FEATURE ARTICLE:
INFRASTRUCTURE OPPORTUNITIES IN EMERGING MARKETS

INFRASTRUCTURE IN EMERGING MARKETS

The insatiable need for infrastructure investments across the world is not a new phenomenon. Indeed, this impetus is no more acute in the world's emerging market economies, which often have underdeveloped and decrepit infrastructure

A detailed and executable plan of infrastructure development is key to economic prosperity across all markets. However, due to the relative immaturity of their political and regulatory systems, governments in developing economies typically have insufficient revenue to properly maintain existing infrastructure, let alone fund new projects. As a result, the state of current infrastructure in these countries is generally dilapidated. This is worsened by the growing strains and stress caused by the rapid population growth and urbanisation trends experienced in developing economies.

To date, deployment of private capital into infrastructure projects in emerging markets from investors in developed markets has been relatively restrained. Whilst returns provided by infrastructure investments in these markets may be very attractive and supported by solid fundamentals underlying the opportunities, there remains a large gap between the supply and demand of private infrastructure capital. Principally, this is attributed to the mismatch of inherent risks attributed to these assets and the traditionally more risk adverse objectives of infrastructure investors.

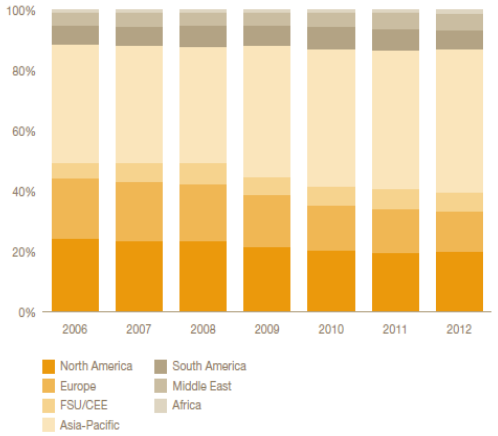
This report discusses the key risks that need to be overcome in order for emerging markets to get a bigger piece of the infrastructure allocation pie - and whether investors can ever effectively price all the associated risks.

1. Increasing Infrastructure Needs

With its growing population, rapid urbanisation, rising income and consumption, emerging market economies require substantial investment to develop new infrastructure to accommodate growth, and to maintain and upgrade existing infrastructure.

Given this desperate need, it comes as no shock that there has been a significant geographical shift in infrastructure spending from the Western World to the East, especially since the Global Financial Crisis (GFC) in 2008. As highlighted in Chart 1 below, developing economies in the Asia-Pacific region, now account for more than half the global infrastructure spend, whilst infrastructure spending in developed nations, Western Europe for example, has materially slowed.

Chart 1: Global Infrastructure Spending



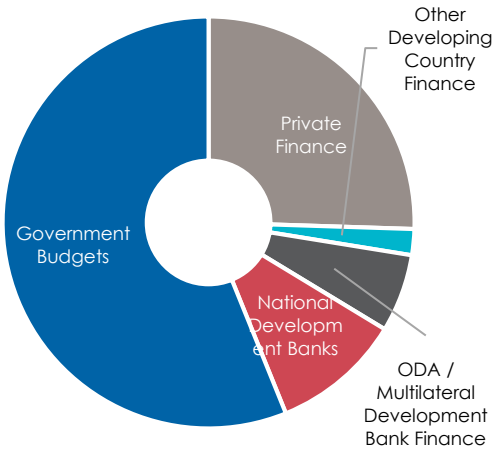
Source: PwC, Oxford Economics

In research undertaken by the World Bank Group, the annual infrastructure requirement for emerging market and developing economies was found to be in excess of US$800 billion per year from 2014 to 2020 or equivalent to 6.1% of GDP.

2. The Financing Conundrum

To date the financing of infrastructure investments in developing economies has primarily been achieved internally through government spending. The World Bank reported that in developing economies, public financing accounts for circa 60% of infrastructure expenditure with the remaining 40% coming from private sources and multilateral development agencies as shown in Chart 2.

Chart 2: Existing Infrastructure Financing in Developing Countries



Source: World Bank Group, Bhattacharya et.al (2012)

This composition of financing for infrastructure is very different for advanced economies. The World Bank reported that in many advanced economies, the private sector has stepped up and provided critical funding for much needed infrastructure projects in

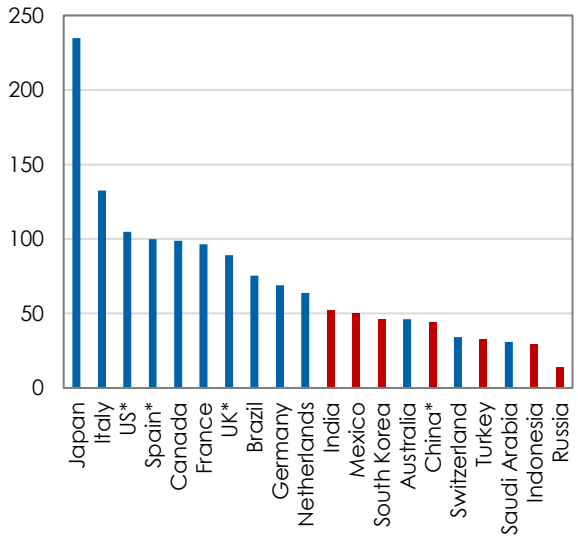
the absence of government capital. The McKinsey Global Institute have exemplified this by showing that in the UK between 2007 to 2011, private finance accounted for 87% of core infrastructure projects (PPP financing and private investments), whereas in India, 64% of core infrastructure was funded publicly.

Raiding the public coffers to pay for the ever-growing infrastructure requirements is unsustainable. Unsophisticated tax regimes, immature taxation collection systems, inconsistency in the interpretation of tax policies, and a lack of resources to administer tax and tackle corruption are common problems in many emerging market economies and developing nations. The impact of the taxation environment is a primary cause of lower government revenue (as a percentage of GDP) in emerging market economies as compared to advanced economies.

Government revenue in emerging economies has consistently been lower than the revenue collected by their advanced economy counterparts. The quantum of government revenue collected typically correlates to the level of government expenditure as a percentage of GDP.

Despite trailing developed markets in their ability to collect tax revenue, as witnessed in Chart 3 below, emerging markets have not witnessed the sizeable increase in government debt which has plagued developed neighbours over the last ten years. As such, prima facie, they should be able to continue to invest in growth infrastructure projects via the public purse.

Chart 3: Government Debt to GDP Levels for 20 Largest Economies, as of 31 December 2016



Source: Bloomberg, Whitehelm Advisers

Note: The debt to GDP level for countries denoted with an asterisk is as of 31 December 2015, rather than 31 December 2016.

The story is not quite so simple as many emerging market nations have a substantial portion of their national debt dominated in US dollars. Accordingly, their ability to service their debt is susceptible to forces outside of their control.

There is no doubt that emerging market countries are making significant strides in reducing their dependence on US-dollar-denominated debt, and improving their foreign currency reserves. However, the existing quantum of US dollar dominated debt means that many emerging market countries face significant headwinds in financing their massive infrastructure needs through government spending.

3. How Private Capital Can Get Involved

Therefore, to entice private capital, many emerging market governments have turned to Public Private Partnerships (PPP) to stimulate infrastructure investment. Such investments are typically attractive to both parties (government and private capital) as this allows governments to fund projects 'off balance sheet'. This means governments are not burdened with further borrowings, which may affect their credit rating and borrowing costs, and at the same time typically provides private investors with a predictable revenue stream backed by government.

Many emerging market governments have made significant inroads to improve the legal environment to support PPP projects. New regulations in many emerging market countries have clearly specified the roles of private and public entities in PPP projects. For example, to attract foreign investment, the Widodo government in Indonesia has established a reformed set of regulations which include the following changes:

- the number of sectors eligible for PPP has expanded significantly;
- government entities can now jointly initiate PPP projects;
- enhancing the process for unsolicited proposals to make the process easier;
- allowing for direct appointments to be made in special circumstances; and
- increasing the transparency and governance in terms of remuneration for the private sector.

4. The Risks and Mitigation Strategies for Institutional Investors

The risk and return characteristics of infrastructure assets vary not only across different classes but also by the structure put in place (e.g. regulated, or demand based). Furthermore, the risk and return characteristics are also are a function of the lifecycle of the asset (e.g. greenfield or brownfield), the type of market it is situated in (developed or emerging markets) and the growth potential of the asset (evergreen or finite concession).

Foreign infrastructure investors, dominated by pension funds and sovereign wealth funds, favour long-term steady income streams. Whilst many are willing to accept riskier assets (e.g. greenfield projects), the additional risk inherent in emerging market economies adds complexity to investments. Accordingly, this results in a large discrepancy between the supply and demand of foreign private capital. Unless risks are mitigated or transferred (for example, back to the government), this funding gap is unlikely to be closed.

Political and Regulatory Risk

In emerging market economies where legal and regulatory frameworks can be weak and immature, it bears additional risk that investors need to consider.

Emerging markets economies often have ineffective judicial systems that cannot be fully relied upon to enforce contracts objectively. Without certainty of enforceability, many infrastructure investors are likely to stay away given the risk magnification effect beyond the acceptable threshold.

Changes in government policy can have major impacts on infrastructure investments and investors. A nation's budget planning and stability can have a significant impact on regulations that could, in turn, impact existing or new infrastructure investments. A robust national budget is likely to provide greater stability and certainty to the investment environment. As compared to many developed nations, emerging market nations can see more dramatic swings in budgetary spending as result of:

- Immaturity of the administration system: Compared to developed nations, the government administration systems in emerging market economies are typically not as sophisticated and experienced, leading to inaccurate forecasts and budgetary changes.
- Changes in political power: Emerging markets economies can be subjected to changes in political power that can have large impacts on the political direction in the country. This could have material flow-on effects to the nation's budget outcomes.
- Lack of a diversified national income stream: Unlike developed nations, emerging market economies are often heavily reliant on primary industry which can be concentrated on a limited number of goods and services. As a result, changes in global commodity prices can have a bigger impact on an emerging market economy, leading to drastic changes to national income - often forcing a government to materially change the national budget.

Despite the above, we note that developed nations are not insulated from budgetary instability. For example, a similar FIT incident took place in Spain in 2010 (retrospectively cutting its FIT to investors by 20%) that has dampened its investment environment.

Whilst political risks can often be minimised through contracting with the current government, these contracts can be changed and rescinded with a change in power.

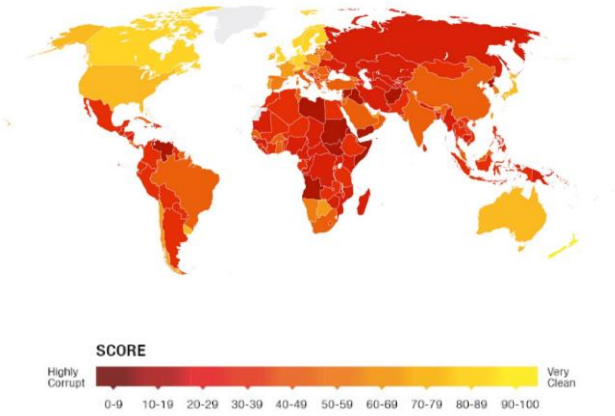
Investors can further mitigate these risks by selecting less risky segments in emerging markets or by selecting trusted local partners who have a sound understanding of local operations and the political environment. Whilst insurance can be used to mitigate some of these risks, the premiums associated may be costly enough to render this option invalid.

One of the key impacts of a weak and immature regulatory system combined with political instability is the prevalence of corruption.

Corruption Risk

One of the most distinguishable issues investors face when considering long term investing in emerging markets is corruption. Such an issue is all too common in emerging market economies given the lack of transparency, the weak regulatory framework and political instability. Figure 1 illustrates the Corruption Perception Index, published by Transparency International, a global leading body that aims to fight against corruption.

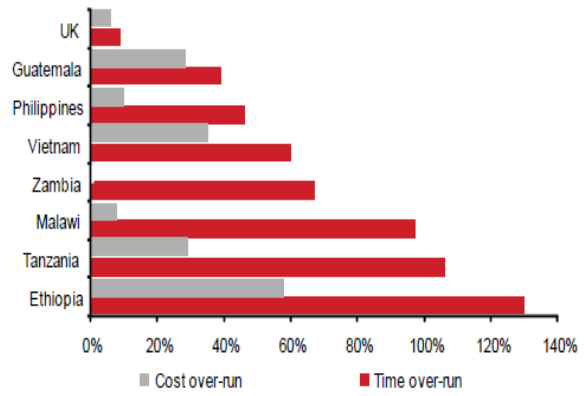
Figure 1: Corruption Perception Index



Source: Transparency International

The impact of corruption on infrastructure projects is large. Transparency International reported that infrastructure projects in highly corruptible countries can cost up to one third more than required given the many facilitation payments required. The Construction Sector Transparency Initiative Programme found that a similar excess amount is also spent on mismanagement and inefficiency. Given the importance of infrastructure in developing nations, these inefficiencies have big impacts on the nations' development. Chart 4 details the average time and cost over-runs on a sample of 145 public sector construction projects in eight countries.

Chart 4: Cost & Time Over-Runs



Source: Construction Sector Transparency

The Global Infrastructure Anti-Corruption Centre found that there are certain inherent properties in infrastructure that make these projects more prone to corruption as compared to other projects. These include the following:

- Uniqueness of infrastructure projects: Benchmarking of infrastructure projects is very difficult given that each project would likely have unique characteristics. This provides the opportunity to inflate costs or facilitate bribes.
- Complexity of the transactions: Infrastructure projects are typically complex in nature involving multiple contracts and stakeholders. Therefore, it is very difficult to establish control measures to effectively address corruption.
- Bureaucracy: Infrastructure projects often involve extensive liaison with local government. Licenses, approvals and permits are required at most stages of an infrastructure project. In emerging market economies where the regulatory framework is weak, each of these stages provides an avenue for bribery.
- Scale of infrastructure investments: Given the quantum of monies involved in infrastructure projects, it provides ideal opportunities for the concealment of bribes.

Investment is deterred from countries where corruption is widespread as it is seen as a tax that increases the cost of capital for investment. Furthermore, corruption can often lead to lower quality assets that do not stand the test of time, which is particularly important for long-term investors looking at infrastructure projects. These factors could significantly reduce an investor's return as assets may have a shorter lifespan or require significantly higher costs to operate and maintain.

In a recent survey conducted by the World Bank, it was found that corruption is the biggest barrier to investment, especially foreign direct investment. The World Bank indicated that all else being equal, investors prefer to establish themselves in less corrupt countries. The IMF also reported that corruption can reduce investment by 5-8% for every single percentage point increase in the corruption index.

Corruption can also adversely affect the reputation of investors. Institutional investors such as global superannuation and pension funds are particularly averse to damaging their reputation. Given infrastructure assets are typically assets with a high public interest, the reputational risks associated with this asset class is often higher than others. As such, the risk of reputation damage can dissuade institutional investors from investing in emerging markets infrastructure assets.

Finally, corruption risks are difficult to mitigate or transfer. Effective eradication of corruption in a country would require significant effort, time and strong leadership. From a private investors perspective, this would remain a risk that will be difficult to address or even price.

Revenue Risk

Unlike in developed nations, many emerging market infrastructure projects are greenfield opportunities, with limited or no historical data to support financial projections. Furthermore, data supporting the investment environment in emerging markets and developing nations is often very poor and unreliable.

In the absence of robust and credible data in forecasting demand or revenue, there is a significant amount of revenue forecasting risk private investors must bear. Furthermore, future financial projections in emerging markets are highly dependent on the local political situation, which can be unpredictable and challenging.

Despite the above, there a number of ways which private funds can minimise or transfer revenue risks. For example:

- Take or Pay Contracts: With these type of contracts, the user of the asset has to take the goods or service provided regardless of whether they take delivery;
- Sovereign Guarantees: Typically, a promised made by the government to assure investors that it will either take or refrain from taking action that would negatively affect the project;
- Long-term Contracts: the longer the contract, the less exposed the asset will be to revenue risk;
- High Quality Corporate Counterparties: A strong counter party will reduce the probability of default of the counter party, it also typically provides greater assurance that payments will be received on time; and
- Inflation-linked Revenue: Emerging market economies are highly susceptible to high inflation. In the absence of an inflation linked revenue, the profitability of the asset could be materially impacted (i.e. costs can be increasing but not revenue), reducing its value. Having inflation linked revenue streams will significantly reduce this risk.

Operational Expense (opex) Risk

Similar to revenue projections, it is difficult to estimate operational expenses for greenfield projects, especially with limited historical data to inform investors as to what these expenses are or could be. The variability of expenses is amplified in emerging market economies given the lack of current infrastructure assets to benchmark opportunities against. For example, anecdotally, it has been reported that Indonesia's poor transport infrastructure has led to huge disparities in operating costs across the countries. For instance, gasoline sold in Jakarta for circa IDR 7,000 per litre, has cost up to IDR 60,000 per litre at the same time in the eastern providence of Wamena, Papua.

Supply chain management presents a significant area of risk that could impact on operational costs, especially in emerging markets where firms may have limited visibility of their suppliers and distributors and may not have the logistical infrastructure to accommodate services.

Most supply chain risks originate from suppliers. These include delays or incomplete deliveries, quality control issues and working capital constraints which could inflate ongoing operational expenses.

To minimise opex risks, a project could seek long-term operational and maintenance contracts with credible suppliers to reduce the volatility of expenses. This allows direct pass through of operation and maintenance obligations to third-party providers who are better equipped to price and manage these risks

Construction Risk

The cost of construction is fundamental to the returns achieved by investors; as it impacts the viability of the project, the financing options and the overall financial performance of the asset. Construction cost overruns are generally considered to be one of the greatest risks faced in infrastructure project development given the complexity and sheer size of many infrastructure projects.

Construction cost overruns are typically caused by an increase in costs of construction (labour and materials) and time delays. In advanced economies, these risks are often addressed by using fixed price construction contracts, implementation of time delay clauses, using reputable construction firms to lower counterparty risks and ensuring there is adequate insurance cover.

However, in emerging market economies, mitigating these risks can prove to be more challenging. Project delays are prevalent in emerging market nations, often attributed to the lengthy approval processes that stem from the immature administration. Corruption, which is widespread in emerging market economies, can also often cause further delays to the project schedule or, even worse, cause the project to be ceased altogether.

Fixed price construction contracts or time delay clauses are often difficult to be implemented due to the riskiness of construction projects. Even if they can be secured, the premiums associated with undertaking such high level of risk can be very large - rendering the project unviable. Furthermore,

sourcing of reputable firms in such developing countries may also not be an easy task.

Without the ability to transfer or adequately mitigate these risks, it is unlikely that private infrastructure investors or funds will be willing to participate in undertaking construction projects, particularly greenfield infrastructure projects in emerging market economies.

Financing Risk

Infrastructure projects often involve significant financing, typically obtained via government, banks, or capital markets. Whilst there is not a one size fits all rule, the availability of financing and the financing instruments used are dependent on the risks associated with the specific project. This approach enables the use of different financing instruments to be used throughout the project.

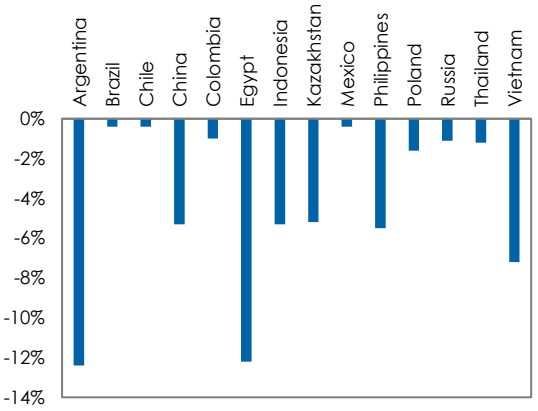
Given the differing risk profile of projects, especially greenfield projects in emerging market economies, obtaining an adequate level of financing can often be challenging.

Whilst initial stages of financing may be offered by the government at very favourable rates that could not be obtained in the market, this could also potentially backfire if these projects fail to secure financing at comparable rates in the future when these financing terms expire. Some of these risks could be minimised with a long-term debt solution.

Currency Risk

Interest rate parity suggests that the difference in forward looking interest rates between two countries drives the spot and forward exchange rates of that currency pair. Whilst we know interest rate parity does not perfectly hold, we expect investments in a country with higher long-term interest rates to incur negative carry, which lowers investment returns in the home country. Chart 5 shows the negative carry of some emerging market nations against the US (using implied long-term bond rates). This negative carry could be considered as a proxy to price currency risks, as an investor's home country returns would be reduced by this amount.

Chart 5: Negative Carry against the US



Source: Whitehelm Analysis, IMF data, various central banks

In addition, whilst a foreign investor may try to manage currency risks by using currency hedges, many emerging market nations may have ineffective central banks and are often exposed to bouts of high inflation with currencies that may be very thinly traded. This means that hedging currencies of such nature can be very expensive to implement or there may not exist a market deep enough to effectively hedge such currencies. Furthermore, most emerging market economies use Non-Deliverable Forwards which require collateral, making hedging more expensive and operationally intensive in such markets.

5. Can These Risks Be Priced?

Unlike the developed world where solid infrastructure returns can be made under favourable regulations, emerging market investors can be rewarded with even higher returns for undertaking additional risks associated with an emerging market economy. However, can private investors who are unaccustomed to assess unique emerging market risks properly price the risks of these infrastructure investments?

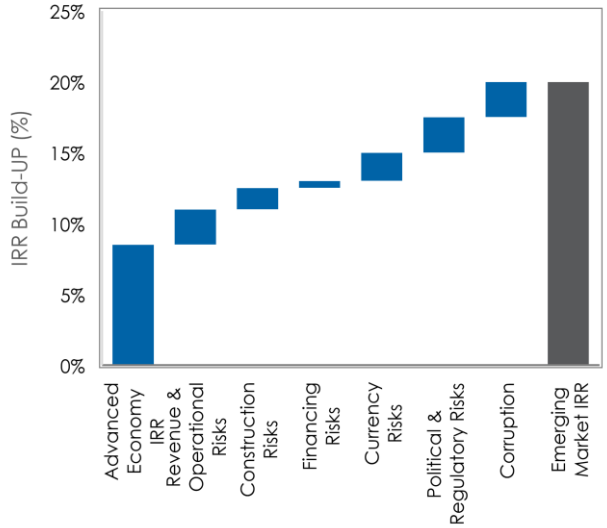
Whitehelm Capital currently manages an emerging market infrastructure fund and has made a number of investments in emerging markets economies. Based on our experience, pricing risks is not straightforward in these environments. To offer comfort, we would analyse an emerging market opportunity using a bottom-up approach and confirm it using a broader approach (the top-down approach).

Bottom-Up Approach

All else being equal, an investor should demand higher returns from investing in emerging market economies as compared to investing in advanced economies. The higher expectation reflects the additional risks that investors must bear.

The bottom-up approach is the building up of an investment's IRR using a similar infrastructure investment in an advanced economy as a base. An example of this approach is illustrated in Chart 6 where risk premiums are added for each additional risk facing the opportunity in question.

Chart 6: Bottom Up Approach IRR Build Up



Source: Whitehelm analysis

Some risks are more easily priced than others. For example, currency risks can be priced using the long-term inflation differential between two countries. Whereas, risks such as political and corruption risks are much more difficult to price in nature, especially in countries where these risks are widespread and unpredictable. For example, it will be easier to attribute a corruption risk premium to Poland (with a corruption perception index of 66/100) than to Kazakhstan (corruption perception index of 29/100).

We recognised that in some instances, it may not be possible to reasonably price such risks at all. Under such circumstances, we would recommend withdrawing from the investment.

Top-Down Approach

With the top-down approach, the country risk premium can be estimated through a variety of market pricing measures. One example is by taking the difference between the five-year Sovereign Credit Default Swap ('CDS') spread of an individual country, and the average five-year CDS spread over a basket of the top five developed nations (G5) by GDP[1]. We note that whilst this only provides an indication of the sovereign risk of a country, it provides a reasonable term of reference for our analysis.

There is no one size fits all solution to the pricing of risks in emerging market economies. The ability to price risks will depend on each country's and each project's unique characteristics. We believe there are investment opportunities in emerging markets where risks can be appropriately priced and the risk-adjusted returns are compelling. However, we acknowledge that such opportunities are difficult to uncover especially for foreign investors with little local knowledge of the investment environment.

6. Portfolio Considerations

In a world where very full prices are being paid for core infrastructure opportunities in developed markets, finding value for money opportunities in the space is challenging.

Investing in emerging market infrastructure projects may be one solution. Investors can be rewarded with higher returns for providing tangible economic benefits to their growing and urbanising population. However, investors need to overcome a range of additional risks they might not experience in developed markets. Some of these, such as material corruption risk, may be impossible to price.

Whitehelm Capital has invested in a number of infrastructure opportunities in emerging market economies with generally acceptable returns, some of which have provided exceptional performance, whilst others have experienced a volatile journey.

As a global infrastructure investor, we believe that emerging market economies can offer infrastructure assets at attractive risk-adjusted returns. However, we have historically limited such investments given the investment objectives of our institutional clients.

Whilst only playing a modest part of client portfolios at present, we do believe that with the strengthening of regulatory frameworks and with appropriate risk structuring in place, infrastructure opportunities in emerging market economies will continue to grow as these nations develop and mature.

This feature article is a condensed version of a more in-depth article. If you are interested in accessing the longer-form version, contact Nicole McMillan at Nicole.McMillan@WhitehelmCapital.com

[1] US, UK, France, Germany and Japan