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consultancy engineering business environment

Barriers to infrastructure investment

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A conversation starter

Introduction

This paper explores a wide variety of aspects that act as barriers, or significantly change the risk profile of an investment project. These processes are important within the investment cycle and should be understood by all parties involved.

By facilitating wider debate on these issues it is hoped that the UK can open up new and existing avenues of funding to help address the infrastructure challenges we face moving forward.

This paper forms part of a growing portfolio of research by ACE into the effects of infrastructure on the wider economy. The papers below outline the case for funding, a variety of funding methods including traditional and new forms of infrastructure spending stimuli, and more detailed sector specific issues such as retrofitting and microgeneration.

- Infrastructure: A case for funding – This infrastructure report reviews and analyse a range of material that is openly available to ascertain what effect infrastructure investment has on the economy.
- The Infrastructure Investment Trust - ACE proposes a supplementary model to PFI initiatives, to read the executive summary please click here
- Retrofitting the UK's housing stock - This paper is intended as a conversation starter on how retrofitting might be taken forward in the residential sector
- Department for Infrastructure - ACE makes the case for a new department to support government and infrastructure
- Spending efficiency - This paper makes the case for a balanced scorecard approach to achieving efficiency
- Infrastructure funding - a range of options in its latest policy paper: Infrastructure Funding
- Avoiding the infrastructure crunch - ACE identifies the problems and suggests policy solutions
- Infrastructure bank - ACE sets out the case for an infrastructure bank
- Infrastructure gilts - ACE's proposal to create an infrastructure gilt to drive investment in transport, energy and utilities and

- Infrastructure assessment - ACE's proposal for an audit of the UK's existing infrastructure
- Microgeneration - ACE finds that support for the development of microgeneration technology needs to be increased if the UK government wishes to speed up the adoption of microgeneration technology.
- Transport – UK's Infrastructure Priorities – The survey, carried out on behalf of ACE and CECA reveals businesses attitude and opinions with regards to the UK's current and future provision of transport infrastructure.

Executive summary

Investment in infrastructure is currently considered as a key policy objective of most developed and developing nations. The goal is a simple one, given the financial crisis, reduced demand conditions and concerns regarding sovereign debt, capital spending is considered a method of facilitating economic growth.

However, these conditions have meant that financial markets are less willing to invest, and their risk profile is considerably lower (reducing their willingness to take risks). This is unfortunate given governments willingness to transfer both the financing and risk of delivering infrastructure projects into the private market.

This paper has identified three key areas where improvement is required to facilitate more activity within infrastructure investment.

1. The risk associated with the construction phase of infrastructure is not understood, and is considered of significant risk by investors. This phase of projects needs de-risking.
2. The public/private sector need to outline clearly what risk each party are prepared to accept and the return associated with such risk.
3. There needs to be a dialogue between government and industry to move the debate surrounding the barriers that are in place with a view to designing practical solutions.

These areas are still quite broad in terms of their scope, but are very relevant to the current situation within both the political and economic environment. Given the research carried out in this paper for each area, we will now outline some potential avenues for discussion going forward.

The risk associated with the construction phase of infrastructure is not understood, and is considered of significant risk by investors. This phase of projects needs de-risking.

The construction phase of any infrastructure project is considered to be one of the riskiest by investors, contractors and designers. There is significant potential for project delays, and an increasing cost base. However, such costs and risks can be managed. This paper has explored the following methods of reducing risk in the system:

- Insurance

- Retention pools
- Operational and design risk reduction
- Government contractual guarantees

However, although these systems play their role in reducing or sharing the risk associated with the construction phase of infrastructure investment, they still require the investor to calculate their return based on a large number of highly complex conditions. Such a system would not encourage pension funds to enter the market. These investors would still prefer assets where construction has been completed, significantly reducing the associated risk.

Separating the 'high risk' segments from the investment system is key, and the development of mechanisms to manage risk such as the ones mentioned above help to provide investor confidence.

The public/private sector need to outline clearly what risk each party are prepared to accept and the return associated with such risk.

This is one of the key areas of confusion, given misaligned expectations. Government feels that the private sector should be taking on greater risk and responsibility for projects, whilst the private sector feels that the returns they receive do not provide sufficient reward given the risks they are being asked to take.

Addressing this issue is important, and so we would urge government to consider the following when considering private investment in a project:

- Is the income stream generated from the project secure and significant enough to ensure investors participation without adding, to the risk premium?
- Is government prepared to pay a significant risk premium if it feels the private sector is best suited to deliver a project (such as nuclear power)?
- Is the project of significant benefit to the UK economy in terms of its growth potential or environmental credentials, and does this correlate to the potential return it would provide to an investor? If not, some degree of subsidisation or risk mitigation will be required from government.
- Is the length of the return of the project suited to the type of investor that is being approached? A ten year return may be too long for an investor

(such as hedge funds) that wants short term returns whilst too short for pension funds to consider as providing long term stability.

There needs to be a dialogue between government and industry to move the debate surrounding the barriers that are in place with a view to designing practical solutions.

This paper has reviewed both the market conditions and requirements of a pensions investor, as well as the aspects within the markets that create uncertainties and slow down or prevent investment decisions.

Looking forward, government should look to engage with pensions funds, banks, the construction sector and private investors to align the models created by government towards the risk (listed vs. unlisted, domestic vs. international, data transparency, single vs multi sector, regulatory, political, legal, environmental) and return (fees, liquidity, pricing, income stream, cost of capital) profiles of investors.

For example, the government may be able to attract pension fund investment by bundling projects together. This could be done across multiple sectors to provide a diverse but relatively secure portfolio, or within an individual sector to provide a greater potential return but higher associated risk. Within this the bundled products would also have to be tailored to span a varied number of time periods, such as 10, 25 and 50 years. Aligning the terms of such a product to that of the market is key to driving investment growth.

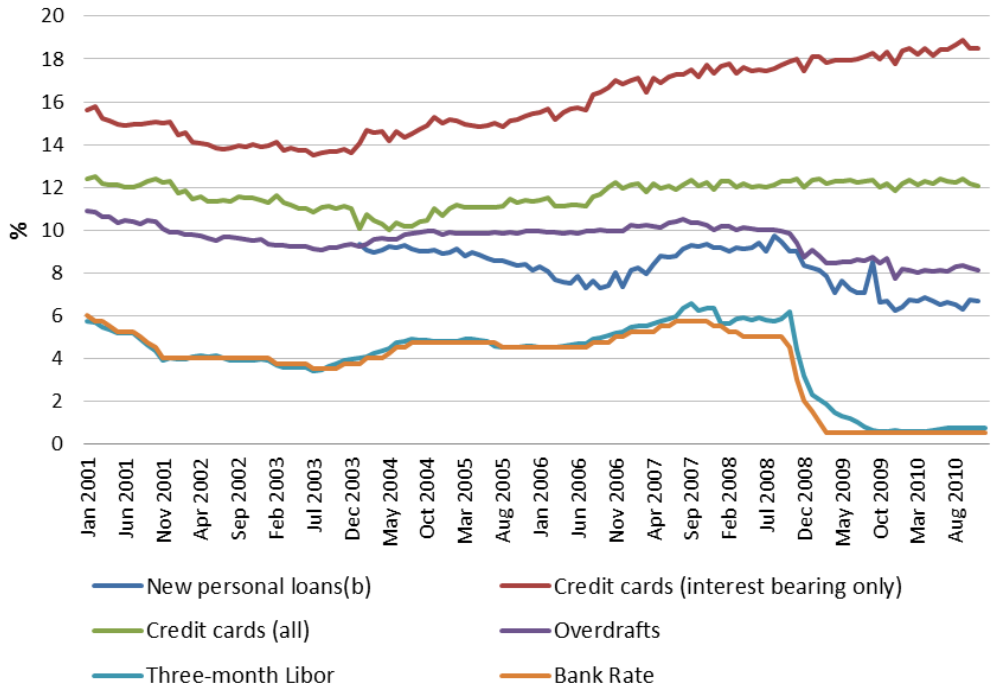
For pension funds to invest in such bundled projects there would need to be transparency as to the composition of the product and the potential returns that were likely. Within this the construction industry will also need to improve the quality and transparency of the processes it employs to not only limit risk but minimise the likelihood of delays and cost overruns. By providing this information in a clear consistent manner, investor confidence should increase, due to the clearer signals relating to risk and return. This should thereby improve the efficiency of investment across the industry.

The finance markets, capital, and the effect of the financial crisis

Capital requirements and markets are significant drivers of investment activity and hence play a key role in the development of infrastructure. The financial crisis has not helped investment in this respect.

Although the base rate is at a historic low, lending to businesses and consumers is still depressed. This can be attributed to several factors:

- The cost of capital has not fallen to the extent consumers and business may have initially anticipated, given the reduction in the base rate (BOE lending data shown below).



Source: BOE

- Interbank lending collapsed when the crisis hit, as confidence in the system deteriorated. The banking sector did not know who was exposed and to how much. This pushed up the cost of borrowing between the banks as the risk of default increased.
- Changes in government and the regulatory environment create financial uncertainties. Clear rules and systems need to be put in place to reassure investors that infrastructure projects are not only eligible to go ahead now but will also be at the point of finance, planning and construction. For example, within industries such as the water sector

where a Regulatory Asset Base model is used, there is certainty provided by the regulator and so projects are undertaken based on the utilities business plan.

- Infrastructure projects are likely to contain various forms of government subsidisation in the form of grant contributions, tax relief, or guaranteed revenues or charges. Within projects the outline of powers, responsibilities, risks and the subsequent income and financial potential is key. Such variables will depend on demand and supply efficiency calculations, which will be considered as an important aspect to investors when calculating potential yields.
- Financial commitments to infrastructure from the public sector are likely to occur over significant periods (such as Crossrail), and so it is important that any guarantees provided to investors aligne with their risk expectations and yield requirements.
- The banking sector has been required to recapitalise its balance sheets, thus reducing the capital available to businesses and consumers.
- The risk profile of debt changed significantly; projects and businesses that were considered viable only a few months before are now considered to be 'risky' investments.
- Investors have not fully aligned their investment return or income expectations to that of a post crisis environment. Despite the Bank of England maintaining historically low interest rates, there is a higher cost of capital, increased uncertainty, and a constrained lending environment, so pre crisis returns on projects are unlikely to be achievable, despite expectations that such returns are feasible.
- Collaborative capital became more difficult to ascertain as fewer parties were willing to undertake risk, but at the same time were also more preferable given that it reduced the risk to the individual financers

As can be seen from the above, there is a large degree of potential for infrastructure projects to be delayed or even cancelled on the basis of tightening finance criteria. An example of this would be the Walkie Talkie in Fenchurch Street, which had work put on hold during the recession, only for work to resume towards the end of 2010.

Addressing these issues will be particularly important if the private sector is to play a primary role in the delivery of infrastructure and investment financing. Within this, it is important that the secondary role played by the public sector is one of efficiently leveraging on the market to deliver investment where feasible, whilst continuing to finance projects that the market would not deliver. This is an area where the Green Investment Bank (GIB) could play a key role in facilitating financing.

The Green Investment Bank (GIB)

Although the GIB's exact role is still to be determined, the possibility of such an institution acting as a facilitator for both listed and unlisted funds could significantly increase investor activity.

If the GIB linked together infrastructure funds, direct equity investment, and operated within an effective tax regime it could create a very powerful tool for infrastructure investment. This would allow both smaller investors to capitalise on projects, and also continue to appeal to investors which have significant capital available to invest in return for sizable equity in the project. In this role the GIB would also provide a resource for potential project teams to approach to mitigate their funding risks.

This highlights the importance of the different types of investors, and how their needs vary. As we have seen by the sale of High Speed One[1] in the UK there is potentially a very significant untapped market in terms of investment via pensions funds. Given the current reluctance and risk averse nature of the financial sector other sources of investment such as pension funds will need to be explored.

One could also ask why there is a lack of willingness by UK pension funds to invest in assets such as HS1, thus allowing competing international funds to secure would-be long term secure investments.

One explanation could be the fragmented nature of the UK's pension fund market. This means few funds would have the ability to meet the size of the investment. For example "the Ontario Teachers' Pension Plan is the largest single-profession pension plan in Canada with net assets of $96.4[2] billion at

[1] Sold to a consortium which includes Borealis Infrastructure and Ontario Teachers' Pension Plan (two Canadian pension funds)

[2] Canadian Dollars, 98.66 US Dollars at a rate of 1.023

December 31, 2009[3]. Whereas the Universities Superannuation Scheme Ltd which is one of the UK's largest private sector funds in 2010 was worth over £30bn (which is approximately 50bn Canadian dollars)[4] This would appear to suggest that consolidation, or vehicles that allow the funds to pool together, would help to improve liquidity.

Another explanation may be that some foreign pension funds have greater experience when dealing with such assets and so are more comfortable dealing with the associated risks (For example, those of Canada and Australia, such as the Ontario Teachers' Pension Plan).

However, as with any new potential investor, the UK's pension funds investment capabilities need to be understood in more detail to enable the market and government to create products and mechanisms that facilitate investment.

[3] The Ontario Teachers' Pension Plan, 2009 Annual report, http://docs.otpp.com/AnnualReport.pdf
[4] Universities Superannuation Scheme Ltd Report & Accounts http://www.uss.co.uk/Annual%20Reports/Report%20and%20Accounts%202010.pdf

Opening up pension funds to infrastructure investment

Pension funds control a substantial amount of capital and unlike the traditional financial sector which is geared more towards the short-term, high-return forms of investment, infrastructure provides a long, secure, and stable return and so should be an attractive proposition.

Pension funds have also been placed in a position by the financial crisis and recession whereby they are looking to further diversify their portfolios to spread risk, countering some of the volatility created by the financial crisis. Infrastructure in this respect could provide a solid long-term low-risk investment base, and given that the assets are 'physical' in nature, portfolio managers confidence will generally be higher since they can see the asset in which their funds have been invested.

However, many pension funds do not have the facilities to assess the risks involved with investment in such projects. For example, they may not have the expertise to assess legal, ownership, environmental, operational, financial and political risks that surround major infrastructure projects.

This situation is not unique to the UK, and it is important to recognise that in such a field the UK will be competing with projects around the world for the investment by pension funds. If the UK does not react to these challenges in a timely manner investment will flow to other markets in place of our own.

The OECD, has produced a detailed analysis of the interaction of pension fund investment in infrastructure entitled "Pension Fund Investment in Infrastructure[5]" - Inderst, G. (2009).

This paper is significant in terms of the depth and extent of the research carried out, and so it is important to be aware of the issues raised. Outlined is a summary of the findings:

In terms of the size and potential of the pension sector to invest in infrastructure, the paper finds that:

- "According to the OECD calculations, the funded pensions market (both occupational and work related) has a size of US $24.6tr worldwide. Of

[5] Inderst, G. (2009), "Pension Fund Investment in Infrastructure", *OECD Working Papers on Insurance and Private Pensions*, No. 32, OECD publishing, © OECD. doi:10.1787/227416754242

this, US $16.2tr is held by pension funds. On a simple calculation, an allocation of 3% of pension fund assets would make roughly US$ 500bn.

To put this figure in context of the UK's current infrastructure challenge, estimated that Britain has an infrastructure deficit requiring at least £434 billion ($704 billion[6]) of new investment by 2020[7]. A small percentage of pension fund assets would therefore give the required finance to tackle this infrastructure deficit.

The paper recognises the importance of the history behind infrastructure funds, and their relatively young age compared to some of the more traditional forms of investment opportunity for pensions funds:

- "Dedicated infrastructure funds were first set up in the mid-1990s in Australia, and the local Super-annuation plans in the USA were early investors in them. Some bigger Canadian plans also pioneered this field. Australian financial institutions started to promote such funds more widely to pension funds and other investors earlier this decade."

This shows that infrastructure funding is of interest to investors and pension funds. However, as mentioned previously the level of expertise and uncertainty with regards to the products on offer, can cause problems. As Inderst notes:

- "Unfortunately, there is considerable confusion in this area, in particular with regard to the definition of infrastructure assets, the investment options available, the actual investments of pension funds, the expected and realized returns, the diversification benefits and the specific risks."

This does not create a conducive environment for investment. Pension funds will be especially concerned as to the exact level of risk and return on offer by infrastructure assets given the term of investment. It is only by knowing such information that pension funds can ensure they meet the future funding commitments of the policies they have put in place.

Inderst continues to investigate these issues further. The first to be considered is the definition of infrastructure itself.

[6] At a rate of 1=1.622

[7] Helm, D, Wardlaw, J & Caldecott B, 2009, Delivering a 21st Century infrastructure for Britain, Policy Exchange

It is found that infrastructure is generally defined by its physical nature, and there is not always consensus as to what exactly should be included as part of the infrastructure asset.

The example used is that of a utility company. These companies own production, distribution and retail operations. At what point do you therefore consider the operations as integral to the infrastructure asset, or as separate entities?

Situations are further complicated when ownership is divided between the public and private sector, or when there is a national interest in the operation, upgrading and maintenance of the infrastructure asset.

Given the above, the paper goes on to look at the various way in which pension funds are now able to invest in infrastructure assets. Although some barriers will be present given the wide variety of investments available, having differing options is not itself a barrier. However, it is important that the UK understands how such mechanisms operate, given that they are likely to dictate how investors' funds are to be distributed.

Traditionally, if a pension company were to invest in infrastructure assets they would purchase shares or invest in bonds. These would then reflect the value of the asset or company and provide a return over time. However, there is now a much wider availability of varying product offerings.

Primary verses secondary market

This primary market involves financing the start-up and construction phase, whereas the secondary market is that of the operation of the asset once completed. Generally, the risks in the primary market are greater and so an investor will expect a guarantee of higher returns to compensate for the additional risk they have undertaken. The primary area is one in which the government would like to see private sector funding improve in the UK, to mitigate against the cuts in public sector funding. However, the private sector including pension funds will only be willing to undertake such risks if they are assured of returns in line with expectations.

This may mean that government has to put in place guarantees to minimise the risk to investors or to improve the rate of return to make projects attractive to the private sector.

Equity vs. debt finance

Inderst finds:

- “Infrastructure projects are financed through a combination of debt and equity. Investors might seek some sort of equity participation or be interested in buying infrastructure bonds issued by infrastructure companies. On the debt side, bank loans tend to dominate but bigger companies often issue infrastructure bonds (e.g., PFI bonds in the UK). Infrastructure projects are often highly leveraged, i.e. the equity portion is small.”

Given the financial crisis, willingness and ability to finance significant debt levels on the riskier projects is unlikely. This is where government may have to be more creative with the instruments that are put in place to help manage the risk to the private sector. For example, the proposed Green Investment Bank could perform well in this area if it operates in a manner that is conducive to attracting private finance.

Listed verses unlisted companies

Further to this the OECD paper shows that:

- "Infrastructure companies can be listed on the stock exchange or unlisted. Investment in unlisted companies works like a private equity investment.”

For pensions funds, unlisted companies are potentially more of a challenge in terms of their investment potential. Whilst the information availability is likely to be less transparent, the ability to tailor investment conditions towards an individual company’s specific needs is likely to be greater.

Direct vs. indirect investment

Inderst then goes on to explore direct and indirect investment finding that:

- “For listed infrastructure companies, equity can be bought easily and directly on the stock exchange. For unlisted companies, direct investment is more complicated. Some bigger pension plans have started to invest directly in unlisted infrastructure companies, normally in partnership with other investors, including specialist funds. The more common route for pension funds is to invest indirectly, e.g. through a specialist private-equity type of fund.”
- For example, the use of Macquarie International Infrastructure Fund (MIIF) or the Canada Strategic Infrastructure Fund (CSIF) as opposed to directing directly in companies such as airport operators (BAA), energy

and utility companies such as Centrica. Looking in more detail at the example of the Ontario Teachers' Pension Plan which was part of the purchase of HS1, their efforts to increase private equity investing has increased with the purchase of stakes in almost 300 companies over the past two decades[8].

These types of investment help to show the infancy of the pensions investors in the infrastructure market, shadowing or utilising specialised investors to build their skills base.

General partner verses limited partners

- "Most private equity-type funds take the form of Limited Partnerships. They are managed by a General Partner (GP) that is often part of bigger financial groups. The investors in such funds are referred to as Limited Partners (LP). LPs take a more passive investor role in the fund. Pension funds typically participate as LPs[9]."

Listed vs. unlisted infrastructure funds

As well as listed and unlisted companies the OECD paper explores the manner in which infrastructure funds can operate:

- "Infrastructure funds may also be listed on the stock exchange (such as closed end funds or investment trusts) or unlisted. There are a number of implications, such as different regulation, governance, investment constraints, reporting requirements, access to the funds, etc."

One way in which investment in such funds could be increased would be to allow or encourage more funds to operate on stock exchanges. In theory this would provide them with a much larger pool of investors (both corporate and individuals) through which funds can be raised.

Domestic vs. international

Importantly Inderst also comments on the global; nature of the market:

- "Some infrastructure funds are purely domestic for reasons of investor preferences or regulatory and tax constraints. Other funds have a global or regional focus (e.g. European, Asian). There are already examples of

[8] Bloomberg, Business Week, The Pension Fund Beating Private Equity, Feb 18 2010, http://www.businessweek.com/magazine/content/10_09/b4168048796720.htm

[9] Inderst, G. (2009)

infrastructure funds for developing countries (e.g. India), regions (e.g. Africa), or global emerging markets."

If we were to take some examples for the global market:

- Macquarie's MIIF funds portfolio consists of Changshu Xinghua Port (CXP), Hua Nan Expressway (HNE), Miaoli Wind Co. Ltd (Miaoli Wind), Taiwan Broadband Communications (TBC) and Cash and cash equivalents. This fund focuses on the Australasia market in particular.
- Barclays Infrastructure fund offers a variety of sectors including healthcare, education, transport, water treatment, courts & custodial, public facilities and defence, across the EMEA, Asia Pacific and Americas
- The Infrastructure Development Finance Company Limited (IDFC) is a collaboration of the Indian government and financial institutions to facilitate investment into India's infrastructure. To do this it utilises tools such as India's Infrastructure Fund (IIF) to attract investment.

This provides multiple avenues of investment for pension funds, allowing them to diversify not only into infrastructure as a wider part of their portfolio but also into differing types of infrastructure asset given their potential return and associated risks.

Single-sector verses multi-sector

- "Infrastructure investment vehicles may be single-sector (e.g. airport, transport, utilities) or multisector, seeking broader diversification across sectors."

Examples include:

- The funds mentioned previously are all examples of funds that provide a degree of sector diversification.
- Whereas, the Rabo Bouwfonds Communication Infrastructure Fund focuses purely on investment in Dutch communication infrastructure.

As can be seen from the above considerations, the investment decision is far from simple and so the degree of uncertainty can be quite high. Hence there is a lower willingness amongst pensions companies to invest, until they feel they have the expertise to make informed decisions.

Importantly Inderst looks in more detail at the barriers that are likely to exist for pension funds when attempting to invest in infrastructure.

Liquidity

Liquidity is important to any investor. The ability to move funds between assets to improve performance and fund activities is key to operational performance. Inderst recognises this as a concern, but does also admit that:

- "Although the majority of pension funds do not have a high need for immediate liquidity, for some others this may be a crucial consideration."

Pension funds have to balance their long term stability against shorter term liquid alternatives. For example, pension funds investing directly in companies stock allows them to redirect investment streams at short notice if they feel the company is not providing a reasonable return. However, investments in infrastructure such as HS1 would require a longer sale period if they decided the asset was no longer going to form part of their portfolio. Infrastructure funds provide some flexibility with investors able to direct their investment to the funds they feel best suit their needs.

Pricing

- "Pension funds are used to daily market price valuations of traded assets but infrastructure is typically valued on an appraisal basis, the frequency being quarterly or longer periods."

This introduces another degree of uncertainty and unease for pension funds as their ability to monitor their assets appears diminished.

Governance, management, operations, and experience

This is an area in which pension funds are likely to experience challenges. Some of the issues highlighted by Inderst include:

- "What type of projects should be considered? What investment approach? What should be outsourced? What specific advisers are needed? Is it understood what fund managers do and what they invest in?"
- "Infrastructure is also an operational challenge for pension funds, including accounting, IT, risk management. Who will deal with all the small print in the (voluminous) paperwork?"

- “Many pension plan trustees feel a lack of knowledge not only on their own side but also on the side of managers and advisers (investment consultants, actuaries, lawyers, auditors etc).”

This demonstrates the potential scale of the task in hand and may explain the lag in pension fund investment in infrastructure projects since their introduction in the 1990’s. It is felt that there is not a sufficient understanding of the construction risk involved with infrastructure projects, and insufficient financial tools to mitigate such risks.

This process will take time as specialist systems and skills are developed and integrated into pension companies investment mechanisms. Only once this is complete, and companies feel they have the ability to access, analyse and mitigate against the potential risks that may occur will investment volumes increase significantly.

In the interim period it is likely that investment will continue to be through funds run by financial institutions that specialise in infrastructure assets, allowing companies to invest in infrastructure in a variety of sectors or regions, rather than direct investment.

Data and transparency

For pension funds the availability, transparency and accuracy of data is important. It is only through having such information that the risks and returns associated with a project or investment can be calculated. However, for companies involved within investment deals such data is key to maintaining a competitive edge. It is important to recognise that both aspects of this balance are important, but sometimes it is necessary for regulation to be put in place to ensure that transparency and reporting requirements are adequate. Examples of this include the Markets in Financial Instruments Directive (MiFID) and the current investigations by the European Commission, under the recommendations in the third package with regards to transparency in the energy sector.

Inderst recognises the infancy of this area of the market with regards to pensions investment stating that:

- “Independent performance and risk management has not gone very far as yet in regards to the collection, analysis, and publication of data. Academic research is also in its infancy.”

Direct investment

Direct investment in infrastructure assets provides a greater degree of control to the investor as to how money is spent, the control of costs and increases the potential return they can achieve. However, it also involves higher levels of risk and increased administration and operational burden. Whilst this option is a possibility for larger pension funds, concludes that:

- "Direct investing in infrastructure is not a realistic option for most smaller and medium sized pension funds."

Short lifespan of investment funds

- "Paradoxically, pension funds often find the lifespan of the infrastructure vehicle offered too short for their needs. There is a maturity mismatch between the typical length of private equity-type of funds (typically 10 years) with the liabilities of pension plans (often much longer)."

Fees

As with most new areas of investment, determining an acceptable level of fees is difficult when there are few comparators. Fees not only occur at the commencement, but also throughout the investment period, and so given the complexity of infrastructure projects the uncertainty of fee levels is considered to be quite high.

Inderst finds that:

- "Typically, there is a basic management fee of 1% - 2% and a performance fee of 10% - 20%, usually with a hurdle rate of 8% -12%. Some (potential) investors feel that they are charged —private equity-type fees for bond/utility stock-type returns."

Regulatory, political and social risks

It is recognised that because of the scale and importance of infrastructure projects they are often subject to a degree of political, social and regulatory processes that would not occur in most other industries.

- "Government involvement can be in various directions. The revenues of infrastructure projects are often protected by government concessions of 25 years or more (e.g. schools and hospitals). Other projects may have charges and fee increases controlled by a public regulator (e.g. toll roads). The public authorities also tend to keep a strong interest in the

regulation of formerly nationalized monopolies such as utility distribution networks."

Given the above, pension funds are aware of the different interests of the groups involved in infrastructure and the political views of these who believe such assets should be funded and run out of general taxation, and so can create negative press. These issues all raise the potential risk to an investment and so deter pension funds from investing.

- For example, the replacement of Kingsnorth coal fired power station in Kent announced in 2006:
    - Had to contend with current carbon policy set by the European and UK government, with the possibility of regulations getting tighter in the future
    - Planned to utilise carbon capture and storage (CCS) technology, bidding for the governments carbon capture and storage competition
    - Contended with rising coal and commodity prices
    - Reached the stage of prequalification
    - Was postponed until 2016 following political pressure
    - Has now been cancelled indefinitely

Emerging markets, developed markets, and over supply

Emerging markets present a number of opportunities and risks in terms of infrastructure, whilst their systems are less developed and so provide the possibility of using known technologies, reducing risk and increasing the level of profitability. Political uncertainties and instability and less developed legal and regulatory processes all increase the risk of such investments.

Developed nations on the other hand, benefit from reduced risks in terms of political stability, regulatory processes and sufficient legal systems. However, due to previous infrastructure arrangements have the potential for costs to escalate, reducing the potential level of profitability. E.g. the UK's dense and aging transport network make it more expensive to upgrade than if you were building from new in less densely undeveloped area.

There are a large number of factors that pension funds have to account for before making an investment decision. This paper has so far explored

- Primary verses secondary market
- Equity verses debt finance
- Listed verses unlisted companies
- Direct verses indirect investment
- General partner vs. limited partners
- Listed verses unlisted infrastructure funds
- Domestic verses international
- Single-sector verses multi-sector
- Liquidity
- Pricing
- Governance, management, operations, and experience
- Data and transparency
- Direct investment
- Short lifespan of investment funds
- Fees
- Regulatory, political and social risks
- Emerging markets, developed markets, and over supply

Some of these risks are not unique to the participation of the pensions sector as an investor in infrastructure. For this reason this paper will now look at the wider issues of income generation, taxation, regulation, construction risk and possible future project challenges within the infrastructure sector.

Income and return: why infrastructure can create uncertainty

Income verses Capital growth

Investors' willingness to finance projects will depend on the potential rate of return they can achieve. This can be in the form of any capital gains associated with the value of the asset itself, or from the income generated from the operations/charges applicable to the asset. These returns will be balanced against the risks and potential liabilities of the project.

Uncertainty of the income stream

Investment in new infrastructure can be difficult given the volatility and uncertainty surrounding future income streams.

For example, projects such as toll bridges are attractive because investors can use historical data to model usage, which subsequently provides a good indication as to future income streams. There are also few alternatives available to consumers which, although limiting user choice, provide certainty over demand for the investor.

If we consider the new nuclear build projects that the UK plans, reliably determining future income streams is not quite so simple. Income will depend on future demand for power, the price of production versus alternative technologies and production methods, plant utilisation (which would need to be significant given the high cost of investment), grid access charges, and environmental legislation both in the UK and Europe. This makes the decision to invest very complex and so increases the uncertainty. Hence, the risk increases, as does the premium the investor will require.

Disconnect between price and value

If we look at a number of infrastructure markets, such as the water sector, we find that although private investment is welcomed, the price of the commodity is regulated. This disconnects the investment cost and the eventual cost to consumers. Establishing such a link would ensure that the product is priced according to the risks and financing costs that are directly undertaken as a result of the improvements.

Although an investor could both benefit and lose out under this arrangement, it is generally felt that such conditions are put in place to ensure that provision occurs at a socially acceptable price. This is generally at a rate below that at

which an investor would consider the income stream to be reasonable to justify their investment.

Exit routes uncertain

Unlike other forms of investment, the exit route from involvement in infrastructure is long in duration, and contains significant uncertainty due to the length of time over which the investment takes place. This has the effect of reducing an investor's liquidity, as they are unable to switch between different income generation types quickly to take advantage of varying rates of return and risk.

As can be seen from the above, the uncertainty of income can deter investors. One way in which such uncertainties can be addressed is by introducing a stable regulatory environment into the system.

Taxation and long term investment

As the financial crisis has demonstrated, the current tax regime and regulatory environment provides too many incentives to aim for short term gains.

For example, a recent report from the IFS[10] found that "corporation tax currently discourages investment financed by equity and favours debt finance." If we wish to encourage pension funds and businesses to invest in infrastructure assets there will have to be greater recognition that investment is part of a long term finance strategy that promotes stability. Such recognition should attract benefits within the taxation system.

Clear data and long term commitments are required to provide certainty in the system. For effective taxation and incentivisation to occur, transparent and reliable data is required. This data should not only be considered in relation to how, say a rail network should develop, but also in the context of whether rail is the optimum form of investment given wider economic benefits and competing forms of transport. Understanding network usage and the impact that changes have on toll revenues will be key to investors' expectations of rates of return.

Taxation and its role in international and cross border infrastructure investment

Taxation systems are generally considered on a national level but, increasingly, infrastructure assets span borders, or are funded by international or multinational companies. This creates complexity of funding, and uncertainty of public funding and receipts.

- For example, the Nabucco pipeline stretches from Turkey to Austria traveling through Romania, Bulgaria and Hungary. This pipeline is not only important to the EU's energy security agenda, but also raises concerns and complications in each country through which it passes. To help secure the approval of the pipeline developers tried to avoid areas of high population density, nature reserves and difficult terrain, reduce security risks and minimise length. Within this there will be multiple financial, regulatory and tax regimes all of which can create further complexities.

[10] IFS - Mirrlees Review of tax system recommends radical changes, 2010, http://www.ifs.org.uk/pr/mirrlees_launch.pdf

A White paper produced by the European Commission[11]' outlines a variety of issues caused by charging policies of transport related infrastructure assets.

Transport infrastructure across Europe needs innovation in the form of optimisation. It is unrealistic, given increasing demand, to continue building infrastructure and systems that do not provide optimal capacity and efficiency across the wider EU area.

The harmonisation of taxation for commercial transport users can be complex, especially as the number of countries through which freight travels increases. It is for this reason the paper recommends harmonisation of fuel taxation for commercial users, particularly in road transport[8].

The report also recommends that such harmonisation efforts should not be limited to just the simpler aspects of taxation such as road duty, but should also include

- "alignment of the principles for charging for infrastructure use; the integration of external costs must also encourage the use of modes of lesser environmental impact and, using the revenue raised in the process, allow investment in new infrastructure, as proposed by the European Parliament in the Costa report."
- "For the modes to enjoy a level playing field, taxation should work according to the same principle regardless of mode and ensure a fairer distribution of the burden of transport costs"

Some of these principles have been applied in subsequent directives but despite this the funding of infrastructure and the tax regimes around such investments still vary significantly.

An integrated EU system such as that suggested in the European transport policy paper would provide investors with confidence that investment regime and conditions would remain stable. This would provide certainty within expectations of future returns, increasing the number and sums investors would be willing to hold in infrastructure assets.

[11] Source: European Commission, European transport policy for 2010: time to decide, (2001) http://ec.europa.eu/transport/strategies/doc/2001_white_paper/lb_com_2001_0370_en.pdf

However, such harmonisation may be difficult to implement given public opinion and concerns as to the reduction of national economic sovereignty. This may promote political challenges in the EU member states.

Since the publication of this report, there have been significant developments such as the financial crisis and the development of more advanced infrastructure products such as infrastructure funds.

The financial crisis has demonstrated the need for investor confidence; if a project cannot currently assure investors of its 'low risk' profile or guarantee a reasonable return given any increases in risk, then there are sure to be difficulties in obtaining finance.

The development of more advanced infrastructure funds now provide tools for investors to not only mitigate their risk across their portfolio from other markets but also between infrastructure assets and sectors. Traditionally such avenues of risk differentiation and investment would only have been available to large investors with significant capital flows.

Interestingly the white paper also suggests that the harmonisation of effective charging policies for transport would:

- "Require equal treatment for operators and between modes of transport. Whether for airports, ports, roads, railways or waterways, the price for using infrastructure should vary in the same manner according to category of infrastructure used, time of day, distance, size and weight of vehicle, and any other factor that affects congestion and damages the infrastructure or the environment."

Although generally alternative options are considered, policy that mandates the equal treatment of differing modes of transport would provide interesting results. For example, in the case of EU travel, an equal mandate could see a further expansion of the EU's high speed rail network due to its environmental benefits in comparison to its costs. This may squeeze out airport development in some areas.

This harmonised and open pricing mechanism would provide clear investment signals, based on the costs and benefits of a much wider variety of transport options and not just the status quo.

Currently, “different levels of taxation apply to the energy used by different modes, e.g. rail and air, and this can distort competition on certain routes served by both modes[12].”

However, changes to such systems are not simple on a national level, without the additional complexity of national policies, targets and preferences. It is for this reason that standardisation was not proposed. Harmonisation would still allow a degree of flexibility within the system. For example, allowing some member states to vary technical standards as long as compatibility was still possible. This provides flexibility whilst improving the level of certainty for investors.

[12] Source: European Commission, European transport policy for 2010: time to decide, (2001) http://ec.europa.eu/transport/strategies/doc/2001_white_paper/lb_com_2001_0370_en.pdf

Assessing the risks within the regulatory environment

Regulatory conditions are a key determinant of investment; they not only provide certainty but shape the ability for investment to occur. An investor's response to regulation can be both positive and negative. Some forms of regulation mitigating risk, whereas others impose risk or additional cost.

Within this, regulation also changes over time and so in itself poses an inherent risk for which investors will demand a premium.

Planning

Planning risk occurs when a project is either in the conceptual stages and still requires permission, or may occur as a result of the externalities of a project within a local area subsequently causing objections to a scheme.

In this respect it is important that local communities are involved within the design and conceptual stages of projects to ensure that there is confidence from investors that the projects are viable.

Ensuring that the process is clear, transparent, and open to all parties should help to provide confidence for investors. Within this, the possibility of lengthy and expensive appeals processes (once a decision has been taken) should also be minimised. These points therefore need to be picked up in the governments Localism Bill and localism agenda.

Building regulations and standards

Building regulations and standards, whilst being essential for construction projects, can also provide a degree of certainty to investors. The more tried and tested an approach the less potential there is for additional costs to be incurred. For example, new technologies such as carbon capture and storage carry a large amount of inherent risk. This is why the European Union and national governments are working together to try and develop CCS projects (The European CCS Demonstration Project Network[13]). Although not necessarily defining standards, the cooperation and harmonisation of projects means that the eventual resultant technology should be applicable across a wider variety of markets, thus increasing its attractiveness to investors. On a smaller scale, investment in electricity car charging points may increase if there were more

[13] European Commission, The European CCS Demonstration Project Network, http://www.ccsnetwork.eu/

standards set such as connection and safety specifications, whereby companies and individuals could be reasonably confident that in two years' time the investment would not be made redundant. Timing for such standards will be key given initiatives such as that between British Gas and Nissan to install charging points and infrastructure in consumers' homes if they purchase a Nissan Leaf vehicle.

However, if regulations are too onerous they can result in project delays, and increase the overall cost of a project. In this respect investors would see such regulations as being detrimental to the potential profitability of a project. It is for this reason that the introduction of low carbon building and insulation standards are phased up till 2016 when homes in the UK will need to be built to a zero carbon standard.

Legal

The legal systems within the UK can play a key role in investment. On a day-to-day basis the cost of legal advice will influence a projects' cost, commitments, liabilities and risks. Therefore, it is vital to ensure that the system runs smoothly, protecting the relevant parties whilst also allowing objections to be undertaken in a reasonable manner.

However, the legal system also plays a far greater role in the provision of infrastructure projects operating under a PPP or PFI model. The distribution of responsibilities and risks within these models needs to be calculated extremely carefully. Risks should be held by the parties best placed to manage them. It is important to balance the efficiency, expertise and investment from the private sector with the security, reasonable level of service and value for money required by government.

- For example Metronet was set up as part of a PPP to maintain the London Underground network. However, following issues over cost, the return to investors and possibility of delivering the upgrades on time, the arrangement fell apart. The failure of this agreement cost all parties involved and in essence shows the issues of ensuring that contractual arrangements accurately reflect the expectations of each side.

Environmental

Environmental legislation will play an increasingly key role in the type, cost and specification of construction projects. Conveying information to investors on the

risks associated with implementing low carbon technologies will be vital. Failure to do so will leave projects either unfunded or funded at a much higher cost, given the uncertainties that investors build into their rate of return calculations. For example, the government's announcement in March 2011, outlined the details of the renewables heat incentive which provides financial support schemes utilising renewable heat, and is the first of its kind in the world.

One way in which the construction sector could help the process of identifying and understanding the risks associated with low carbon technologies is to share experiences and data related to projects. This would enable companies to create cost effective and efficient solutions, without repeating the mistakes of others. This would not only improve the performance of the construction sector in terms of its carbon footprint but also would reassure investors given credible information and physical demonstration of the technologies involved.

An example of transparency and data harmonisation is that of the European efforts to share electricity and gas transmission data. This has resulted in platforms such as entsoe platform which shares flow and transfer data in the gas sector. This transparency has allowed more efficient pricing based on demand conditions. Such pricing will create discrepancies in instances where there is surplus supply or excess demand, in which case these signals provide investors with the necessary information as to the investment requirements.

In this respect, it will also be key to identify pilot projects which carry significant risk but also provide substantial benefit in terms of both improvements in technology and performance and provide essential data (such as tidal pilot projects). The rate of return required by investors on such projects will be higher, and so alternative funding mechanisms or risk reduction measures may need to be considered to encourage innovation. Such innovation will be key to the UK maintaining an internationally competitive position in low carbon. If the UK can achieve the status of being considered the market leader in low carbon and microgeneration technologies than the variety of investors and options available to construction projects should improve, reducing both the associated costs and risks.

Regulation therefore does create certainty but can also introduce risk if not managed correctly. However, despite the importance of income and regulation,

there is still the significant issue of construction risk. So how do we currently try to mitigate and control such risks?

Construction risk, the efficiency of projects, and methods of reducing uncertainty and risk

Infrastructure development depends upon specialist materials, machinery and skills, all of which can be difficult to find and expensive to employ. Whilst this is the concern to the management team in terms of delivery, a lack of understanding of the processes and risks creates uncertainty amongst investors. De-risking this process is essential given that the construction phase of a project is the most likely to overrun in terms of time and cost.

How can we de-risk construction?

Risk can be managed and minimized by the following methods:

- Avoidance – don't undertake the risk from the outset
- Mitigation – reduce the level of risks where possible
- Sharing – transfer risks between parties
- Retention – accept the level of risk that is going to occur and budget for any eventualities

Avoidance - separate the high risk segments from the investment system

To encourage investment from organisations such as those in the pensions market, it may be possible to isolate the risky section of the project from their offering. That is to say that a pension company would invest in the completed project, reducing the level of uncertainty they are exposed to. The problem with such a system is that until the point of completion, alternative finance would have to be guaranteed by a party, which would then in return expect substantial returns given that they have undertaken the riskiest proportion of the project. Under such a scheme the only such investor that would be prepared to forego such returns (perhaps due to the wider economic benefits generated) would be central government. Given the size of the deficit reduction measures there will only be limited scope for government to provide such funding streams.

- An example of this practice would be High speed 1, where the financing of the project was undertaken and underwritten by the public sector with the completed asset to be sold following its completion.

Mitigation - insurance

Insuring oneself does not transfer risk, but puts in place an agreement whereby an individual or company would be compensated given a certain event. For this reason, it is important that insurance policies are applicable to the risks the user or company is taking.

There are a wide variety of private insurance products available in the market, ranging from covering professional indemnity to full project offerings.

Risk sharing - retention pool

Another way in which companies can reduce and share risk is to set up a risk retention pool. Within this system, companies agree to pay equal sums into a pool which is then used to pay for any subsequent claims made within the group. The benefits of such a system are that a proportion of the money involved is not paid to an insurance company in the form of profits, there is stability within the payments, and any changes in conditions can be adjusted for to avoid a gap in liability cover. These pools also allow the companies involved to assess and set their own risk tolerance levels within the pool. However, as with all forms of financial cover there are also risks involved. The cost of administering such a pool can be quite high, raising the initial funds can be difficult and there can be a lack of expertise and understanding of the possible claims and risks involved in running such activities.

An example of how such a system can work is that of the Housing Authorities Risk Retention Pool (HARRP) in the US which provides this type of cover for housing associations.

Unlike the options above, which compensate in the event of a claim, companies can also avoid risk by legally transferring the risk associated with projects between parties. This requires contractual agreements which clearly outline each party's responsibilities and liabilities. Following this, each party is then likely to individually insure against the agreed level of risks they are undertaking. These types of contractual agreement form the basis of PPP and PFI projects where the private and public sectors accept a negotiated level of risk.

Mitigation and retention - operational and design risk

Within the mitigation of risk also falls the ability of firms to take proactive steps to ensure that, at each stage of the development, construction and administration process, any risks are dealt with accordingly and in a manner that

reduces the overall risk of a project. For example, utilising computer models that design infrastructure virtually calculating load, stresses, aerodynamics, fluid dynamics, emissions, and even ease of construction (e.g. being able to fit a person in the space to do up that last bolt) all help to significantly reduce risks in the construction stage which have far greater potential to inflate costs.

An example of reducing construction risk through design is that of the work done by General Dynamics NASSCO on the Washington Chambers. The design of the ship was done utilising Computer Aided Three-dimensional Interactive Application (CATIA). This alongside a culture of continuous improvement, was used to maximise efficiency and reduce cost.

Throughout, it is important to identify and quantify risk. Processes then have to be managed to continue to reduce risks and, most importantly, to manage, report and mitigate the effect of any incidents which do occur. This is by no means a simple task, given the number of uncertainties that exist within any project or financial market and the personal nature of what level of risk is acceptable. For this reason (especially when parties are drawing up agreements that transfer risk), it is important that expectations are managed and demands are reasonable.

Government contractual guarantees

Governments can play a key role in the delivery and facilitation of investment income.

Schemes such as Private Finance Initiatives (PFI) and Public Private Partnerships (PPP) are designed to contractually reduce the risk on the private sector. Alongside this the private sector agrees to raise significant funds for investment at a reasonable rate of return. These systems have proven to be both successful and unsuccessful, with the primary reason for their failure relating to the levels of risk and contractual agreements being weighted too far in a single party's favour.

Examples include the success of the Dartford Queen Elizabeth II road bridge, which was delivered on time and budget as part of a PFI arrangement, and continues to generate a reasonable return for its investors. This contrasts with that of the failure of both Metronet and Tube Lines in arrangements to upgrade the London Underground.

This once again demonstrates the need for contracts to be accurate, reasonable, and based upon reliable data and evidence. Only with such data and transparency can investors and analysts calculate if a project provides a reasonable rate of return given the agreements that are put in place.

However, these systems can also become very complex and so generate their own problems in terms of understanding the risks an investor is undertaking. For this reason such schemes need to be well designed, with simplicity and delivery the main focus for the scheme.

An example of a scheme which has helped to generate investment that would otherwise have not taken place whilst remaining simplistic in its implementation is the feed-in tariffs for microgeneration technologies. An increasing number of households have purchased such technology due to the return government is prepared to guarantee over the payment period for the electricity that is generated.

Future challenges within the infrastructure sector

The differentiation between central, regional and local infrastructure

Key to investment is co-ordinating the systems, reliefs, risks and construction of projects both within and between regions. The need for certainty and confidence in this area has been recognised by multiple governments with initiatives such as the Regional Development Agencies and, more recently, Local Enterprise Partnerships (LEPs).

LEPs and their impact on investment

The LEP plan is designed with the goal of allowing local people to have more influence over investment, whilst maintaining the mentality and accruement of businesses priorities and expertise.

If successful, LEPs should bring a new perspective to issues such as infrastructure and housing development. For example, medium-sized transport improvements can be neglected on the grounds that they do not fit neatly into the strategic plans of the government agencies or the constrained budgets of regional and local bodies. Effective collaboration between LEPs could help to raise such projects up priority lists by providing an impetus for development. However, there are currently concerns that there is no statutory basis or tool to enable or push such co-operation.

If effective, the LEPs should have the potential to reduce disputes over the location of new developments, and improve the speed of delivery. Such achievements would improve confidence for developers, investors and locals.

However, to date there are still a number of the risk factors around LEPs. These primarily stem from the uncertainty as to how they will operate and the responsibility they will hold.

The government has stated that issues such as business development and education will be driven nationally. In other areas, powers may need to transfer across from local authorities if LEPs are to take a lead on issues such as planning.

The interface between national and local agencies will therefore require a delicate balance between independence and accountability. Insufficient accountability would open the government to criticisms over the use of public money and could result in LEPs operating at arms length from local

communities. However, too stringent an accountability regime would limit the scope of the LEPs to take decisions and impact their areas.

For LEPs to work effectively there will need to be productive cooperation between central government, local government and the LEPs.

LEPs may also be vulnerable to 'mission creep'. Should a LEP take on too many responsibilities or set up too many projects, there is a risk that its resources could become diluted. This could result in poor management – and thus inefficient delivery – or a programme with only limited impact. Similar concerns were raised about the Regional Development Agencies.

Measuring the actual impact of the LEPs will be a challenge. It will probably be difficult to correlate direct economic benefits to the LEP's programme of work; For this reason it is suggested that the experiences of RDA projects over the past decade are used to provide some valuable insight. For example, the sharing and usage of data to provide accurate information in a standardised way across multiple LEPs will be required for effective analysis of investment opportunities and performance.

Confidence and accuracy is key as additional complexity or uncertainty will raise the overall level of risk, which will subsequently be included in any cost and benefit calculation performed by investors. As such investors may start to build in a risk premium into their expectations until the operational environment and risks associated with the LEPs becomes clearer.

Multinational infrastructure

A barrier that is increasingly likely to become an issue with infrastructure projects is that of scale, and thus the cost of provision. As infrastructure assets become national and multi-national in size the funding, construction and skill requirements exceed even some of the biggest businesses to date. This suggests that the larger end of the construction sector is likely to grow in size, mostly through mergers and acquisitions. Eventually this may lead to the creation of a number of significant global players.

These companies would not only be able to undertake the size and risk requirements of the large infrastructure projects, but also benefit from significant buying power within the market. This would make it difficult for smaller players to grow, particularly in the mid-market range. However, it is important to

recognise that specialist skills will still be required and so there will always be a market for the smaller construction companies.

This will require a different outlook from governments when looking to encourage infrastructure investment, because international competition will be far greater. The relative risks and benefit of operating in the UK will become more important.

Smaller companies will continue to provide the specialist skills and flexibility to the construction sector, and given the potential economies of scale the larger players could benefit from a mechanism whereby pooling of buying power and risk may be necessary.

Addressing the issues

This paper has looked at a variety of issues that can act as barriers to investment. As part of the process of moving the debate forward, below are a number of concepts that could help to improve market conditions.

Each of these concepts will require further exploratory work to ensure they achieve the right balance between risk, cost and profit.

The risk associated with the construction phase of infrastructure is not well understood by investors, and is considered to be significant. This phase of projects needs de-risking.

A government-backed insurance scheme

This scheme would work in a similar way to a private insurance scheme, but would be applicable to projects of national importance. The scheme could be optional or mandatory, and would provide a state guarantee to cover the additional cost of provision of an asset during the construction phase should then be a cost overrun of a predetermined range past a certain percentage (for example between 5%-30%) of the total project cost.

At the point at which costs are deemed to be higher than those anticipated at the start of the project, accounts, schedules and forecasts for completion will be submitted to a body such as the Major Infrastructure Planning Unit in the Planning Inspectorate, which will continue to monitor the situation to ensure efficiency until completion. This thereby creates a system where:

- The investor has incentive not to have cost overruns as there will be an additional 5% cost.
- The government eliminates the risk beyond this point (5%) to the investor until a cut off is reached (30%) at which if the project has significantly run over cost the investor once again becomes liable.
- There is public scrutiny of cost overruns, a point at which costs are encouraged never to pass (given a percentage at which a cutoff point applies to government support), and it significantly limits the potential risk of the construction phase to investors.
- The percentage cut off point would need to be calculated based on historical projects and their actual verses predicted costs. The rationale behind this is that some upgrade works, such as the improvements to

the West Coast Mainline, came in significantly over budget. This could be addressed in both the scoping of the project and risk mitigation aspect from government.

Why would the public sector fund such a scheme?

- The completion of the project can in itself encourage future economic growth, which in turn will improve tax revenues and demand conditions. An example is the housing growth that has been stimulated as a result of HS1 through Stratford, Ebbsfleet, Ashford, Margate and Dover Priory.
- Currently, the scheme does not reduce the return provided to the investor in order to encourage maximum interest. However, it could easily be adapted so that in the event of a cost overrun, the government provides the insurance facility in return for a 5-10% stake in the assets at the end of construction. This would then provide a return for government for undertaking such risks. It is important to note that any stake the government received would have to equate to less than that of the funds an investor would seek on the open market. If it is not, there is the risk of a similar situation of the return not being significant enough to attract private funds.
- If no private investment occurred, it is likely that government would have to pick up the whole cost of the project, given its national significance. Such a situation is not currently possible given the deficit and period of restrained spending.

Guaranteed purchase, construction performance linked asset scheme

Another possible option is for a partnership between government and a private fund. The private sector agrees to purchase, maintain and manage the asset if the public sector takes on the construction phase of the project.

Government would need to be compensated for the risk it takes during the construction phase, and the compensation for such a project would ideally be linked to performance to encourage efficiency. If the asset is built on or ahead of schedule and budget, then the government would keep the premium on the price of the asset. This process would then also work in reverse if the government performed poorly, providing a predetermined additional return for investors over a defined period if there were substantial delays to the completion of the asset.

The public and private sectors need to outline clearly what risks each party is prepared to accept and the expected returns associated with such risks.

This is one of the key areas of confusion, due to misaligned expectations. Government feels that the private sector should be taking on greater risk and responsibility for projects; the private sector feels that the risks they are being asked to take are not rewarded adequately.

Detailed specification

- Be clear about the projects ownership - before, during and after completion (e.g. Olympics)
- Outline clearly the income stream potential of the project (e.g. Dartford QE II bridge)
- Can the project be run entirely by the private sector or is there a role for public financing (e.g. The European Commission clearly outlining that the state has a role to play if the creation of an EU super grid is to go ahead)
- Outline clearly the risk the public sector is prepared to undertake (e.g. London Overground and East London line upgrade)
- Be clear about the investment opportunity and the type of investor it is likely to attract, (for example, pension funds want long run stable income flows), then tailor the investment mechanism to provide optimum efficiency in terms of risk and cost

Promote stability on projects of national significance

Whilst projects of national significance should be subject to political debate, the potential impact of instability and uncertainty on the potential future of the project and its subsequent economic growth is significant.

Projects such as High Speed 1, High Speed 2 and Crossrail precipitate differing views from political parties. Whilst these may be related to the detail rather than the overall concept, they do create a degree of uncertainty.

For this reason it is important to build stability into long term investment decisions. There is a requirement for government to continually evaluate the uncertainties within the political process, minimising the risks where possible.

Land incentive systems

An alternative to reducing the risk of a project is to increase the potential returns an investor can achieve. This may mean looking at tolls or new investment models. Government could improve the potential return to investors leveraging infrastructure investment by packaging projects with profitable development land surrounding the site.

Such a scheme would provide investors with land that is not only likely to appreciate in value but also provides further opportunities for sustainable homebuilding, office and retail development. Allowing the investment to occur alongside infrastructure improvements, will subsequently improve the attractiveness of the developments. Examples of this can be seen along the routes of Crossrail and High Speed 1 as homebuilders expect increased returns to reflect the improvements in transport links.

The regulatory and tax system should be designed to encourage long term investment.

Another area that needs addressing is the current bias inbuilt within the tax system towards short term investments. For example Sir James Mirrlees said during the Mirrlees Review of tax system[14] that:

- "The review shows that the UK system falls short of the ideal in costly and inequitable ways. It discourages saving and investment, and distorts the form they take. It favours corporate debt over equity finance. It fails to deal effectively with either greenhouse gas emissions or road congestion. The revenue it raises, and the redistribution it does, could be achieved in less costly ways."

It is important that the tax system is simple enough to avoid confusion, whilst providing allowances and incentives to those who invest in a long-term, sustainable manner.

One way in which the tax system could possibly improve long term investments in infrastructure would be to provide tax breaks on investments in infrastructure funds. This would provide investors with an incentive to direct capital towards long term projects which help to drive future growth. In addition, there is likely to

[14] IFS: Review of tax system recommends radical changes, 2010, http://www.ifs.org.uk/pr/mirrlees_launch.pdf

be interest from pension fund providers given the additional benefits to investment.

If the proposed Green Investment Bank linked together infrastructure funds and direct equity investment, and operated within an effective tax regime, it could create a very powerful tool for infrastructure investment.

The policies outlined above should help to improve the price and risk signals conveyed within the industry, allowing a much more effective funding environment.

If successful, such measures should define where the public sector is willing to allow risk to occur and where risk will be supported. Specifically if such processes were put in place for projects of national significance, this should help to instill confidence amongst investors.

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