REVIEW OF FINANCIAL MARKETS

CONTENTs

Infrastructure investment: the risks and benefits to investors
Dougald Middleton, Head of Lead Advisory, corporate finance for EY UK & Ireland 2
Simon Reason, Director of Corporate Finance for the National Audit Office, London 3
Tony Roper, Director of global investment management firm InfraRed Capital Partners, London 4

Profit rates in Britain’s £178bn defence sector
Matthew Rees, Chartered FCSI, Director of Analysis and Reporting, Single Source Regulations Office, London 5

CREST: lessons learned from an infrastructure success story
Dr Hermann Rapp, Senior Lecturer, Anglia Ruskin University 7
Dr Cristiana Parisi, Assistant Professor, Copenhagen Business School 8

THE AGE OF INFRASTRUCTURE

More money will be spent on infrastructure in the next 40 years than in the last 4,000. No surprise then that in the intensive business preparation meetings leading up to this year’s G20 summit in China, infrastructure investment was one of the key issues under debate. The politics, the insatiable appetites, the swaggering took the headlines at the event, but progress towards preparing and structuring complex infrastructure programmes, particularly public-private partnerships (PPPs) to help bring private sector and institutional capital to bear on key development opportunities in both mature economies and the rest of the world, was where the intellectual action was buzzing.

In this important field, worth some $60–70tn in new investments over the next 15 years, according to the most common range of estimates, financial practitioners are – for once – probably ahead of the thought curve. That is not least because, in a world of very low yields, infrastructure can provide refreshingly high returns to long-term investors, particularly for the pensions and insurance communities. So it is a subject of strong focus for the biggest investment firms, and many more are joining in.

In this special issue of Review of Financial Markets (RoFM), we bring together expertise from academia, finance, government and the professions to focus on three specific aspects of current thinking on infrastructure finance: the risks and benefits to investors in UK infrastructure, based on a recent seminar on this theme run by the CISI with the Association of Chartered Certified Accountants; the thorny issue of profit rates in sectors with substantial areas of non-competitive supply, in this case a particularly fascinating analysis prepared for us by Matthew Rees, Chartered FCSI, on how the UK government manages profit rates in what is globally one of the biggest examples of non-competitive infrastructure spend: defence; and finally and nearer to home, particularly for members working in the investment administration arena, a timely analysis from a recent study funded by the CISI and others on Britain’s paperless settlement system, CREST, of how to build and run a major infrastructure project well. And looking to the future, we are delighted to be participating in a new research project on renewables financing – see page 52.

The returns on and types of infrastructure investment

Internal rate of return (IRR) and cash yields remain the key indicators external investors – broadly lumped together as limited partners (LPs) – look to when assessing the performance of infrastructure funds. The weighting given to these varies by type of investor, but typically pension funds focus more on cash yield to service long-date liabilities with a steady cash return, while insurance-based LPs put more emphasis on IRR, in large part for regulatory reporting reasons.

Deloitte conducted a survey of this market in spring 2016, and found that both target and actual IRRs in infrastructure are now running at 10–12%, down by around 2% since they last did this work in 2013. This fall has been driven by success – simply put there are more direct investors in the market, pushing yields down.

Infrastructure investment spans a vast range: developed and emerging markets; greenfield and brownfield; public and private assets; differing stages of development. And there are plays in airports, communications, hospitals, housing, power generation and transmission, ports, railways, roads, schools, water and waste – the list goes on.

Almost all the infrastructure investors interviewed for the Deloitte survey had a preference for core assets, with the three most critical factors sought being the provision of an essential service to society, high barriers to entry and asset-backing. Yield generation was seen as slightly less important. Deloitte reckons this might reflect a move away from a traditional infrastructure long-term buy and hold model towards a more quasi-private model, with a view to sale.

Types of infrastructure investors

Three types of investors participate in this market: large US and European funds; mid-market funds; and direct investors. The biggest players typically have global mandates for euro and US funds and will be looking for deals needing single investments of £500m-plus. The mid-range funds usually target specific asset classes or geographies, and look for £100–500m investments. The direct investors are big institutions – insurance, pension and sovereign wealth funds – looking to invest directly in assets rather than through LP funds. The focus amongst this latter category is usually more heavily on cash yield, so they are likely to be found invested in major core assets in the most developed markets.

Typical investment profiles

Infrastructure investment varies widely, but typical characteristics include:

- large initial outlay and/or major ongoing capex needs for long-duration investments
- predictable and stable long-term cash flows, which may be inflation-linked
- key role of regulatory regimes – see article on defence contracting
- returns often uncorrelated with short- and medium-term economic cycles – again, see defence spending

Infrastructure finance and the developing world

The World Bank has played a central role in infrastructure investment over the years to generate growth, competitiveness, job creation and help with poverty alleviation. In the Bank’s experience, investment in high-quality, sustainable infrastructure can provide basic services to households; lead to productive gains for industry; provide market access for agriculture; enable sustainable urban development; open corridors of trade for poor and landlocked countries to the global economy; and help progress towards a more climate-smart world.

However, much remains to be done: “Despite robust growth over the last decade,” the Bank said this summer, “many people in emerging markets and developing economies still do not have access to reliable and affordable infrastructure services. This lack comes at enormous economic and social cost. Over 1.3 billion people – almost 20% of the world’s population – still have no access to electricity. About 768 million people worldwide lack access to clean water; 2.5 billion do not have adequate sanitation; and 2.8 billion still cook their food with solid fuels (such as wood).”

George Littlejohn MCSI, RoFM Editor and Senior Adviser to the CISI

gorge.littlejohn@csi.org
INTRODUCTION

Significant private investment is required in order for the UK government to achieve its aims under the National infrastructure delivery plan 2016–2021.

In an event in June co-hosted by the CISI and the Association of Chartered Certified Accountants (ACCA), experts from the industry (listed above) addressed the investment opportunities and challenges that infrastructure presents.

In addition, Matthew Rees, Director of Analysis and Reporting for the Single Source Regulations Office, participated in a Q&A session.

PUBLIC SPENDING ON INFRASTRUCTURE

Challenges faced by the government

UK government spending on infrastructure has fallen from a high of 11.5% of GDP in the 1970s to 3.5% as a percentage of GDP today, a situation that is mirrored globally. The Organisation for Economic Co-operation and Development cites public deficits and increased public-debt-to-GDP ratios as factors that have led to the reduction of public spending on infrastructure worldwide.

Public sector net debt in the UK currently stands at £1.6tn, having risen from £500bn in January 2007. In light of this, the government does not wish to take on further debt and is instead relying on the private sector to help fund infrastructure projects.

Attracting private sector investment

Governments have increased efforts to attract private investment in infrastructure. Private finance initiatives (PFIs), introduced by the UK government in the 1990s, have resulted in private sector investment exceeding public sector investment since 1997.

Since the government is spending less on infrastructure, there is an expectation that the private sector will provide the shortfall. More than half of the funding for the infrastructure projects outlined in the National infrastructure delivery plan 2016–2021 will need to come from the private sector. The plan outlines details for £483bn of investment in over 600 infrastructure projects and programmes in all sectors across the UK, to 2020–2021 and beyond.

Despite the creation of government financial institutions, such as the Green Investment Bank, further thinking is required around how private sector investment could be encouraged.

CRITICISM OF GOVERNMENT

Poor forecasting resulted in the government taking on a disproportionate amount of risk in the early stages of PFI. This was particularly evident with the Eurotunnel, where incorrect forecasting on passenger numbers resulted in the government having to spend additional money.

Since the government is reluctant to give grants or allocate additional funds to infrastructure, it has started issuing loans. Nevertheless, it is not clear whether it understands the real risk of issuing these loans. Some experts argue that there are many cases where the government is unlikely to get its money back, referencing green energy schemes in particular.

The government has also been criticised for adopting an overly short-term approach to selling off assets in an effort to ‘balance the books’: The sale of Royal Mail is cited as a prime example.

THE INVESTOR PERSPECTIVE ON INFRASTRUCTURE

Infrastructure is attractive to institutional investors since it provides index-linked returns that do not correlate to volatility in the market. Yields typically exceed those of both 20-year gilts and FTSE 100 companies. Investors can expect a return of 4–7% from yielding infrastructure assets while those looking for capital gain from a ‘greenfield’ asset (an asset that is yet to be built) could expect a return of between 8% and 12%.

This greater rate of return is accompanied by a higher level of risk, such as demand and construction risk, however.

DIFFERENT TYPES OF INFRASTRUCTURE ASSETS

Infrastructure is a very broad category that includes different types of assets that have different risks and generate different types of revenue for investors. Infrastructure assets can be defined as ‘availability’ assets or ‘demand-based’ assets.

• Availability assets

Availability assets, such as hospitals and roads, tend to be procured under public-private partnerships (PPPs). Investors receive contracted payments for the availability, or use, of the asset and its maintenance. For example, NHS trusts will pay for the use of hospitals that have been built through private funding. Since contracts are linked to inflation, they are well matched to the long-term liabilities of insurers and pension funds.

• Demand-based assets

Revenue generated by demand-based assets, such as toll roads, is dependent on how much those assets are used. As a result, demand-based assets provide a more volatile revenue stream for investors. For example, if road users are not taking a toll road then the investor will not receive any revenue.

Similar assets with different revenue characteristics

Different demand-based assets can have very different dynamics, which impacts on revenue characteristics. In the case of airports, for example, Stansted has one dominant tenant in Ryanair, while Heathrow is a hub for a variety of airlines. Meanwhile, Exeter International Airport has very little traffic and so would be seen as more of a real estate asset.

Predictability of both cost and revenue are prime considerations for equity investors

There are parallels between infrastructure and property investment. Some investors will take on construction and demand risk in pursuit of...
capital gain, while other investors will buy a property that already has existing tenants in order to collect the yield.

Likewise, when investing in greenfield projects, investors are potentially taking on construction and demand risk. Infrastructure fund managers will aim to reduce construction risk by using a fixed price contract. Therefore, any project that is delayed or goes over budget would be the contractor’s risk rather than the investor’s risk.

### Illiquidity of infrastructure assets

With pension schemes increasingly moving from a defined benefit (DB) to a defined contribution (DC) model, there is an argument that they require a greater degree of liquidity than infrastructure assets can provide. Some fund managers have addressed this issue by giving investors a ‘listed’ wrap. Investors can then have a liquid exposure to infrastructure in the form of equities while also being able to take a more illiquid approach.

Many pension funds and insurance companies are investing in infrastructure assets directly, however, which shows their focus is on liability matching rather than liquidity.

### Lack of assets to meet investor demand

There are only a finite number of greenfield projects in development and ‘brownfield’ (existing infrastructure assets) available. So it is a challenge for fund managers to find viable infrastructure assets to invest in.

Two options are available to them:

1. Take on assets that push investors further up the risk/reward profile.
2. Close the fund to new investors until suitable assets become available.

Some fund managers take the first option while others take the second. For example, some fund managers view motorway services as an infrastructure asset (due to the process for obtaining building consent and the fact that a finite number can be built) while others argue that they are a retail asset (due to the process for obtaining building consent and the fact that a finite number can be built) while others argue that they are a retail asset

### Investors can look further afield

Exposure to infrastructure can also be achieved through schemes in Europe, Australia, Canada and the US. These schemes offer a similar level of risk and return to UK infrastructure schemes, albeit with additional foreign exchange risk.

#### Mega projects

Mega projects are typically defined as those that exceed £1bn in terms of capital value, while those funded through public-private partnerships range between £200m and £400m in value. Major projects also tend to have extended delivery periods. For example, the Thames Tideway Tunnel project (a major sewer pipe that is being constructed mostly under the tidal section of the Thames) is forecast to take ten years to complete.

### Complex construction and procurement process

Given their size, it is not surprising that mega projects come with particular complexities. In contrast with many PFI projects, such as the construction of hospitals and schools, contractors on mega projects can be unwilling to agree to a fixed price contract or a fixed price contract with a limited variation.

Furthermore the project owners, such as the government, often give a lot of consideration to matters such as design, procurement strategy and parliamentary consent but insufficient thought to how the mega project is going to be financed and delivered. Yet poor planning and poor financial structuring in the early stages are one of the main reasons why mega projects fail.

Many mega projects are overcomplicated and too prescriptive from the beginning. This is particularly the case with government promoted projects, where there can be too much of a focus on innovation. As a result, more standardised, existing engineering approaches are often overlooked. If the private sector wants to introduce an innovative solution at a later stage, however, that is more appropriate since the solution is the idea of the private sector and the private sector is taking on the risk of developing new engineering techniques.

#### Thames Tideway Tunnel: a financing challenge

Mega projects can struggle to secure funding from the private sector. In the case of the Thames Tideway Tunnel project, advisory firm EY had to substantially restructure the project in order for it to progress.

Initially the project was given a B sub-investment grade rating by Moody’s rating agency – the bottom rating a project could have without actually being in default. The immediate goal was therefore to raise the project’s rating to BBB or BBB+ in order to ensure the project was financeable. As an asset class, BBB infrastructure debt shares similar risk and reward characteristics with BBB corporate debt. This makes it a known investment risk for institutions such as insurers and pension funds.

---

### Funding mix of UK national infrastructure pipeline

<table>
<thead>
<tr>
<th>Sector</th>
<th>Private</th>
<th>Public</th>
<th>Public/Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications</td>
<td>1,521</td>
<td>2</td>
<td>4,486</td>
</tr>
<tr>
<td>Water</td>
<td>112,873</td>
<td>4,504</td>
<td>57</td>
</tr>
<tr>
<td>Waste</td>
<td>136</td>
<td>2,542</td>
<td>693</td>
</tr>
<tr>
<td>Transport</td>
<td>4,762</td>
<td>76,425</td>
<td>6,540</td>
</tr>
<tr>
<td>Science and research</td>
<td>5,499</td>
<td>76,425</td>
<td>484</td>
</tr>
<tr>
<td>Flood</td>
<td>19,189</td>
<td>3,840</td>
<td>18</td>
</tr>
<tr>
<td>Energy</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Communications</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: National Audit Office 2016 £m constant
Three achievements contributed to the Thames Tideway Tunnel gaining a BBB rating. First, construction risk was minimised because the contractors were incentivised through an alliance agreement to deliver the project on time and on budget. Second, the project made use of the maximum insurance that was available in the market. Finally, the government guaranteed financial and liquidity support in the event the project ‘really went off the rails’.

During the project development, EY worked with the banks involved to carry out rating tests that monitored whether the desired rating was likely to be achieved. Rating tests are an important means of gaining the confidence of investors to ensure that a project is financed through to completion. As a result, it would make sense for rating tests to be built into the timelines of future initiatives of this scale so that they become a key part of the project development phase going forward.

Summary

While infrastructure investment delivers a degree of certainty to investors, particularly those that require inflation-linked returns and a steady revenue stream, different types of infrastructure assets have extremely varied risk profiles and revenue characteristics.

Even those that, on the face of it, could be considered as similar assets can provide substantially different revenue streams.

Fund managers need to be aware that infrastructure investors require a degree of certainty so should resist taking on assets that are on the periphery of the asset class and that display a higher level of volatility. If investors are pushed higher up the risk/return spectrum than they are comfortable with, it can result in them selling their shares in the fund.

If the government wants to attract further private investment in infrastructure, it needs to find new ways to do this and also to simplify the procurement process for big projects.

Finally, sponsors of mega projects need to reassess the way in which they approach developments of this size to ensure they do not fail before they have even begun and that financing can be secured from the beginning of the project.

ACCA UK and the CISI would like to thank all those who spoke at the infrastructure investment seminar in April 2016 and who gave up their time to contribute to the development of this report.
Defence equipment budget and single source contracts

The UK government plans to spend £178bn on defence equipment over ten years, and in July 2016 MPs voted to renew the UK’s nuclear deterrent. The Ministry of Defence (MOD) spent approximately £8.3bn on all its single source contracts in 2014/15, and in that period over half of new contracts signed, with a total value of £5.4bn, were placed on a single source basis.

Single source contracts relate to the delivery and servicing of highly specialised defence capability for the UK’s armed forces, mostly large-scale, technically complex, and involving a degree of commercial risk. Single source procurement is used for a variety of reasons:

- there is only a single contractor able to deliver the requirement
- there are strong reasons for maintaining national sovereign capability
- the required services have specialised or unique characteristics
- there are issues of national security.

The Defence Reform Act 2014 sets out the contract pricing formula that applies to single source contracts, and the concepts of Allowable Costs (AC) and the Contract Profit Rate (CPR) are explained in this article.

Pricing of single source contracts:

\[(\text{CPR} \times \text{AC}) + \text{AC}\]

Where:

- CPR = Contract Profit Rate
- AC = Allowable Costs

The MOD’s supplier base

The MOD spent £19.5bn with UK industry in 2013/14. The top ten suppliers represented 42% of total MOD procurement expenditure. BAE Systems is the largest supplier. In 2014/15 the MOD paid it £3.5bn. The chart on the facing page (p.44) breaks down the MOD’s spending between competitive and single-source contracts for the top ten suppliers.

Over the past ten years most of the MOD’s main suppliers have outperformed the UK stock market (see chart below).

Defence Reform Act and the formation of the SSRO

In 2011 an independent review by Lord Currie recommended strengthening the arrangements for single source procurement. This led to the Defence Reform Act 2014 (the Act) which brought into force significant changes to the way the UK government procures defence equipment and services for its armed forces and established the Single Source Regulations Office (the SSRO), the independent statutory regulator of ‘single source’ defence procurement.

The Act specifies two aims for the SSRO: first to ensure that good value for money is obtained for the UK taxpayer in MOD expenditure on non-competitive ‘qualifying defence contracts’ (QDCs); and second to ensure that single source suppliers are paid a fair and reasonable price under QDCs.

The SSRO also provides opinions and legally binding determinations in response to referrals from the MOD, contractors and sub-contractors. In May 2016, the SSRO published the outcome of its first determination on two matters by Rolls-Royce regarding its contract with the MOD for the availability of Adour engines, which power Hawk jet aircraft.

The SSRO’s view is that all non-competed defence contracts should be subject to the single source procurement regime, to deliver the greater scrutiny, transparency and improved value for money that it offers. The Act exempts contracts which are government-to-government agreements, part of an international co-operation defence programme and related to land, buildings and intelligence activities.

In 2015, the SSRO identified over £58.8m of costs that have now been removed from contracts or are under investigation, from 20 of the 34 QDCs notified to it, compared to its annual running costs in 2015/16 of less than £5m. The MOD has estimated that savings of up to £200m a year could be achieved through the single source regulatory framework brought into effect by the Act. These substantial savings can be reinvested elsewhere in defence.

Allowable Costs

The SSRO’s Allowable Costs guidance ensures the customer only pays costs that are in direct relation to the contract. Contractors and the MOD must have regard to this principle when entering into any contract where lack of competition could impact on the value for money to the UK taxpayer. The Act places the onus upon the primary contractor to demonstrate to the Secretary of State that costs are allowable. To be allowable, a cost must meet all three criteria of appropriate, attributable and reasonable. The following principles must be adhered to:

a. costs should be supported by adequate and sufficient evidence
b. costs should be assigned to contracts only once
c. actual costs are to be fully recorded and reflected in the books of account.

Examples of non-allowable costs:
- Faulty workmanship
- Contingency funding
- Sales and marketing costs
- Civil penalties and fines
- Entertainment
- Capital costs

Examples of allowable costs:
- Rework
- Sunk costs
- Insurances
- Impairment of goodwill and amortisation
- Risk
- Employee benefits

Contract pricing methods and supplier profit

The Single Source Contract Regulations 2014 introduced six regulated pricing methods that single source suppliers are permitted to use when pricing contracts. A QDC can be priced using more than one method. The methods are set out in the table at the bottom of the page.

The chart below illustrates the impact of variation between estimated and actual contract price on supplier profit for three different contract pricing methods: cost plus, firm and estimate based fee pricing methods.

Method | Description
---|---
Firm | Allowable Costs are the costs estimated at the start of the contract. The profit earned by the supplier is calculated by applying the profit rate to the estimated costs agreed at the start of the contract.

Fixed | Allowable Costs are the costs estimated at the start of the contract, with an adjustment in accordance with a specified index (for example RPI) at a specified time or times. The profit earned by the supplier is calculated by applying the profit rate to the Allowable Costs at the end of the contract once the index change is known.

Cost plus | Allowable Costs are the actual costs incurred to deliver the requirement, established at the end of the contract. The profit earned by the supplier is calculated by applying the profit rate to the actual costs of completing the work.

Estimate-based fee | Allowable Costs are the actual costs incurred to deliver the requirement, established at the end of the contract. The profit earned by the supplier is calculated by applying the profit rate to the estimated costs agreed at the start of the contract.

Volume-driven | Allowable Costs are the cost per unit at the time of agreement, multiplied by the actual number of units produced by the end of the contract. The costs estimated at the time of agreement may be adjusted in accordance with a specified index (for example RPI) at a specified time or times. The profit earned by the supplier is calculated by applying the profit rate to the Allowable Costs incurred at the end of the contract, once the number of units produced is known.

Target | Target pricing sets an estimated target cost and target profit. The Allowable Costs are the target costs estimated at the start of the contract. The target profit earned by the supplier is calculated by applying the profit rate to the target costs. An agreed variation mechanism is used to adjust the price payable to the supplier, should the costs change from predetermined parameters. Cost savings or overruns against the target cost are shared between the contractor and MOD on a pre-agreed basis.

Contract profit rate

The SSRO is required annually to review the figures used to determine the contract profit rate (CPR). Each January the SSRO provides the Secretary of State with its assessment of the appropriate baseline profit rate and capital servicing rates. The contract profit rate is derived from the six steps set out in Section 17(2) of the Act.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>baseline profit rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>cost risk adjustment</td>
</tr>
<tr>
<td>Step 3</td>
<td>profit on cost once</td>
</tr>
<tr>
<td>Step 4</td>
<td>SSRO funding adjustment</td>
</tr>
<tr>
<td>Step 5</td>
<td>incentive adjustment</td>
</tr>
<tr>
<td>Step 6</td>
<td>capital servicing adjustment</td>
</tr>
</tbody>
</table>

contract profit rate

Description

- **Step 1**: Baseline profit rate.
- **Step 2**: The cost risk adjustment reflects the risk of the primary contractor's actual allowable costs under the contract differing from its estimated allowable costs.
- **Step 3**: Profit on cost once. This ensures that profit arises only once in relation to subcontracts within a contractor.
- **Step 4**: The SSRO funding adjustment recovers 50% of the SSRO's costs from industry from 2017/18.
- **Step 5**: Incentive adjustment where the Secretary of State determines that the amount should be increased so as to give the primary contractor a particular financial incentive.
- **Step 6**: Capital servicing adjustment to add or subtract an agreed amount, to ensure that the primary contractor receives an appropriate and reasonable return on the fixed and working capital employed by the primary contractor for the purposes of enabling the primary contractor to perform the contract.

The SSRO has published guidance to explain the adjustments to the baseline profit rate explained in detail.8

In 2015 the SSRO reviewed the methodology9 used to calculate the baseline profit rate to develop a more robust and transparent methodology than was previously used. This included a review of the previous methodology – the 'Yellow Book' regime – and was the most far-reaching since the 1960s. The review focused on the issues of comparability and how to benchmark profits on QDCs against profits achieved by more appropriate comparators from wider industry.

Baseline profit rate (three year rolling average)

*Chart shows the baseline profit rate at Step 1 (after the adjustment for capital servicing allowance). The chart does not include steps 2– 6.*

The SSRO developed a new methodology under which the rate is determined by considering the profit rates achieved by a more international and appropriate range of companies. Previously only companies headquartered in the UK were considered, including some with little or no relevance to the work undertaken by defence contractors. The methodology applied to contracts agreed in 2016/17 identifies comparable companies in two categories of activity: ‘develop and make’ and ‘provide and maintain.’ The SSRO has recently consulted on the introduction of multiple profit rates, including a rate for construction and ancillary services, and will make a decision about this in the autumn.

A three-year rolling average of the profit range for each set of categories is then determined, and the baseline profit rate is the average of the two. As in previous years, the profit level indicator used is net cost plus (also known as return on total cost).

Return on total cost: operating profit/cost of production
Where cost of production = revenue – operating profit (also known as EBIT)
Having applied this new methodology, the SSRO recommended to the Secretary of State in January 2016 that the baseline profit rate for QDCs signed from 1 April 2016 should be 8.95%. The equivalent figure for 2015/16 was 10.60%. The rate is applied for the life of the contract to the estimated allowable costs. It is not retrospectively adjusted if the rate is assessed at a different rate in future reviews.

Alongside the baseline profit rate, the SSRO also publishes the capital servicing rates that apply at step 6, derived primarily from fixed income data. For 2016/17 these are: fixed capital servicing rate: 5.08% and working capital rates of 1.40% for positive working capital and 0.74% for negative working capital.

The SSRO has published an analysis of the planned contract profit rates reported to the SSRO for 30 QDCs/QSCs entered into within the period 1 April 2015 to 31 March 2016. This shows that on average, QDCs/QSCs reported a contract profit rate of 11.7% in 2015/16, and contract profit rates for individual QDCs/QSCs ranged from around 5% to just under 16%. The largest average adjustment to the baseline profit rate was for capital servicing, at an average of 1.2 percentage points.

Matthew Rees, Chartered FCSI is the SSRO’s Director of Analysis and Reporting. He is also an independent NED at Gemserv Limited. He was previously Director of Corporate Finance at the National Audit Office, and has also worked for the Competition and Markets Authority. This followed a career in investment banking with major international institutions.

The CISI will be holding a roundtable discussion at the SSRO’s office in Holborn in October 2016 for further discussion of the issues raised in this paper. For information and to book, please visit cisi.org/events
CREST: LESSONS LEARNED FROM AN INFRASTRUCTURE SUCCESS STORY

Dr Hermann Rapp, Senior Lecturer, Anglia Ruskin University
hrapp@batфинance

Dr Cristiana Parisi, Assistant Professor, Copenhagen Business School
cp.om@cbs.dk

In 2015, the CISI, alongside BT, Euroclear, Swift Institute and Travers Smith, sponsored a major research programme into the history of CREST, Britain’s paperless settlement system which is 20 years old this year, and specifically into the lessons to be learned from this success story for other, forthcoming projects of the same ilk. This excerpt, on the lessons learned, is taken from the first of a series of major reports being prepared by BISS Research, the project’s manager, on CREST and its implications for good project management.

INTRODUCTION BY SIR ALAN YARROW, CHARTERED FCSI(HON), CISI CHAIRMAN

Thirty years ago, Britain’s Big Bang brought sudden and massive change to the way the London stock markets work. Concepts that are now almost forgotten, like fixed commission charges and open-outcry trading – not to mention the stockbrokers and stockjobbers who ran the business – were replaced on the London Stock Exchange by electronic screen-based trading. Those changes helped consolidate London’s position as the leading international financial centre, and Britain’s financial services industry as one of the most highly-regarded on the globe.

The CISI was, at the time of the Big Bang, still part of the London Stock Exchange, sharing its two centuries of heritage. We are delighted to have contributed to the production of this history of a more recent market development – CREST, the paperless settlement system, which made its highly successful debut 20 years ago. As you will read in these pages, the CISI played an important role, which continues to this day. My esteemed colleague Scott Dobbie CBE FCSI(Hon), whom I was honoured to succeed as Chairman of the Institute, chaired CRESTCo during the critical launch phase; its equally highly-regarded first Chief Executive, Iain Saville CBE FCSI(Hon), is another former colleague on the CISI Board.

CREST’s development has been one of many success stories that have cemented Britain’s reputation for excellence in infrastructure projects, in financial services as with CREST, and in helping fund roads, railways, airports and much else across the globe, from Victorian days to our present global leadership in advising on and financing such transactions. Long may that success story continue. The CISI is delighted to play its part, equipping the next generation with the right knowledge, the right skills, the right behaviour – in short, true professionalism – to lead us into the future.

THE CREST PROJECT: WHY DID IT SUCCEED?

One of the most obvious responses that people give as to why CREST succeeded, is that it was because it followed the TAUROS disaster. [TAURUS was CREST’s predecessor]. This has some weight, as it reflects the perceived urgency and the need for change, but is in no way the overall answer. It belittles the many difficult barriers that had to be surmounted, the genius of the design simplicity, and the enormous effort and skill of the project team and the support from many important areas of industry.

TAURUS cost the industry an estimated £400m, but in all likelihood it was much more. Fresh from this outlay, firms were asked to fund another project. So the first barrier was to gain market confidence that this time, investment would produce the desired result. The CREST team gained confidence through an extensive consultancy phase that was as personal as it was correspondent. It had to continually win the right from the industry to build the system, and give direction and leadership. Not all was plain sailing, as discussions and arguments with various industry sectors and individuals had to be won. This, over the time of the project, fell away, as the industry as a whole accepted CREST and the project team.

CORPORATE STRUCTURE AND COMMUNICATIONS

The corporate structure of the new company, CRESTCo, encouraged users to become stakeholders, which created a momentum to succeed and meet targets, and in the early days helped to quickly establish CREST. The structure had four subscription bands, allowing small firms to have a stake alongside larger ones. Thus, investing in the new system gave them a direct interest in its success.

This decision avoided one of TAUROS’s many problems, where vested interests protected the status quo, rather than achieved an effective outcome.

CREST was very different from TAUROS. The relationship between the CREST project team and the industry and ultimately the CREST users was a textbook case of good relationship management, with communication flowing two ways and continuous action to move the project forward.

Interaction with industry was streamlined by Pen Kent, Iain Saville and the CREST team. Project communications with the City were highly controlled, but industry user groups were in direct contact with the core team and dissemination of information was carefully co-ordinated through rigorous internal CREST processes.

Unlike TAUROS, the initial CREST project team was small, consisting of Hugh Simpson, Paul Symons, David Wyatt, Caroline Lee, Mark Kirby, Peter Ross, Brian Goode, Ian Dowglass and Larry Webb, with a flat management structure working under Iain Saville and Pen Kent. They maintained absolute authority and control, creating trust in the markets.

The project culture within the CREST team was instrumental in its overall success and established a good model for future generations to follow. The CREST team established a behaviour pattern where they were able to interact with different industry groups and market sectors.

The development strategy, structure and support model was established very early on and then modified throughout, being transmitted to the clients by the team, who built a collective responsibility with the industry.

The innovation of solutions was dynamic, with regular whiteboarding sessions, written reporting and internal, as well as very frank external, discussions, where assumptions were assessed, challenged and criticism was encouraged. It was by creating this dynamism that individuals felt an important part of the overall solution design. In considering how CREST created and innovated, the five determinants of strategy, structure, support mechanisms, behaviour and communication can be used to explain how CREST’s organisational culture led to innovation.
CREST DESIGN AND INNOVATION

The core proposal for CREST was laid out in the report of the Task Force on Securities Settlement to the Governor of the Bank of England in June 1993. The report analysed the situation and set criteria suggesting the design of CREST. The report outlined the core capabilities, but did not present detailed specifications. These had to be developed by the CREST project team, with frequent testing at progressively greater levels of detail with the market, before finalising the design of each business area.

The Central Gilts Office system (CGO) and the Central Money Office (CMO), both designed and operated by the Bank of England, had a strong influence on the initial design of CREST. Both systems were working successfully and this will have been in the minds of the creators.

CREST faced and overcame many challenges in providing functionality beyond that of the CGO and CMO to meet the requirements of the equity market. As a bonus, the clarity and simplicity of its design allowed CREST to be developed to support gilts and other financial money market products.

There was a marked difference from TAURUS, where the complexity of the design and over-ambition in its implementation were some key factors in its failure. CREST had as much ambition as TAURUS, but benefited from its easy-to-understand and focused deliverables for initial launch.

TESTING

Phased and careful testing at many levels is crucial for successful implementation and ongoing live operation. Bugs and faults found during technical, and then internal user testing must be rectified in an internal test environment, without being exposed to the full glare of users (especially since if found in a live operation, losses of money, confidence and risks can be substantial). A key risk is loss of confidence of the new system. Testing is an essential process in internal projects and system upgrades, but in the introduction of new industry-wide systems upgrades, the importance is magnified many times over. CREST was launched without users incurring any major disruption, and no losses. Its careful and thorough testing was key in achieving industry acceptance and success.

Testing can also heighten user understanding, reinforce training and assist with the introduction of new procedures. This was achieved in CREST through the co-operation of industry groups/firms and suppliers, all working towards the sound of the drum that CREST was, by this stage, beating loudly.

Weekends and various other times were set aside to test the network connectivity and availability of CREST users (financial services firms) and within their operations. Testing scripts were created for both industry sector and overall industry use, but also within users’ firms and their system suppliers. Arguably this was one of the best tested projects of the last century.

Co-ordinating and managing the results of the tests was centrally managed by CREST alone, with some oversight by its regulator, then the Securities and Investments Board (SIB), which became the FSA in 1997.

Industry preparedness was a key issue to be addressed, and CREST devoted significant resources to helping struggling firms. Ensuring that each CREST user was adequately prepared to use CREST was important, but not vital. Some firms found they could not cope and outsourced their back office to those who could.

CREST did have some post-live problems, but these were successfully managed by CRESTCo and we could find no evidence during the research that any material losses were incurred. At one point the proposed live dates for extra securities to enter CREST were delayed; but the migration finished on time.

That fact that CREST succeeded as it did, is a testament to the quality of the test plans and the industry as a whole, and their willingness to work collectively towards a shared objective.

Although testing can’t be flagged as a primary reason for CREST’s success in completing migration, and subsequently in many other major deliveries of functionality, there is no doubt it was a very significant factor in establishing CREST and creating confidence across the industry in the new system and the new company, CRESTCo.

IMPLEMENTATION

Streamlining and improving efficiency and reducing risk were the core aims of CREST implementation. Moving from a certificated paper based environment to an electronic dematerialised environment was a significant benefit, but in addition, reducing the settlement cycle would help to reduce credit and operational risk. CREST was designed to handle a shortening settlement cycle, and in fact from the start of live operation, T+0 was available, and increasingly used for collateral-based transactions.

Prior to the introduction of CREST, the settlement cycle was originally based on a two-week account. In preparation for the implementation of CREST, this was changed to ten-day rolling settlement (T+10) in July 1994. A year later it was reduced to five days (T+5) and in 2001 to T+3. Nowadays, it is T+2, which was introduced in October 2014. This meant that the industry had to change its systems to accommodate rolling settlement. Implementation of CREST on an industry-wide scale was achieved through strong CREST leadership, detailed planning and co-operation of registrars/financial intermediaries and suppliers.

While reduction of the settlement cycle was achieved reasonably quickly, reduction in the use of paper certificates and transfer forms took much longer. During migration, CREST organised the admission of specified issuers entering CREST at regular intervals.

Many user firms created shareholder accounts in CREST to hold client assets as well as proprietary assets: either as a pooled nominee account, a pool with designation of the shareholder, or as a CREST ‘sponsored account’. This provided control in the industry rather than a mass dematerialisation all in one go. Unfortunately, some might say, the government insisted that it was the legal right of shareholders to retain paper certificates if they wanted to, so while there was a vast reduction in paper share certificates, share certificates are still held by some shareholders today.

THE ROLE OF NETWORK COMPETITION, AND SWIFT

CREST decided to create competition regarding network suppliers, with the objective of providing choice for CREST users in order to reduce costs. An open licensing process was created, and the result was that two suppliers; SWIFT, owned by the banks, which operated a private network and Syntegra (BT), a commercial network, passed the stringent tests of security and performance.

It is likely that most firms in the stock broker/investment manager sector of the market had never considered network costs in their operation before CREST. Talisman costs might be the nearest and there is evidence in some quarters that connectivity charges to CREST, were actually less than for Talisman.

At the time of the CREST development, countries around the world were very protective of their settlement systems. Euroclear and Clearstream, using SWIFT, operated a connectivity network between separate jurisdictions. (Today, Target 2 Securities (T2S) is the eurozone provider to central securities depositories (CSDs) of seamless cross border settlements, and also has competing network providers.)
Long before the introduction of CREST, the SWIFT network provided a way of sending payment messages, authorising movement of funds. In the late 1980s, SWIFT opened up its network for securities messages. Messages were sent in ISO7775, which had been developed for payments. The result was chaos, with industry initiatives set up to resolve the problem. In particular, US and European ISITC worked to specify an industry solution, which emerged as ISO15022 in the early 2000s.

In the absence of acceptable standards, CREST specified its own proprietary DEX messages, which are still being used today. SWIFT had to adapt to this extra set of standards, as well as meeting standards related to security, resilience and performance. (Unfortunately, development to unify DEX messages with ISO15022 was never undertaken.) So at the time that CREST was being created, SWIFT would not have necessarily been an obvious choice. However, SWIFT’s network had established levels of resilience and customer support that made the network very secure and reliable.

The CREST project presented SWIFT with the opportunity to extend their capabilities into the securities post-trade markets and gain new customers. The decision by CREST not to enforce its own monopoly connectivity was virtually unique in Europe; SWIFT had a rare chance to become a key component of a national settlement system.

Accordingly, SWIFT decided to bid for a licence to supply network capabilities for CREST, taking reassurance from the fact that many of their existing banking customers were CREST shareholders and users. Gaining the trust of the CREST team was seen as an important part of the bidding process by SWIFT.

Though almost all banks were SWIFT users for payments, the bank’s customers through their custody and settlement services were not. Major custodian banks had created their own proprietary networks for their customers, often in parallel with SWIFT. This meant that custodians were either rekeying data into SWIFT, or using some automatic linking of the data and messages. Non-banks used Syntegra (BT), as SWIFT had not yet decided to open up its banking network.

CREST offered brokers and asset manager customers of custodians the opportunity to have a direct connection to CREST, and operate their own settlements via SWIFT or Syntegra.

Engaging in the CREST project pushed SWIFT into having a more entrepreneurial approach, leaving behind some of the usual internal thinking around risk. Bidding for a licence, cutting competitive deals for big clients, and working with CREST were significant risks, but ones that SWIFT was eager to take. It faced a steep learning curve, so specific people within SWIFT that had some securities knowledge and experience were assigned to the CREST project.

SWIFT worked closely with the CREST project team, but it was highlighted that the personal relationship created with Iain Saville was an important ingredient, enabling not only confidence at board level, but also operationally within the SWIFT and CREST project teams. This was especially relevant at moments of crisis and for dynamic problem solving.

As it turned out, SWIFT became a fundamental pillar in the CREST success story, by taking an implicit role in promoting and marketing CREST. Through its commitment to its success, SWIFT helped deliver widespread support for CREST and gave important backing to the CREST project team. This support would have added to CREST’s momentum, building confidence in the industry of a dynamic development and certain success.

Today SWIFT continues to supply the underpinning network for international cross border securities settlement, along with payments and FX.

CREST’S LONG-TERM IMPACT

CREST has had a huge range of diverse impacts that changed not only processes and systems, but also some people’s lives. Some are obvious, while some are not. The obvious ones are market actors; banks, brokers and investors. Less obviously, software suppliers and even postal workers. A more detailed analysis of the areas impacted by the introduction of CREST will be outlined in a further report in the CREST Research series. However, a summary table is given below that briefly outlines these impacts.

THE RESEARCH TEAM

Dr Hermann Rapp

Hermann Rapp is an academic researcher and technologist with a research interest in banking technology, financial markets operations and project management leading the CREST Research. He has over ten years of industry experience in software, project management and banking. Since 2010 he has worked as a Senior Lecturer at Anglia Ruskin University in Cambridge and Chelmsford, and previously for other UK and European universities. He has presented his research at major European and UK conferences and is a fellow of the Higher Education Academy (HEA), and a member of the European Operations Management Association (EurOMA), and the British Accounting and Finance Association (BAFA). He is the editor of a forthcoming book to be published by Springer, about new technologies in the financial industry. His current research projects focus on information systems research, data standards for financial markets, business intelligence and analytics.
Dr Cristiana Parisi

Cristiana Parisi completed her MA in Accounting at the University of Florence, Italy, with first-in-class honours in September 2004. She received her PhD degree in Accounting from the University of Florence in April 2008. Her PhD project was conducted in collaboration with the Centre for Corporate Social Responsibility at Copenhagen Business School and was focused on the performance management of sustainability within a leading pharmaceutical company based in Copenhagen (DK). Currently, she holds an Assistant Professor position in Management Accounting at the Operations Management Department of the Copenhagen Business School (CBS) after being a Postdoctoral Fellow in Management Accounting at the University of Southern Denmark from October 2008 to June 2011. Her research interests lie in the area of management accounting and mainly focus on the conditions and consequences of the implementation of management control technologies within organisations.

B.I.S.S. Research

The research project was managed and produced by B.I.S.S. Research (BISS), an independent City think tank providing research, advisory services, training, benchmarking and analysis of industry issues, technology and services in the global financial services industry. BISS works with a number of leading universities and research institutes to facilitate research projects relevant to the financial markets. For more Information visit bissresearch.com.

Acknowledgements

We would like to thank Copenhagen Business School for supporting Dr Cristiana Parisi as a principal researcher in the CREST Research team; Anglia Ruskin University for supporting Dr Hermann Rapp as a principal researcher in the CREST Research team; Leicester University for supporting Dr Marta Gasparin as an initial member of the research team; and London Metropolitan University for its support for this research project in hosting the research interviews.

SURVEY: FINANCING RENEWABLE ENERGY INFRASTRUCTURE PROJECTS – THE GROWING ROLE OF ISLAMIC FINANCE

Policymakers and energy industry leaders around the world continue to search out equity finance for sustainable infrastructure energy projects and ways to improve energy efficiency and the production of renewable energy (RE). The International Energy Agency (IEA) estimates that more than $1.6tn was invested in 2013 in energy supply, a figure that has more than doubled in real terms since 2000, with a further $130bn invested to improve energy efficiency.

In addition, more generally, the energy sector stays attractive to investors, owing to a globally favorable business environment and proactive sustainable and environment regulatory changes. However, financing these capital-intensive projects undoubtedly remains a challenge. In this context, investors in the Middle East and Asia believe that Islamic finance has great potential to help fund some of the huge capital investment projects in energy and renewables sectors around the world.

Rationale and objectives of the study

These capital-intensive infrastructure energy projects, coupled with suitability of assets and their business nature, clearly present a real opportunity for Islamic financiers and investors to develop a value proposition model which will be able to offer competitive financing solutions to fund the financial capital requirements in both equity and ‘debt’ financing.

Deloitte’s Islamic finance thought leadership team is conducting a major online survey as part of a wider industry-driven study which aims to unearth opportunities for Sharia-compliant investment and financing instruments in the energy sector. The survey attempts to gauge industry practitioners’ opinions and market sentiment around the potential role of Islamic finance in providing a value proposition for developing alternative equity investing structures.

The study aspires to build a viable business case for Islamic finance in the energy sector and provide practical insights into possible future financing structures, contracts, business and Sharia limitations in the energy and renewable energy sector.

How to participate

For more information on the survey (which should take around ten minutes of your time online, and is entirely confidential) and details of how to participate and receive the results, please contact Dr Hatim El Tahir, Director and Islamic Finance Group Leader, Deloitte Islamic Finance Knowledge Centre, Bahrain, on heltahir@deloitte.com.