sector in particular, there have been a number of cases where divestments have been made or are planned to comply with regulatory requirements<sup>2</sup>. The include:

- German utility E.ON agreed in November 2008 to divest 5000 MW of its generation capacity as well as its high voltage transmission network. This was in response to concerns raised by the European Commission over the German generation and electricity balancing market.
- RWE offered to divest its German gas distribution network in response to competition concerns raised by the European Commission.
- Gas Natural's potential sale of regional gas distribution assets in Spain following its takeover of electricity company Union Fenosa.

The renewable energy sector, which is heavily dependent on regulation, is another source of opportunities. While the EU has long been at the vanguard of renewable energy promotion the US and China have also provided regulatory support for the sector.

## 3. The medium term: sector tailwinds

### *Investment environment*

The medium term outlook for the infrastructure sector is positive, with a number of tailwinds expected to materialise. We discuss each of these below:

#### *Capital markets resume normal service*

With signs that a recovery in market conditions is already underway, we expect the markets to have normalised in the medium term. It is important to specify that 'normalise' in this context does not suggest a return to the frenzied markets witnessed prior to the financial crisis. That period is likely to be viewed as an aberration through the lens of history.

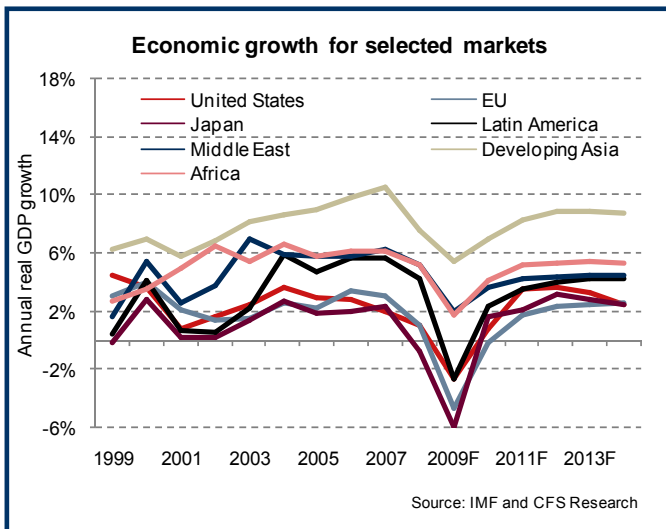
<sup>2</sup> The European Commission is pursuing a broader agenda of 'ownership unbundling' within the energy sector, which refers to a dismantling of the existing vertically integrated model in favour of a separation of energy production/generation and distribution assets to promote competition.

Gearing levels are expected to remain stable for specific sectors at the levels attained post-deleveraging throughout most of this period, reflecting investors' desire to preserve infrastructure's defensive qualities. More GDP-correlated assets such as airports and ports are likely to have lower gearing levels than more stable, regulated utilities, which will be able to support more debt.

**Economic recovery**

During this period, the global economy will also enter a recovery phase. According to the IMF, global growth is expected to recover to 4.3% in 2011, after -1.4% and 2.5% in 2009 and 2010 respectively<sup>3</sup>. However, as Figure 5 reveals, there are expected to be significant differences between emerging and developed economies. While emerging economies are expected to grow at a compound annual growth rate (CAGR) of 5.4% to 2014, the corresponding figure for developed economies is only 1.3%.

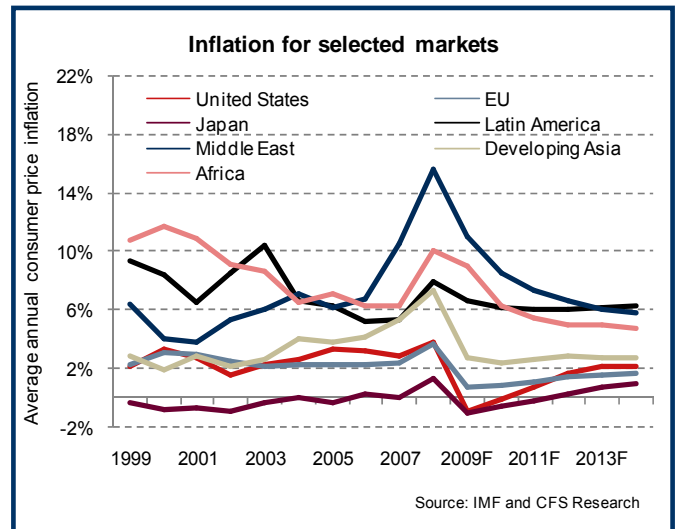
Figure 5



An important development will be inflationary outcomes over this period. Higher inflation is generally a positive for regulated, inflation-linked infrastructure assets – and in periods of high inflation, these tend to outperform other investments. At present, there is considerable debate over whether expansionary fiscal and monetary policy in the short term will lead to inflationary pressures in the medium term. What seems clear, however, is that the developed economies will experience lower inflation outcomes than economies in emerging regions such as Latin America and the Middle East, as Figure 6 highlights.

<sup>3</sup> Source: International Monetary Fund - forecasts from July 2009 World Economic Outlook Update

Figure 6



**Government infrastructure stimulus**

This period will also feature the bulk of government infrastructure spending contained in the fiscal stimulus packages announced recently. The total amount of global fiscal stimulus announced (as at the end of May 2009) is US\$2.6 trillion, according to UBS. According to our analysis, just over half of this is dedicated to infrastructure, amounting to approximately US\$1.3 trillion.

Figure 7

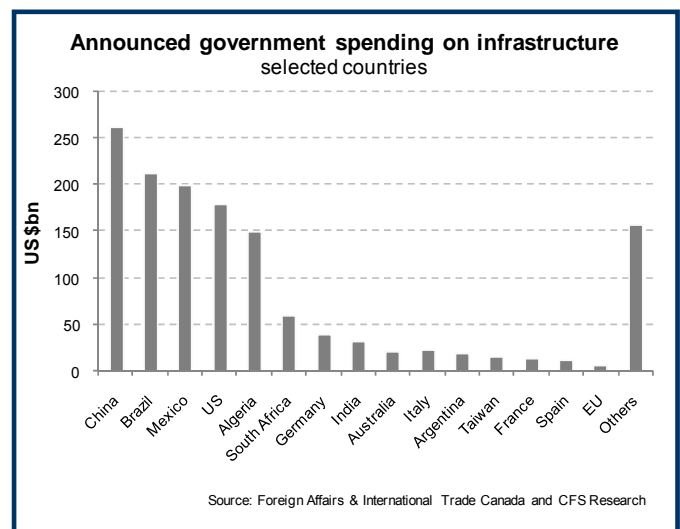


Figure 7 provides a breakdown of this amount by country, with further details available in Appendix A. Exactly when the money will be spent is less clear, but the majority of the funds have been earmarked for deployment over the next two to three years. The stimulus-related investment spending represents a significant increase in the supply of Greenfield infrastructure investment opportunities in a historical context, following decades of underinvestment in infrastructure.

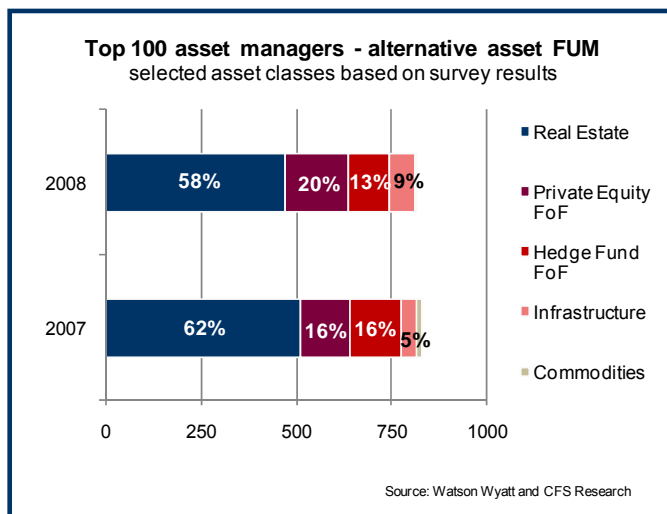
It is worth noting that even with the stimulus-related infrastructure investment announced since the crisis, significant additional infrastructure spending requirements remain. These are discussed further in the section devoted to the long term later in this report.

### **Maturing of infrastructure as an asset class**

As institutional investors worldwide re-evaluate their portfolio structures and investment strategies, infrastructure will emerge as a popular option. Conservative investors, such as defined-benefit pension funds and insurance funds with a liability-driven investment (LDI) strategy, will seek yield-oriented assets with low volatility, inflation protection and low correlation with other asset classes.

Importantly, this shift will be driven by structural, rather than cyclical factors. The pressures of ageing populations and rising longevity, enforcement of more stringent accounting regulations, as well as greater awareness of and familiarity with infrastructure among investors all point to larger permanent allocations to infrastructure.

Figure 8



Infrastructure is already gaining legitimacy as an alternative asset class - Mercer's 2009 European Institutional Asset Allocation Survey included infrastructure as a separate asset class for the first time, while Watson Wyatt's 2009 Global Alternatives Survey identified infrastructure as the fourth major alternative asset class - behind real estate, private equity and hedge funds. The results of the survey, which are presented in Figure 8, show that while infrastructure's share of investor portfolios has

increased significantly, there remains significant opportunity for growth.<sup>4</sup>

The other aspect of infrastructure alluded to earlier in the report is that investment models and strategies will continue to evolve. As new investors enter the asset class, one issue they will need to consider is the appropriate fund model. Listed, unlisted closed-end and unlisted open-ended funds each have inherent strengths and weaknesses in the areas of liquidity, volatility, control and compatibility with a long term investment horizon.

Fund structures and fee levels are also likely to continue to become better aligned with the nature of the underlying assets. Private equity-style fees will be applied less to core infrastructure than to higher risk-return funds with exposure to Greenfield and/or emerging market or sector risk. Products in this space are also more likely to feature closed-end structures than investments in core infrastructure, where we anticipate a greater share of open-ended funds.

Another alternative for investors would be to invest or co-invest directly in infrastructure assets. Due to the significant resources and expertise needed, however, this may only be feasible for the largest pension, insurance and sovereign wealth funds. The issue of expertise becomes more important in the medium term as infrastructure funds move away from the financial-engineering practises of yesteryear toward a model based on active asset management.

### **Investment opportunities**

As projects get underway, governments will look to maximise private sector involvement. While direct assistance for PPPs may gradually be withdrawn, appropriate risk-sharing arrangements may still be necessary, particularly in social infrastructure projects. Investors with higher risk tolerances will find abundant opportunities in the form of stimulus-driven Greenfield projects, which will collectively represent a significant increase in the supply of assets.

The mature-asset privatisation opportunities will continue, both from the fiscal pressures discussed earlier as well as the completion of stimulus-related Greenfield projects. Given the more buoyant capital

<sup>4</sup> The survey focused on the top 100 asset managers, and did not include direct allocations to private equity and hedge funds (only fund of fund allocations were covered). Infrastructure and real estate allocations included both listed and unlisted assets. Manager participation varies from year to year, which must be taken into account when interpreting the results.

market conditions anticipated in the medium term, it is a distinct possibility that competition for these assets will become more robust – particularly given the entry of new investors to the sector. The most successful investors during this period will not only maintain price discipline when acquiring assets, but will also have active asset management capabilities to extract value where assets are not available at fire-sale prices.

Finally, given the capex deferrals in the short term, a backlog of capex plans is likely to exist in the medium term, offering relatively lower risk levels than pure Greenfield projects.

## 4. The long term: structural change

### Investment environment

Owing to the difficulty of forecasting long term capital market conditions with any accuracy, this section focuses on fundamental drivers of infrastructure asset performance, such as the economic environment and structural change. This period is characterised by a greater distinction between developed and emerging market dynamics, as well as a reversal of the earlier shift toward public sector investment in the wake of the global financial crisis.

### Economic environment

The economic environment during this period is likely to be one of robust growth – albeit lower than pre-crisis levels. This growth will also differ from the growth experienced in the decade preceding the global financial crisis in terms of its composition and characteristics.

Firstly, world economic growth will increasingly be driven by emerging economies. According to the IMF, the share of world GDP accounted for by developed economies (on a PPP-adjusted basis) has fallen from approximately 63% in 1999 to 54% in 2009. This trend is expected to continue, with emerging markets set to overtake developed economies by 2014.

Secondly, the higher growth is more likely to be accompanied by higher inflation than was the case during the 1990s and 2000s. This view is based on expected rising emerging market demand, which will place upward pressure on prices of food, energy and commodities globally. Previously, large low-cost producers such as China had been 'exporting deflation'

to developed economies via lower prices on manufactured good exports. This deflationary dividend is diminishing as these economies increase their consumption levels and labour costs rise.

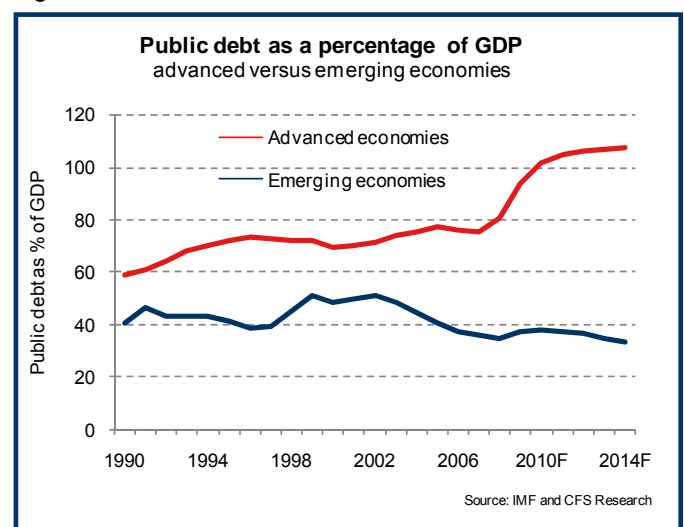
This higher inflation environment, in turn, would have a number of implications, such as:

- Tighter monetary policy in response to price pressure will raise the nominal cost of debt.
- As higher inflation erodes the purchasing power of retirement savings and diminishes the real value of portfolios, inflation-hedging investments such as commodities, inflation-indexed bonds, and regulated infrastructure assets will come to the fore. The latter will appeal due to in-built mechanisms such as explicit CPI-linked tariff increases.

### Fiscal stress

The fiscal stress highlighted earlier in this report is likely to intensify rather than abate in the long term. As Figure 9 highlights, this is particularly a problem for developed economies where already high government debt levels have worsened due to the significant fiscal stimulus required. The US, UK and Japan all have high levels of debt, while the Australian Federal budget – one of the healthiest among developed economies – isn't projected to return to surplus until 2015-16. The IMF recently described trends in developed economy debt levels as being 'unsustainable,' highlighting demographic trends such as ageing and/or declining populations as areas of particular concern.<sup>5</sup>

Figure 9



<sup>5</sup> *Beyond the Crisis: Sustainable Growth and a Stable International Monetary System*. Speech by Dominique Strauss-Kahn, Managing Director of the IMF at the Sixth Annual Bundesbank Lecture Berlin, September 4, 2009.

National and state governments are likely to experience pressure on their credit ratings during this period. Standard and Poor's has already changed its UK government credit rating outlook to 'negative,' as a result of rising debt. This means that an actual ratings downgrade is more likely in the medium to long term. We expect other developed economies to come under similar scrutiny.

## Investment opportunities

As suggested earlier, there are considerable infrastructure investment requirements in both developed and emerging economies. An OECD study estimated that the annual infrastructure spending requirement to 2030 was equivalent to roughly 3.5% of world GDP.<sup>6</sup>

However, given the aforementioned general fiscal stress and the possibility of sovereign credit rating downgrades, there is likely to be a greater role for private financing of this infrastructure investment – particularly in developed economies. PPPs in particular could play a vital role given the potential erosion of the public sector's lowest-cost advantage.

The proportion of large-scale deals will increase on account of both the scale of required investment as well as the increased presence of larger institutional investors such as sovereign wealth funds, although this will be subject to political appetite for foreign investment.

### Structural changes

A number of structural changes will shape the infrastructure sector during this period. The most obvious and critical of these is the transition to a low carbon economy, but other demographic and political trends will also play critical roles. Specific examples of these include:

- The incorporation of carbon pricing. As conventional electricity generation sources are supplanted by renewable energy sources such as wind, solar and geothermal power, infrastructure portfolios will need to evolve to reflect this changing generation mix.
- Carbon pricing will also have a profound impact on the relative growth prospects of different modes of transport (road, rail, sea, air).

- New and enhanced transmission and distribution networks will be required to connect new distributed generation sources.
- Political tension and energy security concerns will also motivate countries to seek new and varied distribution channels, with new gas supply pipelines, storage facilities and ports needed as a result.
- As water shortages become more acute, owners of water utilities will have to comply with greater environmental regulation and efficiency measures. New infrastructure in the form of pipelines, desalination and water recycling plants will be needed. Water pricing is also likely to increase significantly. Conversely, some countries will have a greater propensity for flooding, with further capex build-out requirements.
- Urbanisation, particularly in emerging markets, will generate enormous infrastructure needs, such as mass transit and other high-density social infrastructure.
- Diverging population trends – strong growth is projected for some countries, with declines expected in others. These will dictate the level of demand for infrastructure services and assets.

### Developed versus emerging markets

In developed markets, the balance of investment opportunities will gradually skew towards mature infrastructure assets; with maintenance, rather than new-build spending becoming more prevalent. The mounting fiscal pressure in developed economies is likely to accelerate the privatisation pipeline during this period, as governments in deficit seek to return to budget surpluses and reduce their debt burden.

It is important to note that while Greenfield projects will continue to be available in most developed markets, the nature of these opportunities will be shaped by structural trends. For example, populations in places such as Japan and Eastern Europe are forecast to decline. Greenfield opportunities that do exist in these markets, therefore, are more likely to be driven by factors such as the replacement of emission-intensive assets with greener infrastructure, rather than population growth.

This is in contrast to the higher-growth emerging markets, where population growth will drive demand for new infrastructure. While this is an exciting opportunity, investors will also need to be wary of the political and regulatory risks involved.

<sup>6</sup> *Infrastructure to 2030, Vol 1.* (2006). Estimate includes the following sectors: Road, Rail, Telecoms, Energy and Water

A good example is India, which is projected to become the most populous nation by 2050. The country has enormous infrastructure needs, and requires significant foreign and private sector finance. However, it is also notoriously bureaucratic, politically rigid and lacks the stable, mature regulatory regimes of more developed economies.

Greenfield investors entering emerging markets must contend with less developed legal, political and regulatory institutions in these countries. These increase the risk of contracts being renegotiated, decisions being overturned and other political interference resulting in adverse outcomes. Over time, however, these risks are likely to diminish somewhat as these markets mature.

Indeed, investors will find it difficult in the long term to avoid increasing the level of investment in emerging markets. One reason is simply that rapidly growing emerging economies will account for a larger share of the investment universe. It may also become potentially more difficult to find value in developed markets as governments seek to maximise proceeds from privatisation, impose more restrictions on PPPs, and as regulatory regimes become stricter.

Given the wide array of structural trends occurring in the long term, the increasing scope of the infrastructure market (in terms of geography and subsector diversity), and the increasingly divergent performances across various infrastructure segments; active asset management will offer a valuable driver of returns – both as a return enhancer and a risk mitigant.

## 5. Summary and conclusions

Virtually no asset class was left unaffected by the global financial crisis – and, indeed the period of low risk aversion, high gearing and product innovation that preceded it. Like many other asset classes, infrastructure experienced something of an ‘identity crisis,’ as evidenced by the high gearing levels, financially engineered or ‘artificial’ yield and unsustainable total return expectations associated with some infrastructure models.

Unlike some other asset classes or investment categories, however, infrastructure has the capacity to reinvent itself and assume a more prominent role in portfolios of the future. To do this, infrastructure investment products simply need to better reflect the investment characteristics of the underlying

infrastructure assets, providing moderate, stable, inflation-linked returns with potential for additional gains through active asset management.

The essential nature of infrastructure assets for economies has been highlighted by the fact that nearly half of the post-GFC fiscal stimulus announced by governments worldwide was directed to infrastructure. As private sector participation in infrastructure increases in the medium term, the natural fit between infrastructure and long term investors seeking defensive asset classes will become more established.

Figure 10 highlights that the road ahead for the infrastructure sector is a nuanced one, with a variety of risks and opportunities to consider. Given that infrastructure investment opportunities are large-scale, global, and long term in nature, it is important that managers in this sector possess the necessary ingredients of scale, global focus, and a long term investment horizon. Having active management skill is also desirable, as this is both a source of risk mitigation as well as a source of value throughout the investment cycle, and is therefore an omnipresent opportunity over the short, medium and long term.

Figure 10

Short term	Medium term	Long term
<ul style="list-style-type: none"> <li>Constrained capital markets</li> <li>Deals more difficult to get done, particularly larger assets, non-core infrastructure</li> <li>Public sector playing a prominent role in providing infrastructure finance</li> <li>Enormous opportunities for well capitalised private investors</li> <li>Acquisition opportunities driven by corporate divestments, govt fiscal pressure and regulation (distressed, forced sellers)</li> <li>Capex deferrals, lower dividends and distributions all likely</li> <li>Refinancing risk focus for existing assets</li> <li>Weak, disinflationary economic environment - particularly in advanced economies</li> <li>Infrastructure investment models under review - highly geared, financial engineering-driven structures out of favour</li> <li>Institutional investors' capacity to increase allocations constrained due to portfolio mechanics</li> </ul>	<ul style="list-style-type: none"> <li>Capital markets normalise</li> <li>Robust competition for mature assets - some price risk</li> <li>Greater private sector role, particularly through PPPs</li> <li>Abundance of greenfield opportunities, as bulk of stimulus spending takes place</li> <li>Capex backlog will require significant investment, particularly as demand recovers</li> <li>Solid economic growth, with moderate inflation</li> <li>Core infrastructure becomes less risky, with more moderate returns than pre-GFC. Greater market segmentation between core and non-core investments</li> <li>Changes occurring primarily at the asset class, fund level</li> <li>Greater direct, co-investment by large investors</li> </ul>	<ul style="list-style-type: none"> <li>Greater balance between capital, investment opportunities</li> <li>Private sector opportunities may be limited in state-dominated emerging economies.</li> <li>Fiscal pressure to accelerate privatisation pipeline in advanced economies</li> <li>Opportunities driven by structural change - transition to low carbon economy, energy security, urbanisation</li> <li>Demographics likely to shape investment opportunities - higher new build requirements in emerging economies, greater maintenance spending required in advanced economies</li> <li>More robust economic growth, led by emerging economies. Higher inflation likely</li> <li>Regional and subsector diversification focus</li> <li>Active asset management an important driver of return, risk mitigant</li> <li>Changes occurring at the infrastructure portfolio, asset level</li> </ul>

Source: CFS Research

## 6. Appendix A – Government infrastructure stimulus plans

Country	Amount (US \$bn)	Details
China	263	In November 2008, Premier Wen Jiabao announced a fiscal stimulus package of CNY4 trillion (US\$600 billion) with infrastructure spending estimated in the range of US\$270 billion to US\$470 billion. Key sectors of opportunity will include railways, airports, electricity, oil and gas. Approved expenditures include: <ul style="list-style-type: none"> <li>• CNY167 billion to be spent on infrastructure in the Wenchuan Earthquake affected area (e.g. expressways, trunk roads, railway, civil aviation, telecom, power transmission, water resources)</li> <li>• CNY93 billion to be spent on the West-to-East Natural Gas Transmission Project (Phase 2)</li> <li>• CNY95.5 billion on expanding the Yangjiang Nuclear Plant in Guangdong and the Qinshan Nuclear Plant in Zhejiang</li> <li>• CNY17.4 billion will be spent on water conservancy projects and on new airports and expansion of existing airports</li> </ul>
Brazil	213	While no new infrastructure spending has been announced under Brazil's fiscal stimulus package, the government has committed itself to maintaining funding levels for the "Program of growth acceleration" (PAC) which came into effect over the past two years. PAC consists of BRL503.9 billion (US\$212.6 billion) for projects focussed in three areas: <ul style="list-style-type: none"> <li>• logistics (railways, roads, ports, airports and seaways)</li> <li>• energy (electric generation and grids, oil and gas, renewable energies)</li> <li>• social infrastructure (sanitation, housing, urban transportation, access to electricity and potable water)</li> </ul>
Mexico	200	Planned spending on the National Infrastructure Development Program will total MXN2.5 trillion (about US\$200 billion) over the next five years and includes spending for <ul style="list-style-type: none"> <li>• roads (MXN287 billion)</li> <li>• railroads (MXN49 billion)</li> <li>• airports (MXN59 billion)</li> <li>• hydro-agriculture and flood control (MXN48 billion)</li> <li>• ports (MXN71 billion)</li> <li>• drinkable water and drainage (MXN154 billion)</li> <li>• telecommunications (MXN283 billion)</li> <li>• refining, gas &amp; petrochemical (MXN379 billion)</li> <li>• electricity (MXN380 billion)</li> <li>• hydrocarbons production (MXN822 billion).</li> </ul>
US	180	In January 2009 announced spending of approximately US\$180 billion for infrastructure over two years, focussed on areas such as: <ul style="list-style-type: none"> <li>• roads and bridges (US\$30 billion)</li> <li>• rail and transit (US\$10 billion)</li> <li>• health information technology (US\$20 billion)</li> <li>• broadband for underserved areas (US\$6 billion)</li> <li>• projects aimed at 'greening' America such as smart electrical grids (US\$11 billion)</li> <li>• energy efficiency of public buildings at the federal, state and local level as well as low-income family homes (US\$53 billion)</li> <li>• construction, repair and upgrade of schools and hospitals (US\$23 billion)</li> <li>• environmental projects such as flood control, sewage and water treatment systems (US\$19 billion)</li> </ul>
Algeria	150	A five-year infrastructure and public works plan (2009-2013) is to be announced. This plan is expected to be around US\$150 billion, and will be spent on infrastructure projects (roads, ports, public utilities), as well as the construction, transportation and water works sectors.
South Africa	60	2008 budget committed the government to spend US\$60 billion over the next three years on infrastructure. A large portion of this spending will go to power generation, with the revamping of power-stations and two new coal fired power plants. US\$8 billion will go to transportation, including rail infrastructure, harbors and ports and the construction of a liquid fuels pipeline.
Germany	40	In January 2009 the government passed a package including €17 billion to be devoted to public infrastructure projects such as roads, schools and hospitals. An earlier stimulus package in November 2008 included: <ul style="list-style-type: none"> <li>• funding an energy efficiency program from 2009 to 2011 (€3 billion)</li> <li>• raising state development bank KfW's infrastructure programs for local authorities (€3 billion)</li> <li>• establishing an innovation and investment program for transport with €1 billion in both 2009 and 2010</li> <li>• €200 million for specific regional projects.</li> </ul>
India	34	The government has released two fiscal packages (in December and January) with an infrastructure focus. Highlights include: <ul style="list-style-type: none"> <li>• announced funding for a Public-Private-Partnership (PPP) program of US\$20 billion in the highway sector and port and power projects</li> <li>• India Infrastructure Finance Co Ltd (a govt-owned special-purpose enterprise) authorized to raise US\$2.1 billion by March 2009 to support financing of around 60 highway projects through PPPs</li> <li>• IIFCL authorized to raise an additional US\$6.25 billion in tax-free bonds for refinancing bank loans to infrastructure projects</li> <li>• Non-bank finance companies dedicated to infrastructure financing have been allowed to raise funds from multilateral or regional institutions and will be provided with additional liquidity of up to US\$5.15 billion</li> </ul>
Australia	21	On December 12 the government announced an A\$4.7 billion (US\$3.1 billion) infrastructure program. The program will be financed with A\$2.5 billion of new money and A\$2.2 billion of previous commitments. The package covers three years but is frontloaded with most of the spending happening in the next two years. It includes A\$1.2 billion to be spent on railway construction. The package will also bring forward A\$711 million in road funding and another A\$1.6 billion will fund construction projects on the nation's university and college campuses. The 2009 budget announced in May included a further A\$22 billion on infrastructure over four years. The largest component is for transport (particularly rail), with funding also available for the Clean Energy Initiative, education and health
Italy	23	The government has announced a three-year fiscal stimulus package including €16.6 billion (US\$23.7 billion) dedicated to infrastructure spending - the largest portion of the package. The package includes bridges, highways, high speed rail, metro lines, flood barriers, broadband internet, school modernisations and renewable energy infrastructure
Argentina	21	In December 2008, the Argentine Ministry of Public Works launched a ARS71 billion (US\$20.7 billion) public works plan. <ul style="list-style-type: none"> <li>• 60 percent of resources will be allocated to road infrastructure projects and social improvements</li> <li>• 40 percent will be dedicated to improving and expanding the power, natural gas and public transport sectors.</li> </ul>
Taiwan	17	In January 2009, Premier Liu announced a stimulus package to invest an additional TWD500 billion (US\$16.6 billion) in public infrastructure over the next four years. Major projects which had already received US \$133 bn in funding cover transportation network, industrial development, urban and rural development, and environmental protection
France	15	Measures unveiled in early December 2008 include: <ul style="list-style-type: none"> <li>• €4 billion on infrastructure (including roads, highways, and hospitals), research and universities, defence and security</li> <li>• €4 billion for modernizing railways, energy and postal services</li> <li>• €2.5 billion to local or municipal governments for various infrastructure-related projects</li> </ul>
Spain	13	In November 2008 Spanish PM Zapatero outlined a package including the following infrastructure-related priorities: <ul style="list-style-type: none"> <li>• €8 billion for municipal public investment in urgent public works (effectively doubling the current budget for municipal infrastructure projects)</li> <li>• €30 million for the tourism sector.</li> <li>• €600 million for "environmentally friendly" projects in energy conservation and municipal water management</li> <li>• €400 million for improvements to police and military installations</li> </ul>
EU	8	The European Investment Bank will provide €6 billion (US\$8 billion) worth of additional lending for energy, climate change and infrastructure, in addition to new infrastructure spending at the member state level

Source: Foreign Affairs &amp; International Trade Canada and CFS Research

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