

“Infrastructure : why the Lack of Investment?”

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What is infrastructure?

- Infrastructure represents the framework of assets required to deliver public services.
- Such assets have a long-term life cycle
[e.g. 20-30 years]
- Much of their cost (and revenues) may be in local currency

Project Types

- Power: thermal; nuclear; hydro; renewables; energy efficiency; transmission
- Land Transport: roads, rail, tunnels; bridges; metros; bus-ways; LRT's.

Infrastructure

- Water Industry: irrigation; desalination; clean/dirty water; utilities.

Regulated

- Municipal/PPP: schools; hospitals; govt. offices; defence; waste mgt.

[PUBLIC SERVICES]

- Air Transport: airports; air traffic control (ATC)

- Ports: container ports; bulk handling.

- Oil & Gas: pipelines

- Housing???

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- Oil, Gas & Mining: refineries; exploration & development; mining.

Unregulated

- Industrial : aluminium; steel; cement, agro-ind.; petrochemicals; manufacturing

[Open market]

- Property: offices; housing; hotels; stadiums, cruise terminals

- Telecommunications: satellites; mobile phones; broadband

Funding Private v. Public / Government

Advantages

Private:

- off-balance sheet (?)
- requires private sector capital
- introduces private sector practices
e.g. completion to time & cost
- promotes competitive markets [?]
- facilitates innovation
- locks in maintenance regime

Disadvantages

Private:

- complex structure & documents
- time-consuming to arrange
- high up-front costs
- demands significant senior staff attention
- difficult to resolve when in default

History of Infrastructure Project Finance

UK, Europe & Rest of World [excl. USA & Canada]

*Debt = "On" balance sheet
Security = Govt. & Corp. Gtees*

*Debt = "Off" balance sheet
Security = Cash-Flows*



Private Co.s ----- Privatisations ----- Services by Private Sector---

North Sea Oil

Minerals
Nat. Resources

Power & Telecoms
----- Infrastructure -----

"PFI"

"PPP"

U.S.A. & Canada

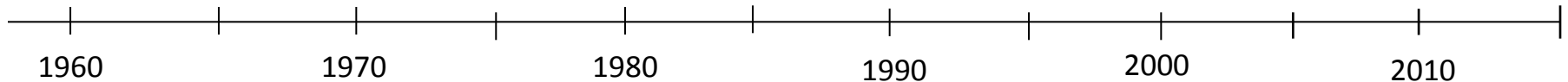
----- Tax-Free Bonds ----- [Comm. Bk. Loans]--



*Municipalities
Govt. Agencies*

Private Utilities, Municipal Co.s -----

Turnpikes; Power; Oil/gas Pipelines; Airports, Water----- ["PPP"]



Public or Private?

Assessment of Project Risks

Features of Risk:

- risk is fundamentally a subjective issue;
- risks can be identified;
- the impact of risks under chosen scenarios can be quantified ;
- sensitivity testing can identify the most important risks;
- probability analysis can provide further insights into the impact;
- but: **“risks are best allocated to those best able to carry them”**.

Further issues:

- can risks be mitigated or shared? If so, how?
- risk always exists, & changes over time.

NB. The process of “due diligence” = risk assessment

Key Risks for Infrastructure

| Risk | Type |
|----------------------------|---|
| Construction | <ul style="list-style-type: none">- Cost over-runs- Delays- Site acquisition & access infrastructure |
| Operations | <ul style="list-style-type: none">- Revenue forecasts & payment- Operating costs- Management failure |
| Technical Environmental | <ul style="list-style-type: none">- Technology & Performance- Environmental- Safety [for transport] |
| Financial | <ul style="list-style-type: none">- Debt – equity structure of SPV- Commitment of funding at outset- Foreign exchange fluctuations- Taxation |
| Legal | <ul style="list-style-type: none">- Regulatory framework- Concession law |
| Political | <ul style="list-style-type: none">- Regime stability- Political intervention |

Cross – Sector Review of Risk

| Sector | Key Risks |
|--|--|
| Roads/Bridges/Tunnels | <ul style="list-style-type: none"> - Construction/completion risks - Traffic / toll revenue forecasts - Land availability & access infrastructure |
| Rail/Urban Rail | <ul style="list-style-type: none"> - High investment in track & stations, with long cost recovery. - Projects are often economically, but not financially, viable - High construction/completion risks for the track, etc. - Trains can be privately owned and operated - Inter-modal integration important |
| Ports | <ul style="list-style-type: none"> - High cost in jetties/breakwaters; long cost recovery - Revenue risk: based on short term projections/contracts - Labour/union resistance prevalent; dredging is costly. - Access infrastructure (road/rail connections) available? |
| Airports | <ul style="list-style-type: none"> - High cost of runways & aprons; long cost recovery - Revenue risk: based on short term projections/ contracts - Terminals like shopping malls: can be 50% of revenues - Access infrastructure (road/rail connections) available? |
| Municipal Water / Waste Management [PPPs] | <ul style="list-style-type: none"> - Often projects are rehabilitation of existing assets - Condition of existing assets uncertain - Creditworthiness of service customer/payee? - Political risk on tariffs adjustments |

Cross – Sector Review of Risks

| Sector | Key Risks |
|------------------------------------|--|
| Power | <ul style="list-style-type: none"> - Possible construction/completion risks of time & cost - Revenue risks (e.g. merchant pwr & wind) - Fuel supply risks? - Environmental & technical risks can be significant - Revenues: political risks on tariffs possible - Availability of connection to Grid important |
| Oil / Gas | <ul style="list-style-type: none"> - Revenue forecast risks: based on price of oil/gas? - Reliability of field reserves estimates? - Environmental & political risks prevail - Pipelines are structured as infrastructure projects, e.g. roads |
| Industrial / Process Plants | <ul style="list-style-type: none"> - Revenue forecasts: projects often exposed to a market. - Uncommitted sales revenues - Technical & Environmental issues can prevail - Strength & commitment of sponsors required [& guaranteed?] |
| Property | <ul style="list-style-type: none"> - Planning permit available? - Value of completed asset? - Committed use of facilities after construction? Low risk? |
| IT / Telecoms | <ul style="list-style-type: none"> - Change in technology over short period - Short-term business perspective [2-3 yr] |

The Financial Crisis : 2007-2015

Project Finance & Infrastructure post-Financial Crisis

- Few, if any, defaults on infrastructure / public utility debt due to Financial Crisis globally.

- BUT:**
- Number of banks in sector drops to half the previous number
 - Cost of bank loans (margins over Base Rate [e.g. LIBOR]) doubled
 - Lack of commercial bank loans > 10 year maturity [ref. Basel III]
 - Use of “Perms”. Risks of re-financing understood? Good banking?
 - ECAs and IFIs to fill the gap commercial banks cannot satisfy?
 - Recognition that capital markets (i.e. bonds) could contribute to long-term debt needs, but mechanism lacking
 - Contingent liability issue arising for PPP recognised, but remains a risk?
 - Project insurance is more expensive too [ref. Basel III]!
 - No change at BIS re. classification of Project Finance loans, [notwithstanding risk of default is low].

Conclusion:

Project Finance perceived as good credit risk, albeit deal flow is slow.
Money (debt & equity) available for well-structured projects with risks allocated to those best able to carry them.

Choice of Infrastructure Project

Government Decision-Making [UK-style]

Issues:

- Demand for infrastructure is often beyond argument as represents engine for growth
- Infrastructure investment is not a 'quick fix'. Often longer to implement than political life-cycle
- Government financial resources may be limited, so turn to private sector.
- Uncertainty over responsibilities can arise if the existing service is delivered by the private sector [e.g. the UK]
[NB. arguably, UK privatisation was flawed. Focus was on asset sale, not service delivery. Regulation has been passive/weak, and many utilities now highly leveraged].
- Beware The RAB Model of funding infrastructure!!
- HM Treasury becomes arbiter for schemes originating from DfT, DEFRA, DECC, etc.
- Government VfM assessments not in public domain. "Commercially sensitive" information!
- Consultation often undertaken post-decision and only on the chosen option
- Basis for cost-benefit (VfM) analysis arguably flawed. 'Real' v. 'nominal' analysis [Green Book, UK]
- VfM only evaluated publicly by NAO after the event (but constrained in their Reports).
- Compulsory purchase regime lacks public confidence and integrity
- Conflicts of interest abound!

Middlesex Hospital PPP, UK [1998]
Public Sector v. Private Option

| Net Present Value | PPP | PSC (conventional) |
|---|-----------------|---------------------------|
| Real Discount rate = 6% (1998) | £ 124 mn | £ 129 mn |
| Real Discount rate = 3.5% (today, excl. Optimism Bias) | £ 182 mn | £ 152 mn |

Result:

- Unrealistic real discount rate was chosen
(6% real = ~ 9% nominal; UK 30yr Govt bonds [1998] = ~ 5.5% pa.).
- Decision to choose the PPP option was based on Green Book.
- In 2003, HM Treasury changed the real discount rate to 3.5%, but introduced Optimism Bias assumption!
- The out-turn costs of the project were significantly underestimated

Some Major UK Government Decisions

- Hinkley Point C Nuclear Project [£8-14bn]
- HS2 [£30bn?]
- Thames Tideway Tunnel [£5bn]
- Runway 3, Heathrow [£20bn]

Some Major UK Government Decisions

- Hinkley Point C Nuclear Project [£8-14bn]

*Proven technology?
Economics?*

- HS2 [£30bn?]

*Capacity is the problem, not speed
All options explored for increasing capacity?
Environmental & social issues prevail*

- Thames Tideway Tunnel [£5bn]

*Needed today?
Flawed corporate & financial structure (& unfunded)*

- Runway 3, Heathrow [£20bn]

*Best site for London's airport expansion?
Security?
Funding?*

- Bridges over The Thames???

Government Decision-Making

The Future?:

- Create an ***independent*** Infrastructure Project Unit. [✓]
- Staff Unit with mix of Government and private sector experts (with no political affiliation) [✓]
- Unit to report directly to Parliament (e.g. PAC) on VfM assessments [X]
- Review VfM methodologies [X]
- Review all public service asset investments > £100mn. [X]
- Review all project proposals and alternatives > £100mn [X]
- Recommend funding mode (public v. private). [X]
- Review procurement process, decisions and contract awards. [X]
- Impose “Common Sense” test for all major projects! [?]

Discussion

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