

# **Privately financing infrastructure investment**

The experience of  
the United Kingdom

Background paper

This background paper is part of a package of materials accompanying the final report of an International Transport Forum Working Group, entitled *The Future of Public Transport Funding*.

The paper was authored by Chris Campbell (UK Department for Transport) and was presented at the third meeting of the Working Group held on 13-14 April 2023 in Reykjavik, Iceland.

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Cite this work as: ITF (2024), "Privately financing infrastructure investment: The experience of the United Kingdom", Background Paper, International Transport Forum, Paris.

## Introduction

From the mid-1700s until the nationalisations of the late 1940s, development of transport infrastructure – roads, canals, and railways – within the United Kingdom was primarily driven by private finance. The development of each mode was characterised by a series of investment frenzies– the Turnpike Mania 1751 to 1772, the Canal Mania 1790 to 1810 and the Rail Mania of 1843 to 1847 – which led to very dramatic expansions of the networks. For example, the Turnpike Mania saw the development of 10,000 miles of road (Bogart, 2004).

The Turnpikes were 21-year concessions, in which Parliament granted Trustees the authority to levy tolls in return for the maintenance and expansion of the road network. The trusts were entirely debt financed and forbidden from distributing any profits. In contrast, the canals and railways were publicly traded companies, financed with a mixture of debt and equity.

The development of the transport infrastructure was characterised by a laissez faire approach, which in the case of railways meant development was effectively rationed by capital markets (Casson, 2008). This approach accounts for the variety of build specifications, as exemplified by the ‘Battle of the Gauges’ (1835 to 1892) in which the Great Western Railway adopted broad gauge 7’ ¼” (2140mm) while the majority of railway companies adopted narrow gauge 4’ 8½” (1435mm): the final section of broad gauge track was replaced in 1892.

Despite this laissez-faire approach, Central and Local Government were not absent from infrastructure development. For example, in the 1830s when the Turnpikes Trusts reached their greatest extent, c.20,000 miles, Parishes continued to maintain c.80 per cent of the road network (Bogart, 2004). In addition, for all three modes of transport Acts of Parliament were required to authorise the forced sale of land for infrastructure development. Furthermore, over the course of the 1800s, as rail companies sought to reverse declining profitability through amalgamation, Government steadily took a more interventionist approach. This culminated in the Railways Act 1921 which consolidated the industry into four companies (‘The Big Four’) and established the Railway Rates Tribunal to regulate user charges.

Since the late 1940s, transport infrastructure development and maintenance has been primarily the financial responsibility of Government. Exceptions have been limited either in terms of duration – the rail infrastructure was briefly under private ownership from 1996 to 2002 – or geographic scope, namely the M6 Toll or Heathrow Airport rail link. Whilst private sector led transport infrastructure investment of the kind employed in 1800s is limited, successive Governments have used regulatory and contractual mechanisms to draw in private finance. This paper examines the different approaches adopted by Government to draw in private finance and concludes with a short discussion on key observations.

## Funding versus financing

Funding and financing are two related but distinct concepts which are often used interchangeably. **Funding** refers to the revenue used to reimburse the project whole life costs (capital and operations expenditure) and financing costs, whereas **financing** refers to the interest-bearing capital (debt or equity) invested to satisfy a project's upfront capital expenditure. There is a time inconsistency between financing and funding, as the former is provided to create the infrastructure while the latter is (generally) earned once the service becomes operational: a non-interest-bearing Government contribution towards capital expenditure is classified as funding as taxpayers are in effect providing an upfront revenue lump sum.

There are a wider variety of financing options – such as syndicated loans, corporate or municipal bonds, and preferential shares – and the ability to privately finance an investment project is predicated on the ex-ante assumption it is fundable, in other words investors must reasonably expect that over the life of the asset the funding will be sufficient to meet the liabilities (the funding requirements).

*Funding requirement = operating expenditure (including maintenance) + capital expenditure + return on investment*

The achievement of this threshold requires a focus on minimising the funding requirement and maximising the available funding. With regards minimising the funding requirement, this necessitates a focus on cost efficiency during both construction and operation of the asset and optimising the financial structure: the financial structure – the choice of financing instruments – influences the cost of capital and hence the return on investment.

With regards maximising the available funding, Vassallo and Garrido (2023) note three potential sources:

- Direct user charges;
- Taxes and charges on indirect beneficiaries; and
- Subsidies from general taxation (broader society).

These sources are not mutually exclusive. For example, if the revenue available from user charges were insufficient to meet the funding requirement but there were significant benefits to non-users, the Government could decide to provide additional funding through a subsidy or levying a tax. The level of funding available from direct user charges will be affected by the presence of substitutes and complements: the presence of the former or the absence of the latter will adversely affect revenue generation. Thus, whilst distinct any examination of financing options must consider the level and source of funding as well as the funding risks.

### Box 1: UK railways: Complements and substitutes

The behaviour of UK railway companies prior to their nationalization in 1948 demonstrates the importance of complements and substitutes to the financial viability of infrastructure investment.

The UK rail network was predominantly built by private companies operating in a laissez-faire environment, in which investments were effectively rationed by the financial markets (Casson, 2008). Early attempts were made to create an integrated network, such as the proposals by the Railway Committee of the Board of Trade, which were presented to Parliament in 1845 (Casson, 2008). However, these came to nothing.

The laissez-faire period was marked by three investment ‘manias’, the biggest of which occurred from 1843 to 1847 when Parliament authorized c.10,000 miles of new routes: Acts of Parliament were required to force the sale of land to the developer. This approach led to an excessively large network, which had significant adverse cost implications: Casson (2008) estimates a network of only 13,000 miles could have achieved the same social benefits as the c.20,000 constructed. A large part of the excessive mileage was characterized by the duplication of routes, which split passenger revenue, adversely affecting financial performance: dividends as a proportion of rail company par value never returned to their pre-1843 heights (Campbell and Turner, 2015). Of note, established companies accounted for a very significant proportion of the increased route duplication between 1843 and 1850, as they sought to ward off competition from new entrants (Campbell and Turner, 2015). In recognition of the adverse impacts arising from competing provision, ITF (2020) recommends ‘competition for the market’ in preference to ‘competition in the market’.

It should be noted that whilst competition in the rail market adversely affected financial performance, it was the presence of an external substitute, motorised transport, which provided the fatal blow to a financially sustainable railway. The British Railways Board (‘Beeching’) report of 1963 recognised this and proposed significant reforms in the hope of achieving financial efficiency. Whilst renowned for proposing the closure of 1/3 of the network, the ‘Beeching’ report went beyond rationalisation, identifying markets where rail could potentially compete with road, such as the transport of bulk commodities, and recommending the adoption of containerised freight handling systems.

The railway companies invested in complementary activities including hotels, dock operations, as well as bus, ferry and airline services: in 1934, the Big 4 – the Railways Act 1921 merged 120 companies into 4 regional groups - partnered with Imperial Airways to establish Railway Air Services, which operated domestic flights in the United Kingdom. These complementary activities were designed to create an integrated service, facilitating travel and trade (Casson, 2008). This apparent focus on end-to-end journeys would appear to be an attempt to encourage the use of the railways and capture revenue at each stage of a trip.

## The justification for private finance

The 1980s heralded a period of privatisations which extended beyond state owned enterprises, such as Jaguar (1984), British Petroleum (1987) and Rolls-Royce (1987), to include infrastructure utilities: telecoms (1984), gas (1986), water (1989), and electricity (1990). By the late 1990s, the Government actively sought to draw in the private sector to provide services which were traditionally seen as the preserve of the public sector, such as prisons, schools, waste management and housing. The desire to involve the private sector was motivated by several factors.

Private sector finance was considered a means to address the backlog of required maintenance and enhancements, **accelerating investment** above what could be financed by Government alone (House of Commons, 2008). For example, following privatisation electricity generation underwent significant structural change, with the proportion of electricity generated from natural gas increasing from c.1 per cent in 1990 to c.34 per cent by 2000 (BEIS). This “dash for gas” cost an estimated £11bn (Green Investment Bank, 2010), with new entrants accounting for 50 per cent of new capacity (Newbery, 1999).

Compounding the need to address a backlog of capital investment was the Government’s desire to **maintain fiscal discipline**. In 1997 the New Labour Government introduced two fiscal rules, adherence to which it was hoped would help stabilise the economy, avoiding the booms and busts which had characterised the post-War period. The Sustainable Investment rule limited Government debt to 40 per cent of GDP over the course of the economic cycle, while the Golden Rule only allowed borrowing for the purpose of investment over the economic cycle: borrowing to fund current spending was prohibited. Note the Golden Rule introduced an element of intergenerational equity to fiscal decisions, as the beneficiaries of government spending and investment should pay.

There was also a widely held view that the private sector, disciplined by the market, could **achieve cost efficiencies** not possible for Government (House of Commons, 2008). For example, it was assumed removing asset management (investment and maintenance) decisions from the vagaries of the election cycle would yield cost savings, as the private sector, in pursuit of profits, would seek to minimise whole-life costs. Similarly, freed from the strictures of Government, such as trade union recognition, the private sector would modernise working practices. In addition, cost efficiencies would be realised by a more proactive approach to **risk management**. For example, it was assumed the revenue risk would lead private sector infrastructure managers to give greater forethought to the required service outputs, thereby avoiding cost specification changes during construction.

## Drawing in private finance

When privatising transport in the 1980s and 1990s, the Government sought to incentivise the realisation of cost efficiencies through the creation of competitive pressures. Rail underwent the most profound restructuring, as the industry monopoly, British Rail, which included train manufacturing, infrastructure, and operations, was vertically and horizontally separated. The Government tailored its approach to private finance to reflect the different characteristics of each mode.

### Price Cap Regulation and the Regulated Asset Base

In the 1980s and 1990s the infrastructure networks were privatised as regional or national monopolies in recognition of the benefits arising from economies of scale and revenue protection. However, it was also recognised that such industry structures would provide the newly privatised infrastructure managers considerable pricing power over captive markets. For this reason, Government established a regulatory framework which capped user charges ('price-cap regulation'): prices could increase by the inflation rate less an efficiency target.

$$\text{Price increase} = \text{inflation} - \text{efficiency target}$$

The framework is designed to mimic a competitive market, with infrastructure managers incentivised to bear down on operational expenditure: failure to achieve the efficiency target reduces profits, while exceeding the target results in excess profits. In addition, regulators benchmark infrastructure managers' performance, with laggards set higher efficiency targets (subject to mitigating circumstances), which, when combined with the incentive mechanism, provides a degree of financial compulsion to catch-up with the best in class.

Efficiency targets are revised at regular intervals, usually every five years (the 'price control period') and rebased against outturn operating expenditure. This rebasing allows regulators to transfer any excess efficiency savings to users, effectively capping the profits of infrastructure managers. In this manner, all efficiency savings accrue to users in the long run.

The Price-Cap regulatory framework was first adopted for the privatised water companies in 1989. However, as the first price control review after privatisation approached (starting 1994), it was realised price cap regulation, if left unreformed, would disincentivise infrastructure investment.

Investment creates assets with specific characteristics, such as a two-track rail viaduct. Whilst the asset can be used over multiple periods – parts of the UK rail network are over 150 years old – the investment to create the asset is non-recurrent expenditure. The only recurrent expenditures associated with the original investment are the capital repayment and the return on investment. Applying price cap regulation to the capital repayment and return on investment would mean arbitrarily reducing the value of the original investment as the only way to improve the quality of the asset above the original specification would be through further investment.

To guard against arbitrary reductions to the value of investments and the resulting disincentives, investments are ring-fenced in a Regulated Asset Base (RAB) with the capital repayment and return on investment feeding directly into user charges which provides a very strong incentive to invest. Given the impact on user charges, prior to the start of each price control period regulators agree with infrastructure managers the efficient level of investment (scope and value) which can be included in the RAB.

Note that as a result of the RAB, changes to user charges reflect the interaction of two effects: (1) the efficient level of investment; and (2) the efficiency target for operational expenditure. The former acts to increase user charges owing to the capital repayment and return on investment, while the latter acts to reduce user charges. If the efficient level of investment were high enough, the upward pressure could outweigh the effect of the efficiency target for operational expenditure, thereby causing user charges to increase.

The price-cap regulation and RAB have been applied to every infrastructure manager displaying monopoly characteristics - the rail, water, gas, electricity and fixed telecommunication networks and Heathrow Airport – and has been credited with increasing the level of infrastructure investment above that which the Government was either willing or able to afford. For example, the annual real investment in the water industry has increased by c.70 per cent since 1988/89, the last financial year prior to privatisation (OFWAT, 2022). Nevertheless, the Price- Cap RAB regulatory framework has been criticised on several counts.

The privatised infrastructure managers have come under frequent criticism on account of **dividend payments to shareholders**, in particular due to the perception that it reduces financial resources available for investment and increases user charges. This criticism has been particularly acute in the water industry where an estimated £50bn has been distributed to shareholders (CIWEM, 2019), while domestic charges have increased c.40 per cent in real terms between 1989 and 2015 (NAO, 2015), and discharges of raw sewage and water leaks remain (CIWEM, 2019).

Discussions on profits and dividend payments invariably lead to comparisons to the Government cost of borrowing. However, as set out below with regards Private Finance Initiatives, the **private and public sector costs of capital** are not directly comparable. A far more serious criticism than relative costs of capital is that of artificially boosting profits through **financial engineering** (Helm, 2009). When setting the price cap, the regulator assumes a weighted average cost of capital for the duration of the price control period. If the actual cost of debt is lower than was assumed to estimate the weighted average cost of capital, there is an incentive for infrastructure managers to increase the return on equity by increasing the proportion of debt financing. The UK's National Audit Office estimates the total cost of water bills would have been c.£840m lower between 2010 and 2015 had the water regulator (OFWAT) adopted the same approach as the energy regulator (OFGEM) whereby the cost of debt varies within the control period 'based on the borrowing cost of *similar* companies' (NAO, 2015).

The problem with financial engineering extends beyond user charges being greater than necessary given actual capital and operating expenditure; financial engineering increases insolvency risk due to the withdrawal of loss bearing equity. Just as infrastructure managers earn excess profits when the actual cost of debt falls below the assumed (regulated) rate, they incur losses when the actual cost of debt rises above the assumed rate. In extreme cases the losses would necessitate equity injections or lead to insolvency. Helm (2023) suggests this accounts for the current financial difficulties at Thames Water.

Whilst price cap regulation incentivises efficiencies and prevents the abuse of market power, it **potentially disincentivises innovation**, as investors have no means to recover losses and any gains are relatively quickly past back to consumers through the quinquennial price reviews. In recognition of changing priorities – after nearly 20 years of price cap regulation inefficiencies have to a large extent been removed and decarbonisation of the networks has become increasingly important – the gas and electricity regulator



(the Office for Gas and Electricity Markets) reformed the regulatory regime to place greater emphasis on the delivery of outputs and innovation: the reformed regime is called Revenue, Incentives, Innovation and Output (OFGEM, 2010). For example, in 2021 OFGEM, together with Innovate UK, launched a £450m Strategic Innovation Fund to invest in innovative solutions to the key challenges facing energy infrastructure, such as decarbonisation.

It has also been suggested the guaranteed return on investment, implicit in the RAB model, **biases infrastructure managers towards capital investment** rather than operational solutions (Makovšek and Veryard (2016), although the evidence for this is unclear. In addition to the above criticisms, there are also questions about the **suitability and replicability of the Price Cap RAB regulatory framework** to other contexts. Within the United Kingdom, the regulatory framework was applied to networks which were substantially *complete* where the primary objectives were reducing inefficiencies and addressing investment and maintenance backlogs. However, it is unclear how well the framework would perform in contexts of constructing entirely new or substantially expanding existing infrastructure networks.

Infrastructure networks are subject to very large economies of scale, such that as the network approaches universal provision the marginal cost reduces dramatically. In other words, the marginal cost is considerably higher in the early stages of constructing an entirely new or expanding substantially an existing network. As the RAB passes the financing costs direct to customers, the user charges, particularly the capital cost element, in the early stages of network construction will be considerably higher than that of a network with universal provision. At least within the British context, the RAB has never been applied in the context of constructing a new network, so it is unclear whether users would be willing to pay charges sufficient to meet the elevated, albeit transitory, marginal costs. Should users be unwilling to pay the necessary charges, it may prove difficult, if not impossible, to draw in private finance even with the backing of a RAB.

Furthermore, in the United Kingdom the infrastructure networks were sold at substantial discounts to the current replacement cost: for example, the water companies were sold for c.£5.3bn versus a current replacement cost in 2010 prices of c.£224bn (Stern, 2013). Had the water companies been sold at the value of the current replacement cost, user charges would have been very considerably higher (even with the economies of scale). Indeed, as the Water industry RAB has grown, now valued at c.£94bn (OFWAT, 2023), there has been considerable criticism of the impact on user charges (CIWEM, 2019). In addition, even where there is a strong strategic and economic case from a national perspective for infrastructure expansion, Government has limited powers to force private infrastructure managers to invest. Thus, when constructing an entirely new network or expanding substantially an existing network careful consideration should be given to the funding implications and the appropriateness of the Price-Cap RAB regulatory framework.

### Box 2: Railtrack

Railtrack, the owner and operator of the rail infrastructure in the United Kingdom, was privatised on 26 May 1996. However, on 7 October 2001, less than 6 years after privatisation, Railtrack entered administration and subsequently returned to the public sector as Network Rail. Among the many factors contributing to Railtrack's demise were the incentive regime and the poor condition of the assets.

Railtrack was subject to a performance regime which incentivised the efficient operation of the network. Prior to the start of each control period, the regulator would set the benchmarks against which Railtrack's performance would be assessed: the benchmarks reflected the regulator's assumptions regarding the level of planned and unplanned disruption of an efficient operator given Railtrack's investment plans and current operational performance. Railtrack would be rewarded for performance which exceeded the benchmark and penalised for shortfalls. Whilst the performance regime was designed to affect profitability, in the extreme circumstances which followed the Hatfield rail accident in 2000 when Railtrack imposed speed restrictions across the network and undertook widespread emergency repairs, the penalties became punitive and starved Railtrack of the funds needed to improve performance (Butcher 2010).

By 1990 the majority of the UK public infrastructure had been privatised – Ports (1983), Telecommunications (1984), Gas (1986), Airports (1987), Water (1989) and Electricity (1990) – and attention turned to how private sector discipline could be brought into the public sector. As public sector services are generally funded via taxation rather than user charges, the approach to draw in private finance would necessarily be different to the infrastructure privatisations.

## Private Finance Initiatives

Private Finance Initiatives (PFIs) are a type of Public-Private Partnership whereby a private consortium designs, builds, finances, operates and maintains an asset on behalf of the Government. PFIs are typically 25-year contractual agreements, whereby the procuring authority agrees to pay a 'Unitary Charge' in return for the delivery of an asset: deductions to the Unitary Charge are made should the asset be unavailable or fail to meet the required quality standards set out in the Service Level Specification.

PFIs open parts of the public sector traditionally considered the preserve of Government, such as prisons, housing, and waste management, and are purported to bring several benefits:

1. Cost efficiencies – the procuring authority operates a competitive tender and private consortia compete for the right to deliver the asset, which should put downwards pressure on the unitary charge. In addition, the long-lived nature of the contractual arrangements incentivises consortia to manage whole-life costs rather than just focus on the initial build costs.
2. Guaranteed maintenance – linked to realising cost efficiencies through managing whole life costs, Governments are contractually required to pay for maintenance, thereby preventing a deterioration of public assets as occurred in the 1980s.
3. Risk transfer – responsibility for the delivery and maintenance of the asset is transferred to the private consortia, thereby removing the risk to Government of cost escalation.

Despite first being proposed in 1992, PFIs are primarily associated with the New Labour Government (1997-2010): in the decade preceding the 2008 Finance Crisis the capital value of contracts signed exceeded £3bn per annum and reached a peak of £7bn in 2004 (HMT and IPA, 2019). During this time, PFIs were used across all levels of Government: of the 694 in operation in 2021, c.51 per cent were procured by Local Authorities, c.19 per cent by the Devolved Administrations and c.15 per cent by NHS Trusts (HMT and IPA, 2023). Whilst the 2008 Financial Crisis affected the availability of finance, it was the 2010 General Election and the change of Government, which turned the tide against PFIs.

For Governments grappling with financing significant public sector investments whilst simultaneously achieving self-imposed debt targets, such as the Sustainable Investment Rule, PFIs were attractive as they did not automatically appear on the Government balance sheet. For example, c.51 per cent of the total capital value of all outstanding PFIs (£57bn) in 2018 were off-balance sheet under the European System of Accounts (HMT and IPA, 2019).<sup>1</sup> Whilst the total capital value is relatively low when compared with Government debt of £1,837.5bn (ONS, 2019), it is associated with unitary charges of c.£188bn between 2018 and 2051. The significant multiple of unitary charges over the capital value led to concerns the off-balance sheet nature of many PFIs was masking the true extent of Government liabilities. As a result, the use of PFIs to finance new projects declined after the 2010 election until the Chancellor announced at Budget 2018, they would no longer be used by Central Government (HMT, 2018): this decision did not affect the Devolved Administrations.

### **Key criticisms of PFIs**

The **cost of capital** has consistently exceeded that of public sector borrowing: in evidence to the Treasury Select Committee, PricewaterhouseCoopers estimated the PFI cost of capital could exceed that of Government by 2 to 4 per cent (Treasury Committee, 2011). Nevertheless, the PFI weighted average cost of capital (WACC) and Government borrowing rate are not directly comparable: the PFI WACC reflects project specific cost and revenue risks, whereas the Government bond yields reflect sovereign risk. For example, with regards project specific revenue risk, the Government only starts paying the Unitary Charge to the PFI consortium, when the asset becomes operational and thereafter applies deductions should it become unavailable. In contrast to this, the Government needs to pay the cost of capital on Government bonds irrespective of assets becoming operational or subsequent performance. Thus, those financing PFIs are exposed to a revenue risk not present for Government bonds and this is reflected in the cost of capital.

Following the completion of the initial build phase and the start of operations, many consortia refinance to reflect the risk profile change from construction to operations. In several of the first PFIs to be awarded, consortia refinanced at significantly lower rates, earning **excess profits** (Hare, 2013), as the actual cost of capital was less than the contractualised rate. Government responded by including a sharing mechanism in future PFI contracts, initially set at 50 per cent and from 2008 this was increased to 70 per cent.

The Scottish Government responded to concerns about excess profits by adopting a Non-Profit Distribution (NPD) model of private finance, in which equity returns are capped and any excess profits returned to Government. This has led to the substitution of subordinated debt for equity, such that NPD projects are 100 per cent debt financed: these financial arrangements are reminiscent of the Turnpike Trusts. Despite these contractual innovations the private sector cost of capital continues to exceed the sovereign rate, as they measure different types of risk.

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<sup>1</sup> For PFIs representing 31 per cent of the total capital value the accounting treatment was not reported, such that it is conceivable the percentage off-balance sheets is greater than 51 per cent.

Given the higher private sector cost of capital, the identification and realisation of efficiencies is critical to the financial attractiveness of PFIs. However, in the case of schools and hospitals evidence suggests **efficiency gains have been minimal** due to the separation of core services (retained by the public sector) and the contracted out ancillary services (Allen, 2003).

PFIs have proven **complicated and expensive to contractualise** due to the need to specify the required service levels for the duration of the contract, which is typically 25 to 30 years. As a result, the length of time required to award a PFI has typically been far longer than expected: housing PFIs negotiated prior to the 2008 Financial Crisis took on average 77 months from inception to final contract award (Hodgkins, 2010). In addition, the negotiations require commercial expertise more often associated with the private than public sector, such that Government has been **dependent upon external advisers** (Siemiatycki, 2011).

Specifying service requirements for such a long period of time involves **uncertainty**, as the procuring authority must anticipate economic, social, and technological change which may impact usage. Despite the uncertainty, PFI contracts are generally quite **inflexible**. Whilst this provides certainty to both parties with regards the quantity and quality of the services to be delivered, it reduces the ability of the authority to react should the future prove significantly different from expectations.

In theory the Government has the potential to transfer project risk to the private sector. However, there have been high profile PFI insolvencies (Metronet 2007, Carilion 2018), in which the **risk transfer has proven illusory**, as Government was not prepared to see the closure of public services. In addition to individual project risk, Government is potentially assuming **greater fiscal risk**. With publicly financed investments Government is only obligated to fund the public debt: in the face of a fiscal emergency the Government could opt to delay maintenance or mothball public services. However, this option is not available under the PFI model, the maintenance and operating costs are fixed for the life of the contract (usually 25-30 years), thereby reducing Government fiscal discretion. Thus, in the interests of transparency regarding future obligations it may be advisable for the capitalised unitary charges to be reported as public debt on the Government's balance sheet.

### Box 3: Metronet

In 2003 Metronet was awarded a 30-year PFI contract to maintain the infrastructure of four underground and five sub-surface rail lines. Together with Tube Lines, which was awarded a PFI for four other underground lines, it was estimated £16 billion would be invested over the first 15 years of the lives of the PFI with estimated efficiency savings of £4 billion (Butcher, 2012). Metronet entered administration on 18 July 2007 having run up losses of c.£2bn.

Central Government paid c.£1.7bn to assume the private sector debt of Metronet: when the PFI was awarded in 2003, it included credit guarantees, which reduced the risk borne by private sector investors. In addition, Central Government paid a further £300 million towards Metronet's administration costs.

On 27 May 2008 Metronet left administration and transferred to Transport for London (TfL), an executive agency of the Greater London Authority. To close the c.£2.5 billion funding gap, TfL reprogrammed investment activities and realised cost efficiencies of c.£1 billion. Examples of cost efficiencies included the integration of back-office functions and the removal of duplication between the procuring authority and Metronet (Butcher, 2012).

## Funding and Financing Support

The preceding two sections outline two approaches Governments have adopted which displace public sector investment. However, in established private markets rather than retrenching Governments could financially intervene to influence the allocation of private sector investment to those activities deemed politically, socially, environmentally, or economically desirable: the need for financial intervention implies the desired investment allocation would otherwise be unfundable.

The factor causing the desired investment to be unfundable will determine the type of intervention. In those instances, in which the funding available from user charges is insufficient, the Government could provide *funding support* to make up the shortfall. Alternatively, if the funding requirement is not cost efficient due to a very high cost of capital, the Government could provide *financing support*.

With regards cost efficiency, it is often assumed the private sector will outperform the public sector. However, in high-risk environments, such as the development and deployment of new technology, the private sector may have difficulty providing an efficient cost of capital: in extreme cases the financial markets may fail to quote a cost of capital. Re-allocating part of the risk profile to Government, in other words capping the risk exposure of the private investors, may reduce the project's cost of capital to a more efficient level (*'financing support'*).

### Box 4: Ultra Low Emission Bus Scheme

Since 2010 the United Kingdom has provided funding support to assist the adoption of low, then ultra-low and now zero emission buses. These more environmentally friendly buses tend to have higher whole-life costs than conventional diesel buses but have the benefit of lower emissions of carbon and particulate matter. However, these environmental benefits cannot be captured through additional user charges, such that for many operators these buses are unfundable. By targeting support at the funding gap, Governments can influence the investment decisions of private bus operators, thereby accelerating their adoption.

The latest funding support focussed on the adoption of ultra-low emission buses (ULEBs). Funding support was capped at 50 per cent of the difference between the capital cost of an ULEB and a conventional diesel bus and 75 per cent of the associated infrastructure total capital expenditure. In addition, the funding allocation was competitive: Local Authorities and bus operators submitted bids with those requesting the least funding favoured.

Funding support was deliberately targeted at capital costs, as this is the primary factor driving higher whole-life costs: on high intensity routes ULEB operating costs may actually be lower than those of a conventional diesel bus. Thus, funding support was not required for the entire capital cost differential of the bus or total cost of associated infrastructure to incentivise bus operators to adopt ULEBs.

There are few points to note in this regard: First, focusing support on high intensity routes has a disproportionate impact on environmental impacts; Second, capping and bearing down on the funding support ensures bus operators are still incentivised to minimise their operating costs and hence user charges; and Third, by creating the initial demand for ULEBs, bus manufacturers should have the confidence to invest in manufacturing capacity, which is essential if economies of scale are to be achieved and capital costs driven down to those of conventional diesel buses.

## Discussion

Before opting for private finance, Government must be clear about the objectives it is trying to achieve. If Government is simply looking to achieve cost efficiencies, it may be possible to achieve these without resorting to private finance. Evidence from a study investigating options to reform the institutional structure of the United Kingdom's Strategic Road Network concluded the provision of long-term funding certainty was essential for realising efficiency savings (DfT, 2014). In addition, it has been suggested the adoption of contractual arrangements commonly employed in the private sector, namely fixed price contracts, could yield efficiency savings through a better allocation of risk and reward (Makovšek and Veryard, 2016). Thus, governments require clear objectives about what they hope to achieve before opting to draw in private finance.

Private finance has been touted as a means to overcome Government fiscal constraints, which are often self-imposed, such as the former 'Sustainable Investment Rule', rather than reflecting private sector appetite for Government debt. However, private finance is not without its own constraints: the need for investments to be fundable clearly sets an upper limit to the level of private finance. Furthermore, whilst the fundability constraint is financially efficient, only in a unique set of circumstance will this coincide with the socially efficient level of investment. Thus, private finance may overcome a government fiscal constraint, but the achievement of a socially efficient level of investment may necessitate ongoing government involvement.

Government involvement can come in a variety of forms - from vesting statutory power in an independent regulator, procurement policy, and funding and financing support - and the choice of approach should be informed by the industry's characteristics and government objectives. In addition, the approaches are not mutually exclusive, such that it may be necessary and appropriate to adopt multiple approaches within an industry.

Given the fundability constraints, there is a need to coordinate investments within and across modes. Failure to adequately consider complements and substitutes can lead to investments which are neither socially nor financially efficient, or to a failure to invest in projects that would meet these efficiency criteria. Whilst the initial construction of the United Kingdom's rail network demonstrates the problem of too much investment, current experience within the electricity industry potentially highlights the problem of insufficient network investment which is reputedly holding up the development of offshore wind farms. Thus, incentives need to be tailored to ensure they create a sustainable framework balancing the achievement of government objectives and the needs of private finance.

In addition, infrastructure assets are long-lived assets – parts of the rail network are approaching two-hundred-year-old – and it is likely political, social, and economic changes will affect the infrastructure need. Thus, incentive regimes must evolve to meet changing Government objectives.

Regardless of the approach to drawing in private finance, careful consideration should be given to the level of risk and its allocation. Even in industries that have been completely privatised, concerns have been raised that the price cap, which prevents the recovery of financial losses, has incentivised risk aversion. In other cases, private finance has accepted risks beyond what it can manage, with investors realising significant losses through distressed asset sales (toll roads in Australia), debt for equity swaps (Channel Tunnel) or insolvency and a reversion to Government (Metronet), which raises questions about the suitability of private finance in large, risky infrastructure projects. Note insolvency has often resulted in a reversion to public sector ownership and operation, at least temporarily, due to the economic importance

of infrastructure, with the Government often absorbing at least part of the private sector losses. In addition, the risk allocation will interact with the reward which may create perverse outcomes, as private companies seek to increase the return on equity via financial engineering – increasing the proportion of debt above that assumed in the regulated/contractualised weighted average cost of capital – rather than through operational efficiencies. Thus, careful consideration should be given to the allocation of risk, and how this interacts with the contract price.

Finally, drawing in private finance creates contractual demarcations which either do not exist or perhaps are not so strongly defined/observed within Government. This creates an ongoing requirement for sufficient public sector staff with the requisite expertise to monitor and enforce contractual obligations. Failure to provide sufficient resources is likely to undermine the achievement of the Government's objectives. In addition, the costs of developing and maintaining such resource may not be insignificant and, as was demonstrated in the case of Metronet, add additional costs to a project. Thus, when assessing the overall value for money of a proposed privately financed investment project, the cost of providing sufficient monitoring and supervisory resources must be fully weighed.

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# The Future of Public Transport Funding

Well-funded public transport services that provide easy access for all citizens to the opportunities they seek are essential to decarbonising transport, making our cities more liveable, and connecting people living in rural areas.

*The Future of Public Transport Funding* aims to help governments meet the challenge of funding public transport sustainably and equitably.

The report recommends revisiting investment allocations, moving away from a road focus, and ensuring the efficiency of public transport services. Governments must also optimise the contributions of users, indirect beneficiaries of public transport (including landowners and businesses) and the public sector.

Read the full report: [www.itf-oecd.org/future-public-transport-funding](http://www.itf-oecd.org/future-public-transport-funding)