



Australian Government
Productivity Commission

Public Infrastructure
Financing:
An International Perspective

Productivity Commission
Staff Working Paper

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Abbreviations

ABS	Australian Bureau of Statistics
ACG	The Allen Consulting Group
ACPI	Australian Centre for Public Infrastructure
ACT-PLA	ACT Planning and Land Authority
AIFRS	Australian-equivalent International Financial Reporting Standards
Amtrak	National Railroad Passenger Corporation (USA)
ANAO	Australian National Audit Office
AOFM	Australian Office of Financial Management
APPA	American Public Power Association
APRA	Australian Prudential Regulation Authority
ASX	Australian Stock Exchange
ATO	Australian Taxation Office
AusCID	Australian Council for Infrastructure Development
BCC	Bankstown City Council
BDW	Blake Dawson Waldron
BIE	Bureau of Industry Economics
BOO	Build Own Operate
BOOT	Build Own Operate Transfer
BOT	Build Operate Transfer
CAPM	Capital Asset Pricing Model
CBAs	Central Borrowing Authorities
CBO	Congressional Budget Office (USA)
CCPPP	Canadian Council for Public–Private Partnerships
CDS	Credit Default Swap

CEDA	Committee for the Economic Development of Australia
CFS	Colonial First State
CGF	Credit Guarantee Finance
CLF	Credit Local de France
COAG	Council of Australian Governments
CPA	Competition Principles Agreement
CSOs	Community Service Obligations
CTC	Competitive Tendering and Contracting
CUC	Change of Use Charge
D&B	Design–Build
DBO	Design–Build–Operate
DBOT	Design–Build–Operate–Transfer
DCLG	Department for Communities and Local Government, United Kingdom
DIFU	German Institute of Urban Affairs
DIPNR	Department of Infrastructure Planning and Natural Resources, New South Wales
DLGPSR	Department of Local Government, Planning, Sport and Recreation, Queensland
DoD	Department of Defence Australian Government
DOI	Department of Infrastructure, Victoria
DOTARS	Department of Transport and Regional Services
DSE	Department of Sustainability and Environment, Victoria
DTEI	Department of Transport, Energy and Infrastructure, South Australia
DTF	Department of Treasury and Finance, Victoria
DTUP	Department of Transport and Urban Planning, South Australia
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortisation
ECNZ	Electricity Corporation of New Zealand
EMU	European Economic and Monetary Union

EPAC	Economic Planning Advisory Commission
ESC	Essential Services Commission
EU	European Union
FCM	Federation of Canadian Municipalities
FHWA	Federal Highway Administration (USA)
FRAB	Financial Reporting Advisory Board (UK)
GARVEEs	Grant Anticipation Revenue Vehicles
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital formation
GFOA	Government Finance Officer Association of United States and Canada
GMW	Goulburn–Murray Water
GO bonds	General Obligation bonds
GTEs	Government Trading Enterprises
HFAs	Housing Finance Agencies (USA)
IC	Industry Commission
IDBs	Industrial Development Bonds
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
IRR	Internal Rate of Return
KBR	Kellogg Brown and Root Pty Ltd
LGAT	Local Government Association of Tasmania
LGMA-NSW	Local Government Managers Australia, New South Wales
LIBOR	London Interbank Offered Rate
LOO	Lease–Own–Operate
MAB	Management Advisory Board
MAE	Material Adverse Effect
MRP	Mighty River Power Ltd
NAO	National Audit Office, United Kingdom
NASBO	National Association of State Budget Officers (USA)

NCPPP	National Council for Public–Private Partnerships (USA)
NTD	National Transit Database(USA)
NYCEDC	New York City Economic Development Corporation
NYCIDA	New York City Industrial Development Agency
NZDMO	New Zealand Debt Management Office
O&M	Operate–Maintain
OAG	Office of The Auditor-General, New Zealand
ODPM	Office of The Deputy Prime Minister, United Kingdom
OECD	Organisation for Economic Co-Operation and Development
OFGEM	Office of Gas and Electricity Markets (UK)
OFWAT	Office of Water Services (UK)
OMB	Office of Management and Budget (UK)
PABs	Private Activity Bonds
PAYGO	Pay-As-You-Go
PC	Productivity Commission
PCA	Property Council of Australia
PFI	Private Finance Initiative
PPIs	Public–Private Initiatives
PPPs	Public–Private Partnerships
PSBR	Public-Sector Borrowing Requirement
PSC	Public Sector Comparator
PTA	Public Transport Authority, Western Australia
PTB	Passenger Transport Board, South Australia
PwC	PricewaterhouseCoopers
PWLB	Public Works Loan Board (UK)
R2R	Roads To Recovery Program
RBA	Reserve Bank of Australia
RFF	Réseau Ferré de France
RTD	Denver Regional Transportation District
SL	Stockholm Local Transport

SNCF	Société Nationale des Chemins de fer Français
SPV	Special Purpose Vehicle
STA	State Transport Authority, South Australia
TCV	Treasury Corporation of Victoria
TIAC	Western Australian Technology and Industry Advisory Council
TxDOT	Texas Department of Transport
US DoD	United States Department of Defence
US DOT	United States Department of Transportation
US EPA	United States Environmental Protection Agency
VAGO	Victorian Auditor-Generals Office
WAPAC	Parliament of Western Australia Public Accounts Committee.
WAPC	Western Australian Planning Commission

Glossary

Affermage contract	A contract between public and private sector entities encompassing infrastructure project design, construction or operation, for a specified period of time, but excluding terms regarding project financing.
Capital structure	The mix of various types of debt and equity capital maintained by an entity, resulting from financing decisions.
Community service obligation	An obligation imposed on entities financing or providing goods or services as a result of government non-commercial objectives.
Concession	A contract granting, for a specific period of time, the right to control and operate, and demand payment for the use of, an infrastructure asset.
Construction risk	Risk associated with the physical construction and warranty phases of infrastructure project development.
Contributed asset	A public infrastructure asset financed by the private sector proponent of a property development, with ownership subsequently residing with a public sector entity.
Debenture	A form of fixed-interest security issued by an entity in return for medium- to long-term investment of funds.
Demand risk	Risk associated with variation of the demand for a public infrastructure service from initial expectations.
Economic infrastructure	Physical assets available for conducting business activities, including communications, transportation and distribution networks.
Equity premium	The excess return that an individual stock, or the overall stock market, provides over a risk-free rate. Since a higher rate of return is required to entice investors to accept riskier investments, the equity premium effectively compensates investors participating in the equity market.

Finance lease	An asset leasing arrangement that effectively transfers from the lessor to the lessee most of the benefits and risks associated with ownership of a leased asset.
Financing	The acquisition of monetary resources to undertake capital investments.
Financing vehicle	The arrangement or method by which public infrastructure projects are financed.
Financing risk	Risk associated with variation of the financing costs for a public infrastructure service from initial expectations.
Franchise	An arrangement whereby a public sector entity grants an exclusive right to a private sector entity to access, occupy, operate and maintain public infrastructure facilities in order to deliver services over a period of time.
Funding	The subsequent act of payment or the servicing of any debt associated with the initial financing of public infrastructure.
General budget appropriation	The authorisation by a legislative entity that allocates a designated amount of public finances to a government for a specified purpose, such as public infrastructure investment.
General obligation bond	A bond secured by the taxing and borrowing power of the issuing government, rather than from the revenue of a given public infrastructure project.
General-purpose borrowing	Borrowing activities for the general purposes of government, that can include financing public infrastructure.
Hypothecated taxation	The pre-commitment of taxation revenue to finance designated expenditure, including public infrastructure investment.
Material adverse event	Any event, condition or change which materially or adversely affects, or could be expected to materially or adversely affect, the assets, liabilities, other financial conditions or operations of an entity involved in financing infrastructure.
Monoline insurer	Insurer writing only a single line of insurance contract, similar to a financial guarantee, used as credit enhancements for securitisation transactions.
Network risk	Risk associated with network infrastructure facilities whereby the demand of a given asset depends on decisions made with respect to other elements of the network.

Off-budget financing	Public infrastructure financing activities by government, and their instrumentalities, that are not considered as part of general budget appropriations.
Operating lease	An asset leasing arrangement under which the lessor effectively retains most of the benefits and bears most of the risks associated with ownership of the leased asset.
Operating risk	Risk associated with operating a service, including the potential for systems failure.
Public–Private Partnership	An agreement between public and private sector entities on the financing and provision of public infrastructure.
Regulatory risk	Risk associated with the potential for government legislation, regulation and agreements to change and thus impact relevant investment. At a broader level, it can be known as sovereign risk, encompassing such actions as industry nationalisation.
Revenue bond	A bond issued by government that is secured from the revenues generated by a public infrastructure project.
Risk premium	The excess return over a risk-free asset that investors require to sufficiently compensate for the risk associated with holding the asset.
Security	An investment instrument, other than an insurance policy or fixed annuity, issued by a corporation, government, or other organisation that offers evidence of debt or equity.
Securitisation	Financial transaction in which future cash flows from assets (or insurable risks) are pooled, converted into tradable securities suitable for capital market investment. The assets are commonly sold to a special-purpose entity, which purchases them with cash raised through the issuance of beneficial interests (usually debt instruments) to third-party investors.
Social infrastructure	Physical assets that support the social development of a community, including education, health and public housing facilities.
Specific-purpose borrowing	Borrowing activities for specific purposes, including the financing of public infrastructure investments.
Specific-purpose levy	A levy or charge imposed for a specific purpose, including the financing of public infrastructure assets.

Strategic alliance	An agreement between two or more organizations to cooperate in a specific business activity, so that each benefits from the strengths of the other. Strategic alliances involve the sharing of knowledge and expertise between partners as well as the reduction of risk and costs in areas such as relationships with suppliers and the development and procurement of new products and technologies.
Systematic risk	Risk associated with the portion of an infrastructure investment's total risk that cannot be avoided by combining it with other investments in a diversified portfolio. It is measured as the correlation of the return on a security with the returns on the broad market.
Take-or-pay contract	Agreement between a buyer and seller in which the buyer will pay some amount even if the product or service is not provided.
Tax arbitrage	Trading that takes advantage of a difference in tax rates or systems as a basis for profit.
Tax-credit bond	Bond issued by a government, whereby the tax liability imposed with respect to interest payments are reduced by an amount equal to the specified tax credit.
Tax-exempt bond	A bond, issued by a government, whereby interest payments are not subject to federal income tax and/or sub-national income tax.
Technological risk	Risk associated with technological change that could render existing infrastructure obsolescent or stranded.

OVERVIEW

Key points

- General government investment in infrastructure has fallen in recent years for most of the countries in this study, (information is not available to assess whether this is true for public investment more generally). Nevertheless, overall investment in infrastructure has remained fairly steady in recent years, although volatile in some countries.
 - Total Australian investment in infrastructure has rebounded in recent years to just below 6 per cent of GDP in 2006-07. Sub-national governments undertook 76 per cent of public infrastructure investment, with government trading enterprises accounting for around half of this.
 - With the global financial crisis, governments are looking to infrastructure investment as a way of stimulating the economy. But financing options have also been constrained by the crisis.
- Financing decisions are separate from the investment decision and can be made independently. Financing differs from public funding: the latter being the commitment of public revenue to meet any gap between the costs of infrastructure provision and the revenue from user charges. Funding decisions carry an opportunity cost and deadweight loss of raising taxes.
- Budget appropriations, financed on a pay-as-you-go basis or from public debt, remain the major form of financing for government investment in infrastructure (63 per cent in 2006-07). Specific-purpose bonds, where repayment is linked to the performance of the asset, are a major source of finance in the United States and Canada, but were phased out in the 1980s in Australia.
- Public-private partnerships (PPP), where the government contracts a private partner to variously finance, design, build and operate infrastructure assets for a fixed period, are growing in use. Used extensively in the United Kingdom, in Australia they made up 6 per cent of public investment in 2006-07 — higher in New South Wales and Victoria.
- Some approaches used to finance public infrastructure can improve efficiency and lower the life-time project cost through:
 - better management of project risk by aligning incentives for risk management with the capacity to manage the risk
 - improvements in information, contract negotiation and management and other transaction activities that pay-off in better risk management and cost savings
 - bringing greater market or other scrutiny to bear on the investment, and imposing the costs on potential beneficiaries to better reveal their willingness to pay.
- The most efficient financing vehicle will depend on the nature of the investment, the degree of asymmetry of information, the potential for competition, and the skills of the government as negotiators and contract managers.
 - The potential for governments to shift risk onto private partners may be limited, and any non-diversifiable risk assumed by the private sector will be reflected in their required rates of return.
 - PPPs offer considerable potential to reduce project risk, but are costly to transact. If such transactions are off-budget, this may inhibit the scrutiny needed to ensure efficient investment.

Overview

The study focuses on efficient financing

Historically, governments have played the predominant role in owning and operating infrastructure facilities such as schools, hospitals, roads, bridges, railways, ports, telecommunications networks, and water and electricity supply facilities. Government investment in infrastructure has been justified as a response to natural monopolies, and where the infrastructure services are seen as essential. Difficulty in charging users also provided a justification for public provision of infrastructure such as roads. Increasingly, technological developments are reducing the transaction costs of exclusion and charging for use, while regulations are seen as an alternative to prevent abuse of market power, and to ensure security of supply.

Governments have also used their ownership of infrastructure to deliver subsidised services to specific groups on equity or other grounds, for example, where the minimum scale required for service provision is simply not financially viable with the service population. And, as infrastructure can provide benefits to groups other than the direct users (such as the effect of public transport on road congestion and greenhouse gas emissions), the benefits of the investment may exceed the potential revenue from user charges. With the current global financial crisis, governments are expanding investment in infrastructure projects as a source of fiscal stimulus, with the twin objectives of job creation and improving economic performance. While these features may justify some public funding for infrastructure services, in themselves they do not require public *provision* of infrastructure.

Growing acceptance of the user pays principle, along with recognition that there are generally greater incentives for efficiency in the private sector, have seen increased private involvement in the provision of both economic and social infrastructure. Nevertheless, governments remain a major influence on investment in infrastructure, and the efficiency of their investment decisions has considerable ramifications for the overall efficiency of the economy (PC 2006e).

Efficient financing is one element of efficient investment. The costs of financing large and complex infrastructure projects are substantial, so the savings from getting it right can be significant. And the financing vehicle may provide information and create incentives that improve other aspects of an efficient investment decision.

This study explores the scope for efficient financing to reduce the life-time cost of an infrastructure project and the potential financing vehicles have to improve the investment decision. It does not attempt an overall comparative assessment of financing vehicles — many legal, institutional, market environment and project specific factors have to be weighed in making such judgements. Instead, it reports on the experiences of a number of countries following different approaches to help provide an assessment of the strengths and weaknesses of the different options.

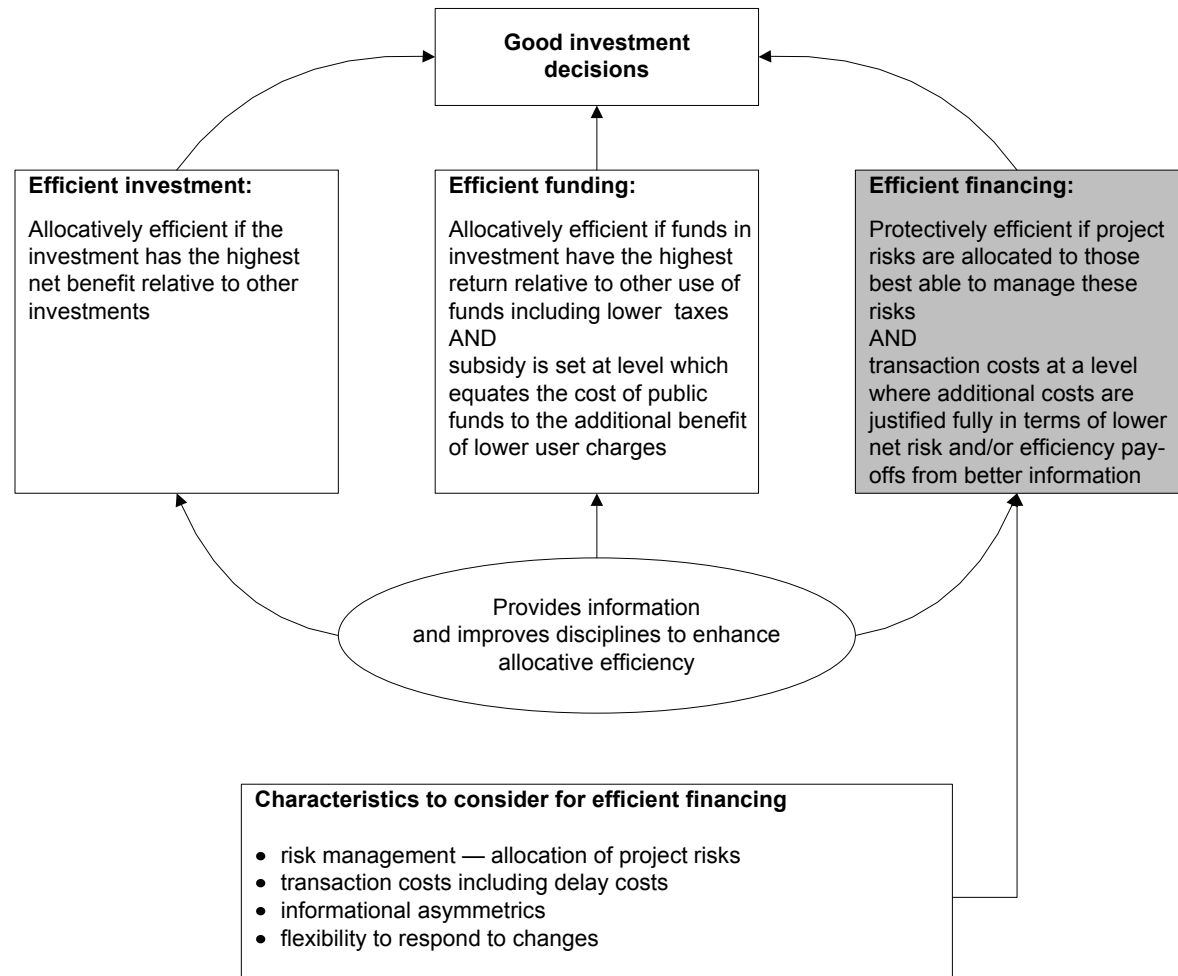
Efficient investment, funding and financing decisions make good investment practice

The provision of public infrastructure involves the interrelated activities of investment, funding and financing — which all have distinct implications for economic efficiency.

- Investment in infrastructure should add to community welfare. Profitability alone is an inappropriate criterion for infrastructure projects with significant spillover benefits that are not fully captured in market prices. An investment is efficient in allocating resources if it delivers the highest ratio of benefits to costs compared to other alternatives. These alternatives include options such as expenditure on other public services or returning the funds to taxpayers.
- Funding sources should reflect benefits to users, with public funding making up the shortfall between user charges and the overall costs of the infrastructure (construction and operation). These costs include interest payments and principal repayments. Efficiency requires finding the balance between the effect of user charges on demand (including the impact of additional users on the quality of the service provided), with the reduction in costs imposed on taxpayers who may or may not use the service (adjusting for the transaction costs associated with user charges). Where there is a decision to fund the gap, this subsidy should be directly funded through budgetary processes to help ensure transparency and accountability of project funding decisions.
- Financing should minimise the lifetime financing costs of a project. While the major financing task is meeting upfront investment costs in a timely manner, the central efficiency issue is which financing vehicle best manages project risk. Financing vehicles that assign risk to the partner best placed to manage each type of risk are more efficient, reducing the overall cost of the project. There may also be scope for the financing vehicle to influence allocative efficiency by imposing greater discipline on investment and funding decisions.

Figure 1 indicates these three considerations in public infrastructure investment decisions. The highlighted section identifies the area covered by this study, that is, infrastructure financing.

Figure 1 **Efficiency considerations of good investment decisions**



Efficient financing has three main aspects

This study draws on country experiences with different financing vehicles to identify their strengths and weaknesses in terms of their implications for improving:

- project risk management
- transaction costs (including costs of delay arising from cash flow constraints)
- information and disciplines that contribute to more efficient investment decisions.

Project risk can be reduced by good management. The financing vehicle may be able to better align incentives for managing a range of project risks with

responsibility for risk management. For example, Public-private partnerships (PPPs) may assist in transferring construction and operational risks to private partners, while government retains regulatory and demand risk with a commitment to underwrite minimum revenue from user charges.

There may also be some scope to transfer risks to those more able to bear these risks, either as they can more effectively diversify the risks or because they have a higher tolerance to risk. However, one lesson from the financial crisis is that securitisation, which allows the sharing of financial risks, may reduce the incentives to manage specific project risk, so innovative financial products need to be assessed carefully.

Arranging and managing financing can have high administrative costs. Negotiations and contracting to bind risk exposures can be time consuming and costly, and outcomes may not always be as expected. Timing also can matter. Having adequate finance available when it is required is important for timely delivery of design, construction and operation of infrastructure. Delay can impose costs in forgone services, although it can bring better information to guide the investment decision.

Informational asymmetry affects how well risks can actually be allocated as the parties to the investment do not have a common understanding of the types and extent of risk associated with the infrastructure project. Information discovery can add substantially to transactions costs. Uncertainties will be reflected in higher premiums required by investors, and higher hurdle rates for public investment. Information asymmetry can lead to adverse selection, where good projects face a higher required rate of return that would be the case if information were disclosed. The financing vehicle can influence the incentives for the parties to share their information, and hence affect the allocation of resources.

While financing and investment decisions are largely separable, the financing vehicle can impose additional disciplines on the investment decisions where it requires greater scrutiny. Private investors will have a greater incentive to assess the financial viability of an investment where they bear all the contingent liabilities. These financial risks can arise through cost overruns in construction and operation, and revenue shortfalls, with the extreme situation where the asset becomes stranded or has to be decommissioned. Political processes can also impose scrutiny on investment decisions. These disciplines reduce the probability of poor investment prioritisation.

Recent patterns in public infrastructure investment and methods of financing

The use of particular financing vehicles by governments varies considerably across the countries in this study. While history may explain much of this variation, other reasons are differences in:

- infrastructure characteristics — affecting the user profiles and revenue-raising capacities of particular assets
- fiscal and macroeconomic conditions — potentially restricting use of particular financing vehicles because of their budgetary consequences
- institutional arrangements — defining the legal and regulatory framework as well as the intergovernmental relationship within which public infrastructure assets are operated and financed
- perceptions of the role of government — and voters' expectations for the involvement of government in delivering specific services and managing the economy.

Trends in use of financing vehicles

While budget appropriations remain the major source of finance for public infrastructure, Australian and overseas governments alike have increasingly been drawing on capital markets to finance public infrastructure. This partly reflects the impact of financial innovation on financing efficiency, as well as changes in the attitudes of government to debt and ownership of infrastructure assets. In Australia, the corporatisation of government trading enterprises (GTEs) during the 1980s and 1990s included utility and transport services that traditionally owned major infrastructure assets. While GTEs can finance investment from retained revenue, or budget appropriations (equity injections) or debt, there has been a trend toward greater use of the later. For some GTEs, this appears in part to be due to rebalancing the capital structure to raise the debt to equity ratio (chapter 6).

The 1980s and 1990s also saw a trend toward privatisation in some infrastructure industries, reflected in the higher private sector share of investment. The trend continues with a greater reliance on PPPs in some Australian states, notably New South Wales and Victoria. Nevertheless, within those states, PPPs account for a small percentage of public investment in infrastructure (10 and 9 per cent respectively in 2005-06). Moreover, their share fluctuates from year to year (chapter 8). The global financial crisis has seen a sharp reduction in the availability of credit, and increased caution about innovative financial products utilised in some PPP financing arrangements.

Trends in public infrastructure investment

Comparisons of public infrastructure investment across countries are difficult, principally due to potential inconsistencies in defining what *constitutes* infrastructure investment. In addition, public investment is not consistently broken down into infrastructure assets and other fixed capital formation. While caution must be exercised therefore, in drawing any conclusions, some general trends are apparent:

- For most of the countries, the level of total (public and private) investment in social and economic infrastructure industries on average remained fairly constant in real terms over the past three decades, although some experienced slight declines. In 2006 investment was marginally below 4 per cent of GDP for most countries. In Australia, where investment had traditionally been relatively high, it experienced a downward trend. This was reversed after 2000, and in 2006 was just below 6 per cent of GDP.
- General government investment (which excludes public corporations) as a proportion of GDP has fallen in most countries over the past four decades. In Australia it stood at 2.4 per cent of GDP in 2005-06. This could reflect the pattern of corporatisation of GTEs as well as privatisation over the period.
- In Australia, national government investment has fluctuated between 1 and 2 per cent of GDP over the past four decades. In the 1980s and 1990s the decline in government investment appears to be largely due to declines in sub-national levels of investment, whereas in the 2000s growth in sub-national public investment has more than offset declines in national level public investment.
- In Australia, sub-national governments (and their public corporations) are responsible for the majority of investment, currently making up three-quarters of the total of public investment of 4.1 per cent of GDP. This split is similar to the United States.

What is driving the observed trends?

The main trend among countries has been a decline in the relative share of public infrastructure investment with overall investment stable. This appears to be largely a result of privatisation, motivated by the view that private ownership tends to raise the internal efficiency of previously government-owned businesses engaged in commercial activities (Kain 1997). In addition, fiscal policy constraints have encouraged government to seek greater private sector participation in the provision of infrastructure under a range of structures. These trends largely transfer investment from the public to the private sector, although they may also reduce excessive investment by imposing market discipline. Conversely, the same forces

allow for increased investment in circumstances where government has faced fiscal constraints. While corporatisation of government businesses should improve the efficiency of investment, corporatisation has no specific implication for the overall level of investment unless there has been systematic under or over investment.

Infrastructure investment is affected by general economic conditions. Private sector investment tends to be pro-cyclical, while the pattern is less marked for public investment. Use of public investment to stimulate the economy during a down-turn increases the demand for finance at the same time as government revenues are under pressure. The advent of new financing vehicles reduces fiscal constraint, but financing vehicles relying on capital markets face other constraints. Other factors that contribute to observed trends include population density and distribution, geographic factors, the regulatory environment, and changes in the structural composition of economies.

Strengths and weaknesses of different financing vehicles

The financing vehicle is the method used to raise the cash to meet payments for construction and, in some situations the operation, of the infrastructure project. It can influence the funding gap through the incentives it generates for user charges, the disciplines it imposes on risk management, and the costs of financing which form part of the lifetime project cost.

Financing vehicles may differ in their:

- *risk management* — the assignment of non-diversifiable project risks and management of the overall project risk
- *transaction costs* — the cost of arranging and managing finance, and costs associated with delay or uncertainties with availability of finance
- *exposure to market or other disciplines* — the extent to which borrowers and lenders share, signal and can act on information on project prospects and risks in the investment decision.

A comparison of the different financing with respect to these three characteristics is given in table 1.

Table 1 Comparing the characteristics of the financing vehicles

<i>Financing vehicle</i>	<i>Exposure to market or other discipline</i>	<i>Incentives for project risk management</i>	<i>Transactions costs</i>
Government appropriation: PAYG	Low to medium: exposure to parliamentary scrutiny, and subject to binding budget constraints	Low: depends entirely on quality of public management of procurement and operation	Low: but cash flow constraints could delay project and little flexibility as only assets sales allow restructuring of ownership
Government appropriation: government bonds	Low: exposure to parliamentary scrutiny	Low: depends entirely on quality of public management of procurement and operation	Low: marginal cost of higher debt issue but little flexibility as only assets sales allow restructuring of ownership
Government appropriation: Inter-government transfers	Low: exposure to parliamentary scrutiny, could distort preferences	Low: depends entirely on quality of public management of procurement and operation and level of project monitoring by grantor	Low: as above, but may have additional costs associated with project monitoring
Specific purpose bonds (not tax exempt)	Medium: intermediaries provide risk assessments, and price in risk, but weaker if governments offer some backing	Medium: requirement for user charges to service debt imposes disciplines, but depends on government assumption of contingent liabilities	Medium: requires intermediary assessment and underwriting costs
Specific purpose bonds (tax exempt)	Medium: as above, but maybe lower if tax exemption acts an investment incentive (tax gain not fully passed into lower yields)	Medium: requirement for user charges to service debt imposes disciplines, but depends on government assumption of contingent liabilities	Medium: requires intermediary assessment and underwriting costs
GTE borrowing	Medium to high – if borrowing directly from the market Medium to low if borrowing restricted to CBAs	High: if good governance in place	Medium to high: if borrowing directly from market Low if borrowing from CBA
GTE retained earnings	Medium to low: good governance will improve scrutiny, incentives to reinvest are high	High: if good governance in place	Low: but depends on the cost to government of forgone dividends, could delay projects considerably
GTE equity injection	Low to medium: exposure to parliamentary scrutiny, and public interest	Medium to high: less than if funding came at a higher risk to the GTE	Medium to low: low cost of finance, but costs of negotiations with government may be significant

Continued next page

Table 1 (Continued)

<i>Financing vehicle</i>	<i>Exposure to market or other discipline</i>	<i>Incentives for project risk management</i>	<i>Transactions costs</i>
Development contributions as a source of funds and finance	Medium: depends on the potential for achieving nexus	Low: unless the contribution is in kind in the form of the infrastructure	Low to high: negotiated contributions and the potential for legal appeal create potential for high costs on an otherwise low cost of finance
Public private partnerships	Medium to high: depends on reliance on user charges or well designed service payments	High: as long as contracts allocate risk appropriately	High: contract negotiations are complex and can be lengthy

Budget appropriations

The application of budget appropriations have undergone significant changes in many countries over the past two decades (chapter 4). These changes include the revenue sources used to fund appropriations (including general public debt as well as taxation revenue), the impact of public sector reforms (such as accrual accounting and output-based budgeting), trends in fiscal policy (such as fiscal responsibility policies), and the increased use of special (standing) appropriations in financing government spending. Budget appropriations remain the major source of finance for public infrastructure investment in the Australian states and territories. In the United States and Canada, they are more important at the municipal level, however, comparisons are difficult due to the different reporting of public capital expenditures.

Budget financing on a pay-as-you-go basis avoids the transactions costs of raising finance. Moreover, infrastructure investment can be presented as fiscally responsible and financially prudent if governments spend only what they can currently ‘afford’. This approach avoids a direct liability on future revenues, which may be important to keep credit ratings intact and preserve borrowing capacity for other circumstances. However, it still comes at the opportunity cost of the alternative use of the funds, including returning them to taxpayers who may themselves have invested at market interest rates. Other expenditure needs of government may delay major projects, particularly those that have to be completed in phases as determined by the availability of funds.

Public debt is another source of funds for budget appropriations. The total cost of debt finance includes the rate of return on government bonds, administration costs associated with debt issue and the contingent liabilities of the project, which with financing by budget appropriation remain fully with the government.

Financing from higher level government grants can distort incentives for efficiency

The Australian Government has traditionally provided ear-marked grants to the State and Territory governments to implement projects of national strategic importance. About \$3.7 billion of specific-purpose capital payments were provided by the Australian Government to the State and Territory governments in 2006-07, and through the State and Territory governments to local governments (Commonwealth of Australia 2007). Such transfers improve welfare where they generate spillovers within a country, or address vertical fiscal imbalance. They may also respond to equity concerns, helping close funding gaps where some state and local governments have inadequate revenues to meet their infrastructure and other expenditure needs, compared to wealthier regions of the country.

Investments may not be allocatively efficient where federal priorities do not reflect the best use of funds at the local level, a problem compounded if matching funds are required. Incentives for pursuing efficient pricing policies and the effective and efficient use of the funds may also be blunted. And the arrangement could encourage cost-shifting which is likely to lead to shortfalls in infrastructure construction, maintenance and replacement, or a lowering of service standards.

Specific-purpose bonds

Specific-purpose securitised borrowing refers to the issuance of debt instruments such as bonds, debentures and inscribed stocks for the purpose of financing specific infrastructure by the public sector (chapter 5). These borrowings are usually secured on the asset, or against the revenue stream arising from the asset. The inability of governments to avoid contingent liability and the potential for cost savings from centralised borrowing, along with the privatisation of a significant number of infrastructure service providers, saw the phase out of specific purpose bonds in Australia by the mid 1980s. Such ‘revenue bonds’ remain a major source of finance for infrastructure investment in the United States and Canada. Revenue bonds in the United States are tax exempt. While this lowers the interest cost, evidence suggests that this does not fully offset the forgone tax revenue.

The exposure of bond holders to project risks provides an incentive for due diligence on the investment. However, this link is weaker where there are additional sources of revenue for servicing the bonds unrelated to performance of the asset.

Transaction costs can be fairly high, especially for small investments. The costs of engaging market players in the assessment of the risks and underwriting a bond issue are in the order of 1 to 2 per cent. Hence the market-related incentives for

better project design and management need to be significant for specific-purpose bonds to be the most efficient financing vehicle.

GTE financing

Reflecting broader trends, Australian GTEs have been increasing their debt-to-equity ratios, moving to capital structures that have higher leverage (chapter 6). New infrastructure investments have typically been predominantly debt financed, although a mix of instruments is often used. Government dividend requirements, and regulations that affect user charges, largely determine the capacity of GTEs to finance through retained earnings. In Australia, GTEs may face limits on borrowing in their Acts, which may leave capital injections by the shareholder government as the only source of finance.

Capital injections are on-budget and subject to parliamentary scrutiny, unlike GTE borrowings which are off-budget. Where GTEs raise finance from the capital markets, their financial performance and the viability of the investment is subject to market scrutiny. Market disciplines are weakened if the GTEs are required to borrow from the Centralised Borrowing Authorities (CBAs), as in Australia, although this lowers the transactions cost of arranging finance. Debt finance may make the GTE more sensitive to the cash flow implications of the investment, and hence to risks posed to outcomes such as timeliness of construction and quality. Where the GTE operates in a regulated market, regulators can impose discipline on the investment decisions where price rises are not justified solely on a cost basis.

The greater the government commitment to independent and accountable governance the greater incentive GTEs have to manage the project risks of their investments, regardless of the financing arrangements. Hence, whether a GTE is a good instrument for infrastructure investment depends very much on the quality of its governance. Reforms over the past two decades have seen considerable progress, though there is scope for further improvement (PC 2006d).

Development contributions

Urban expansion and the higher expectations of more affluent societies have increased the demand for the quantity and quality of urban infrastructure. With greater acceptance of the principle of user pays, and limits on revenue raising of local government, development contributions have grown as a source of both funding and finance for urban infrastructure. Most governments apply the principles of reasonableness and accountability to the determination of development charges. Reasonableness covers issues of equity and fairness and generally applies the test of

nexus and apportionment. Nexus has causal, spatial and temporal dimensions and is about justifying the proposed investment in terms of the need for the investment, the impact relating to the area of the development, and the benefits it delivers to those who contribute to its cost. Apportionment requires that the contribution liability should be proportionate to the share of the total benefit from financed infrastructure that is received by the development.

Development contributions, by imposing a ‘user charge’, should improve the allocative efficiency of the infrastructure investment. However, developers have an incentive to provide infrastructure that is either highly marketable and easily recovered from home buyers, or low in initial up-front cost if the charges cannot be passed on. In either case, ongoing maintenance or operating costs could be higher than optimal. Local planning authorities, on the other hand, have incentives to minimise future maintenance and replacement costs, and to make up for inadequate past investment. The temptation can be to ‘gold-plate’ the requirements up front, with implications for housing affordability.

Transaction costs can be high and outcomes uncertain, especially for negotiated contributions. Where contributions have been in-kind, such as land for a public park, the financing task for capital improvements falls fully to the government if it is responsible for the investment. Where development contributions are made up front in cash, this provides timely finance for the investment.

Allowing governments to accumulate the funds raises concerns about the reasonableness and accountability of the development contributions. While achieving a nexus improves allocative efficiency and equity, there is little in funding by development contribution that ensures project risks are minimised.

Public private partnerships

Public-private partnerships constitute around 5 per cent of investment in public infrastructure, more in New South Wales and Victoria which have been the main users of this financing vehicle. This growth be due in a large part to the scope to bring in private sector management skills, the opportunity that bundling design, construction and operation, or parts thereof, provide to improve efficiency and the ability to bring forward the provision of the infrastructure service. There can also be less scrutiny from off-budget financing.

The potential to lower total costs through alignment of incentives to manage project risks with capacity to do so is considerable. Contract design and management are important to ensure that only risks that can be better managed by the private sector partner are allocated to them. It is also important to ensure that public underwriting

of user charges and committed payments for services do not undermine these incentives. Trying to extract the last ounce of rent can also create contingent liabilities for government if it increases the probability of failure.

There is evidence that private sector partners are more realistic in their estimates of construction time and costs than public agencies. Private partners have an incentive to develop a realistic financial model that takes into account all costs and revenue flows. The quality of this information is likely to be superior to that of public sector agency where the proponent has less experience in the area.

While PPPs may assist in improving productive efficiency they are no guarantee that the investments are optimal, and the off-budget treatment of future funding obligations related to some PPPs may reduce the scrutiny applied to the investment.

Public-private partnerships work best where government has considerable skill in contract negotiation and management, and where there is adequate competition for the projects. The costs of tendering, negotiating and managing contracts can be considerable – with tendering costs alone estimated at up to 3 per cent of the project cost. And while risks may be transferred to private partners, the cost of risk will be factored into the cost of finance. The main advantage of PPPs comes from the scope for lowering the total cost of the project through improving project risk management. And while contract negotiation can be lengthy, PPPs provide a more flexible, and potentially more timely source of finance for important infrastructure investments that might otherwise be constrained by public debt pressures.

Franchise arrangements

Government franchising involves a government or public-sector agency (the franchisor) granting an exclusive right to a private or other independent entity (the franchisee) to occupy, operate and maintain publicly owned infrastructure facilities to deliver services over a predetermined period of time. This approach differs from licensing arrangements whereby businesses are granted permission to supply infrastructure services with their own assets.

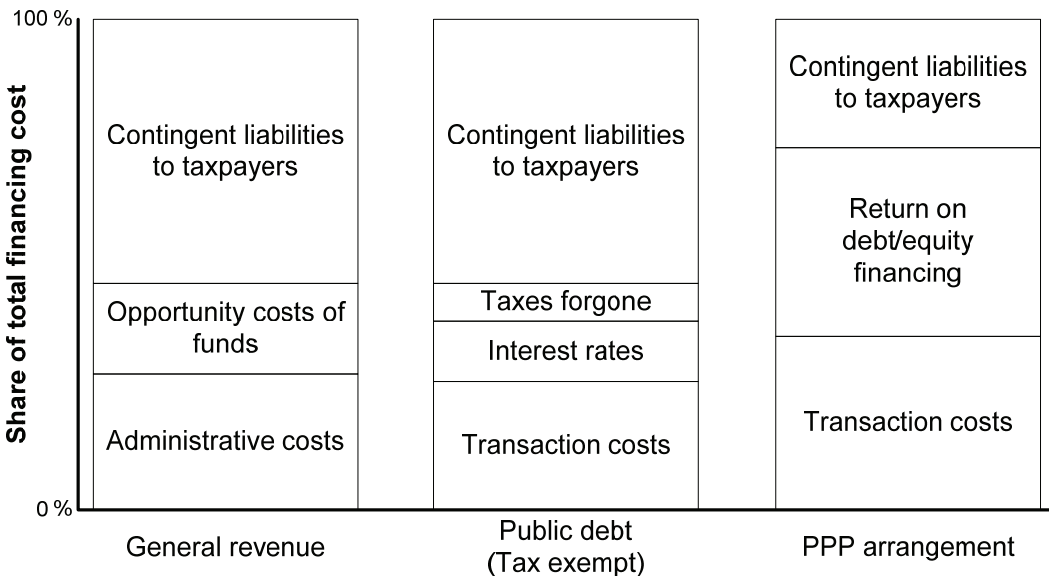
Infrastructure services are often characterised by significant economies of scale, scope and network integration, reducing the scope for competition in the market. Franchise arrangements can introduce competition for the market through franchise bidding. The effect can extend over the franchise period as the incumbent franchisee faces incentives to be efficient in order to receive favourable consideration upon franchise renewal or retendering. ‘Yardstick competition’ is created where the performance of franchisees operating different segments of an infrastructure network can be compared. This can be used as the basis for determining franchise

payments, or influence the award of future contracts. While government franchises aim to achieve higher operational efficiencies and lower maintenance costs they have not worked as well as envisaged. Breaking up networks to introduce yardstick competition comes at a cost of introducing network inefficiencies. And, while short-term contracts may raise scope to introduce competition, they reduce the incentive for maintenance that would otherwise have longer-term pay-offs.

The total cost of finance

The total cost of financing is made up of the return paid to investors, the cost of contingent liabilities to government arising from exposure to project risk, the transactions costs of the financing arrangement, and any costs of delay that might be associated with a particular financing vehicle. The cost of financing does not include the deadweight loss associated with the collection of taxes to fund any gap between revenues from the infrastructure and its total cost, although this is an important cost of the project (chapter 2) that must be taken into account in the cost-benefit assessment. Nevertheless, financing from consolidated revenue has an opportunity cost as these funds cannot be used to support other programs or left with the taxpayer. For projects financed using tax exempt bonds, the cost of the forgone tax revenue must also be included in the cost of financing. Figure 2 sets out the major costs to be considered in comparing the total cost of financing three of the vehicles.

Figure 2 **Stylised breakdown of total cost of financing public infrastructure by different types of financing vehicles**



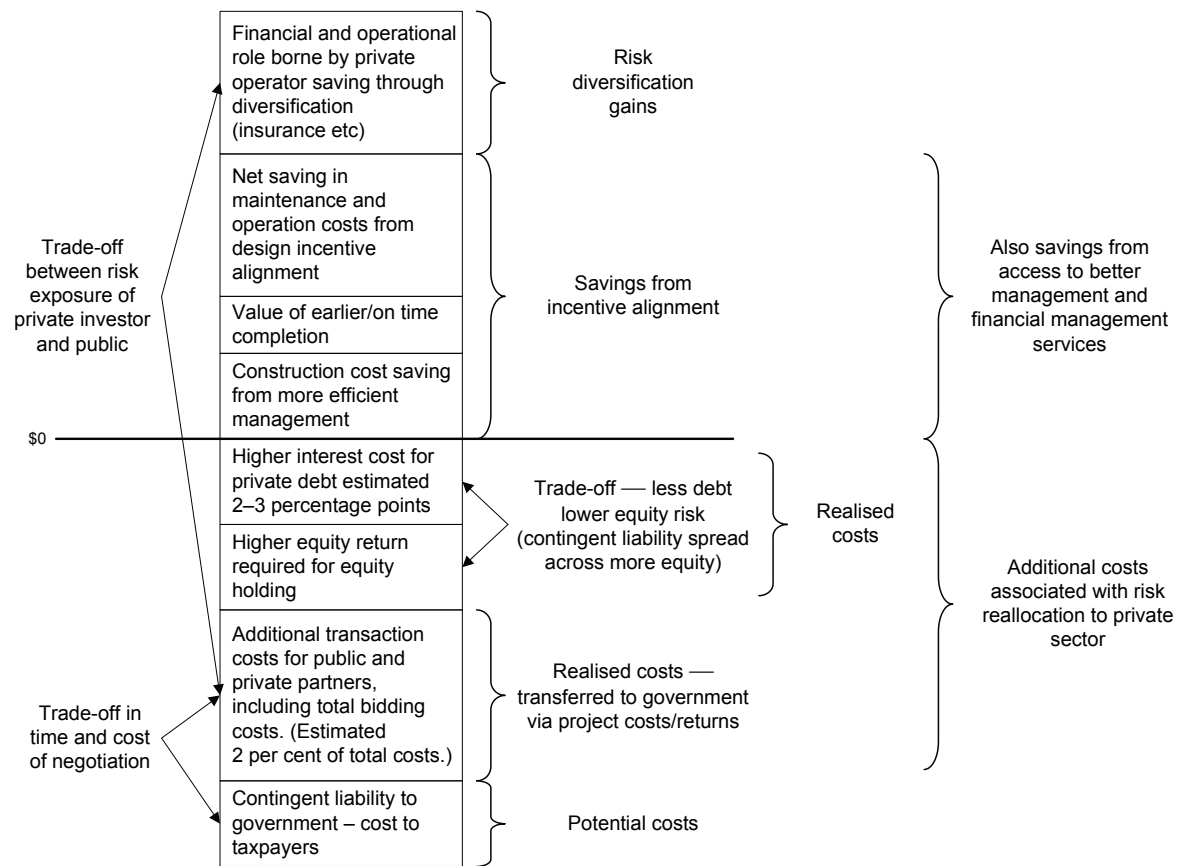
A particular financing vehicle can reduce the total cost of financing to the extent that it can:

- better align the incentives for managing non-diversifiable project risk to those who have the capability to better manage this risk
- improve the portfolio balance for the investors, reducing the market risk through diversification, consequently lowering the return required to hold this asset
- reduce the life-time transaction costs of financing and or the costs of delay.

Of these three avenues for lowering total costs of financing, the most powerful is usually the potential for a financing vehicle to reduce the cost of contingent liabilities through aligning the incentives to better manage project risks. The case for PPPs, like the case for specific purpose bonds, lies largely on the potential to align these incentives, and hence the size of the premium that the private partner (or investor) will charge for taking on these risks. If they are able to manage the risks well the premium charged will be lower, lowering the total cost of finance. If a PPP or specific purpose bond leaves most of the contingent liabilities with the government, the premium charged might also be lower, but as this imposes additional costs on government, the total cost of finance is not reduced.

Estimating the total cost of finance is not a trivial exercise, as it involves assessment of contingent liabilities as well as life-time transactions costs. There can also be gains from refinancing that are uncertain at the time of the original contract. Figure 3 provides a comparison of the different component of costs of a PPP financing arrangement compared to a government bond. Below the zero line are the sources of higher costs associated with PPPs, while above the zero line the sources of cost savings are listed. Which dominates depends on the nature of the project and the project risks, the competition for the project, and the government's skill in negotiating and managing the contract.

Figure 3 Comparing the cost of PPP and government debt finance



1 What is the study about?

Key points

- This study examines the vehicles used to *finance* public infrastructure in Australia and in a selection of comparable overseas countries
 - the study does not include an assessment of the *adequacy* of current infrastructure stocks or investment.
- The studied vehicles include: budget appropriations; specific-purpose securitised borrowing; off-budget financing by government businesses; development contributions; and contractual arrangements with the private sector involving the injection of private equity in assets that are eventually fully owned by the public.
- The countries included in the study are Australia, Canada, France, Germany, New Zealand, Sweden, the United Kingdom and the United States
 - all of these countries have mature capital markets, as well as broadly similar standards of infrastructure and institutional arrangements.
- Background information on financing arrangements is presented for each country, including data on investment trends and the potential drivers of those trends.
- The application of each financing vehicle is explored to identify the issues that have influenced their choice at each level of government
 - the characteristics examined include risk management, information asymmetries, transaction costs and flexibility.
- The strengths and weaknesses of each vehicle are assessed in terms of the disciplines they impose on productive efficiency through the management of project risk, the allocative efficiency of the investment decision and the implications for the total costs of financing.

The Council of Australian Governments (COAG 2007a) recently agreed to develop national policy, planning and regulatory frameworks to meet Australia's future infrastructure challenges. In this respect, one of the functions of the newly established Infrastructure Australia is to advise the Australian Government on possible infrastructure financing vehicles.

Governments have to consider the financing of large-scale projects in the context of the pressures to maintain low net debt levels, while balancing intergenerational considerations. Further, they have been reappraising the appropriate role of

government involvement in infrastructure provision in many areas. For these reasons, public–private partnerships and other innovative arrangements have been developed over the past decade or so to increase or bring forward the supply of infrastructure.

The purpose of this study is to investigate and report on the ways in which governments finance or support investment in infrastructure, the relative reliance on the available vehicles, their application by area of investment, and their relative strengths and weaknesses. The efficacy of various vehicles is discussed in terms of the disciplines they impose on management of project risk and investment decisions. The resultant cost of finance to the public includes the rate of return paid on the funds *and* the cost of contingent liabilities remaining with the government. Contingent liabilities are realised, largely but not exclusively, with claims on the government to fund cost overruns and/or revenue shortfalls. The total cost of finance also takes into account the transactions costs of making and managing the financing arrangements.

This report is informational. It is intended to facilitate a deeper understanding of infrastructure financing options, including recent greater reliance on private sector involvement.

1.1 Scope

The study is concerned with *financing* public infrastructure — the vehicles employed by governments to provide, or through which they channel, upfront capital for infrastructure investment and management.

The vehicles covered include:

- budget appropriations (chapter 4)
- specific-purpose securitised borrowing where capital is raised by issuing a security for a specific infrastructure investment (chapter 5)
- off-budget financing, typically through government trading enterprises using retained earnings, equity injections or borrowings (chapter 6)
- development contributions involving obligatory payments or in-kind transfers of capital assets (chapter 7)
- contractual arrangements with the private sector involving the injection of private equity in assets that are eventually fully owned by the public — so called, public–private partnerships (PPPs) or private finance initiatives (PFIs) (chapter 8).

This study is not directly concerned with investment. There are inherent differences between the economic functions of ‘investment funding’ and ‘financing’. Investment is about whether to allocate economic resources, whereas financing is about raising and allocating ‘monies’ or ‘finances’ — which are not economic resources, just claims on them as inputs. This distinction has significant implications for policy issues relevant to the efficient provision of public infrastructure (Brennan 1996). An efficiently financed project in no way guarantees that the project itself satisfies the criteria of allocative efficiency.

The ways in which governments forestall reinvestment are also examined. Preserving assets and delaying the need to finance replacement could be a more efficient option than replacing existing infrastructure assets. Consequently, the contractual arrangements aimed at improving the management of public assets under franchising arrangements are also considered (chapter 9).

For this study, infrastructure is defined to be those structural elements of the economy that provide basic services to industry and households. Such facilities are categorised as either ‘economic’ or ‘social’ infrastructure.

- *Economic infrastructure* — incorporates the physical structures from which goods and associated services are produced that enter as common inputs to many industries, and which play a large part in determining efficiency, industry costs and levels of production. Transport and communications networks as well as power, water supply and sewerage facilities commonly fall into this category.
- *Social infrastructure* — includes the facilities and equipment directed at satisfying society’s needs in terms of education, health and community services.

Capital assets are considered to be *public infrastructure* if they are owned by governments, or where communities *fund* the investment (through paying fees or charges to the operator) and governments ultimately own the assets under arrangements such as build, own, operate and transfer (BOOT). In the case of long-term concessions, the government is essentially purchasing a stream of services and financing the construction and operation of the assets included under specified terms and conditions (Grimsey and Lewis 2005).

Moreover, under some contractual arrangements the government will share in the cash flows from the project above ‘base-case’ forecasts. In this instance, the government essentially owns a call option over a portion of the project’s cash flows.

Many infrastructure projects have embedded value-adding options in their contracts that can result in changes to ownership structure for the project as well as alter risk sharing. For example, energy distribution networks and water treatment plants can have expansion or abandonment options.

The private sector can be involved in financing investments in public infrastructure in a variety of ways through either debt or equity holdings (or a hybrid of the two) in the assets. These investments can be financed:

- directly through financial intermediaries (often a consortium of banks with a lead investment bank), or other institutional investors (for example, superannuation funds or insurance companies)
- indirectly by retail investors purchasing secondary market instruments issued to finance the infrastructure asset
- indirectly through both listed and unlisted infrastructure trusts.

This study does not consider the efficiency and distributional consequences of government *funding* the repayment of debt, nor meeting any expected gap between user fees and charges and the costs of construction and operation of the infrastructure. The opportunity cost of funding expected gaps must be taken into account in evaluating the net benefits from the infrastructure investment, but do not impact on the total cost of financing. However, the effect of the sources of funding on the management and assignment of project risk and, therefore, on both the rate of return paid to investors and contingent liabilities for government, are examined in this study.

Financing instruments that embody tax advantages are used for economic policy purposes as well as to access capital. These policies are generally intended to encourage investment or to correct perceived market failures. Where this is the case, their effectiveness and efficiency in achieving the relevant government's policy objectives were not assessed. However, their implications for financing outcomes were considered.

This study canvasses international experiences with different financing vehicles. The countries studied are Australia, Canada, France, Germany, New Zealand, Sweden, the United Kingdom and the United States. They were chosen because they all have:

- relatively mature and sophisticated capital markets with reasonable levels of liquidity, offering a wide choice of instruments
- broadly similar types and standards of infrastructure provision
- comparable institutional arrangements, such as parliamentary democracies with similar objectives in public infrastructure investment.

Most of the analysis and illustrations come from Australia, with information from the other countries providing a broader or deeper perspective.

Finally, it was not the intention to investigate and assess the adequacy of current levels of investment or to advocate a particular approach to financing infrastructure investment as ‘best practice’ in each area of investment. Rather, the report provides information that will assist governments choose the appropriate vehicles to finance future infrastructure investment.

1.2 Approach

This report includes statistics on investment trends in the studied countries. The information available from published sources has a number of consistency problems that limit comparability. Nevertheless, the presented statistics provide a broad picture of overall investment trends and current public infrastructure investment under each of the vehicles.

Information is also presented, where available, on the potential drivers of the choices of financing vehicle in each of the studied countries. This is influenced by the institutional arrangements, tax-effectiveness considerations, the type of infrastructure, the risks involved and the historical availability of capital. These factors are complex and interacting.

The characteristics of each vehicle that are specifically examined include:

- *exposure to market or other disciplines* — the extent to which borrowers and lenders share, signal and can act on information on project prospects and risks and hence improve allocative efficiency
- *risk management* — the assignment of non-diversifiable project risks and management of the overall project risk and consequent incentives to manage project risks
- *transaction costs* — the cost of arranging and managing finance and costs associated with delay or uncertainties with availability of finance.

In a broad sense, efficient outcomes are dependent on efficient investment and policy decisions that generate the need for financing in the first place. Consequently, each financing vehicle was also examined to determine the extent to which it *enhances transparency* and other incentives that promote accountability for efficient investment decisions.

A comparative assessment of the efficiency of the vehicles used to finance and re-finance infrastructure was made on the basis of the disciplines imposed on the management of project risk and the resultant cost of finance, and the influence on the allocative efficiency of the investment.

In addition to the total cost of finance, there are many legal, institutional, market environment and project-specific factors that would have to be weighed up in selecting the financing vehicle for any infrastructure project. These include:

- broader economic policies concerning the desired level of infrastructure provision, and investment incentives for private service-providers
- government responsibilities and taxing powers at different levels of government
- the corporatisation of government-owned providers and their governance arrangements that affect policies on pricing and the retention of earnings
- capital market infrastructure-related regulation.

Judgements are required to weigh up these factors in order to make an overall assessment. Moreover, the project-specific nature of most investments militates against arriving at useful conclusions even for substantively similar infrastructure projects.

Finally, there is no universally consistent terminology used to describe infrastructure financing vehicles. Therefore, the most commonly used terms in Australia were selected and used throughout this report. Where significant differences were found to exist across countries, they are noted. The terms used can be found in the glossary.

1.3 Conduct

Most of the information reported is drawn from legislation, government reports, public records such as budget papers, and literature reviews. Where possible, the information was verified through contacts in each of the studied countries.

A preliminary version of this paper was refereed by Professor Christine Brown of the Department of Finance at the University of Melbourne and Mr Bob Sendt, a former Auditor General of New South Wales. Also, Professor Brian Dollery of the School of Economics at the University of New England refereed the report chapter on development contributions. These referees were asked to review the accuracy of the conceptual foundations, the appropriateness of the analysis and the validity of the conclusions drawn on the strengths and weaknesses of the vehicles covered.

The Productivity Commission held a workshop attended by selected government, business and academic representatives to obtain stakeholder input before finalising the report (appendix A). The Commission also invited written comments from those who attended.

1.4 Report outline

Following this introductory chapter, government involvement in public infrastructure provision is described in chapter 2, including a discussion of the characteristics of infrastructure, the possible rationale for government ownership and what constitutes efficient financing. The main factors affecting the choice of financing vehicles are also identified and discussed, including reported constraints on investment.

Recent trends in infrastructure investment are described in chapter 3, including levels of overall and public investment. In the chapter, possible factors that have influenced the observed trends are discussed.

In the following chapters, the main financing vehicles — budget appropriations (chapter 4), specific-purpose borrowing (chapter 5), off-budget financing by government businesses (chapter 6), development contributions (chapter 7) and public–private partnerships (chapter 8) — used in the studied countries are discussed. Specifically, the application of the vehicles, the instruments used and relevant government policies are reported. Each chapter concludes with an assessment of the strengths and weaknesses of the subject vehicle.

Asset management under government franchise is examined in chapter 9. A number of case studies are used to illustrate recent experience and policy issues. The strengths and weaknesses of the contractual arrangements used to ensure that assets are efficiently maintained are discussed.

Finally, an overall assessment of the components making up the total cost of finance under the various financing vehicles is presented in chapter 10. The assessment is presented in terms of the implications for economic efficiency — minimising the total cost of finance and improving discipline on project selection. A discussion of considerations required in selecting a financing vehicle concludes the chapter and the report.

2 Financing public infrastructure

Key points

- Many public infrastructure projects are unlikely to be financially self-sufficient because of the inherent characteristics that prompt governments to provide them. The cost to the taxpayers of funding the expected revenue shortfall, while it must be taken into account in the investment decision to ensure allocative efficiency, is independent of the financing vehicle.
- Nevertheless, the financing vehicle may promote capital market and governance disciplines that affect project selection and hence improve allocative efficiency.
 - Information asymmetry is a major hurdle to allocative efficiency, and the financing vehicle may help address this problem.
- Efficient financing for public infrastructure investment depends on selecting a financing vehicle that minimises the total cost of finance over the lifetime of the infrastructure asset.
- The total cost of finance is made up of:
 - the return paid to the investors who provide the capital for the investment
 - any contingent liabilities arising from financial claims associated with the infrastructure investment
 - transactions costs of negotiating and managing the financial vehicle, including any costs associated with delay in commencement of a project.
- Transaction costs aside, in general the total cost of finance is minimised where the financing vehicle assigns project risks to those parties to the transaction that are best able to manage those risks.
- Governments have employed a variety of financing vehicles. They fall into two broad categories:
 - ‘pay-as-you-go’ (cash flow) financing — based on current revenues or savings within the public sector
 - capital-market financing — based on borrowings or equity contributions from private sources.
- During the past two decades, significant innovation in project financing, credit enhancement and securitisation has contributed to the potential for increased financing efficiency, enabling a combination of debt and equity financing from both private- and public-sector sources.
- Governments finance infrastructure with different degrees of dependence on particular vehicles, subject to numerous influences such as infrastructure characteristics, fiscal and macroeconomic conditions, institutional arrangements and prevailing views about the role of government.

Investment can be regarded as an act of forgoing current consumption by allocating economic resources such as labour and capital to create increased capacities for future production and income. In the case of infrastructure, investment typically involves building new or maintaining existing long-lived physical assets.¹

Infrastructure investment mostly requires significant outlays during the asset-building phase of a project. On the other hand, the revenue flow to be generated from an infrastructure project, or its funding (in the case with social infrastructure) is spread over the economic life of the asset. This can lead to a divergence between the supply of and demand for project funds over time — even for projects that have the potential for full cost recovery.

Financing and refinancing — that is, raising and allocating cash flows to meet resource costs — play a crucial role in overcoming inter-temporal funding constraints. This enables productive infrastructure investment to be realised sooner than otherwise possible (or which might not otherwise have occurred).

The context and rationale within which governments undertake infrastructure investment and financing is discussed in section 2.1. The core conditions for efficiency in financing arrangements are discussed in section 2.2. The diversity of financing vehicles used by governments, as well as the multiplicity of influences on their applications, is discussed in section 2.3.

2.1 Why governments provide infrastructure

Historically, governments have played a dominant role in owning and operating infrastructure facilities such as schools, hospitals, roads, bridges, railways, ports, telecommunications networks, and water and electricity supply facilities. The main reasons for government involvement have been the natural monopoly and/or public good characteristics of many infrastructure services.

- Because of the lumpiness of infrastructure investments and related economies of scale and/or scope, one firm or entity may be able to supply a local market at a lower cost than two or more firms — a natural monopoly. The concern was that a *private* infrastructure monopoly provider would raise prices excessively, resulting in an inefficiently low level of consumption. Even if market power were not exercised, a private provider must cover all costs, fixed and variable. Consequently, with marginal costs declining as output expands, prices cannot be set equal to marginal cost for all units sold.

¹ Maintenance is considered as investment because it entails certain costs and in return gives rise to a stream of future benefits. Further, the determinant of maintenance are the same as those for new investments, namely cost of funds and rate of asset utilisation (Bitros 1976).

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- Where one person's consumption of a service does not affect the amount available to others and, moreover, people cannot be prevented from consuming the good (even if they refuse to pay for it), the service is a 'public good'. A private provider simply will not provide services the costs of which cannot be recouped in some way.

However, decades of experience revealed a number of problems arising from public provision of infrastructure. In particular, immunity from market signals and commercial disciplines (including from capital markets), resulted in high cost and poor quality services, a lack of innovation and sub-optimal investments. From the early 1990s, the response has been a swing back to more commercial or fully private provision of much public infrastructure in order to promote productive efficiencies and innovation, albeit within regulatory frameworks designed to constrain misuse of market power.

Nonetheless, government ownership prevails in infrastructure such as roads, water and some postal services, and it remains substantial in rail, ports, electricity generation and telecommunications. While there probably remains scope for increased commercial provision in some of these areas, strong public good features make it difficult, even undesirable, to privatise some infrastructure services including, for example, the bulk of the (non-trunk) road networks and many services which benefit the broad community.

2.2 Efficient infrastructure investment

The provision of public infrastructure involves interrelated activities of investment, funding and financing — which all have distinct implications for economic efficiency.

- For investment, the central issue is whether or not community welfare can be improved by governments allocating resources to create, expand or augment a particular infrastructure service.
- For funding, the central issue is whether governments should depend on user charges or taxes *over time* to pay for the ongoing costs of infrastructure operation, including interest payments and principal repayments. Public funding makes up the gap between these costs and the revenue from user charges.
- For financing, where the decision is whether to use fiscal reserves, sell assets, raise new taxes or other revenues, or borrow to pay for the investment's *upfront* costs, the central efficiency issue is which vehicle best manages project risk.

Efficient investment decisions

A basic tenet of investment theory is that an efficient investment is one in which a project is expected to yield benefits that exceed risk-adjusted costs. Where there are constraints on the availability of finance, efficiency requires optimising across projects to ensure the highest overall returns. Infrastructure investment has multiple consequences and, therefore, governments typically have to consider a range of macro and micro factors when undertaking project appraisal and comparisons.

The nature and size of a project's benefits and costs are influenced by the policies that underpin government decisions to provide infrastructure services (section 2.1). For example, profitability alone is an inappropriate criterion for infrastructure projects with significant spillover benefits that are not fully captured in market prices. As noted by Brealey, Cooper and Habib (1997),

[the criteria for public-sector investment] cannot be identical to those for private-sector investment for ... government intervention in the economy is motivated by the very limitations of the criteria for private-sector investment. (p. 18)

Generally, it is not straightforward to identify and estimate project benefits and costs. Obtaining accurate cash flow forecasts, identifying an appropriate discount rate, and assessing risk evolution over the project life in a realistic manner are some of the difficult tasks in investment evaluation. These difficulties are compounded by the presence of embedded contract options in some infrastructure projects.

For projects that require large and substantially irreversible commitment of capital funds (sunk costs), there could be some value attached to waiting for new information on project benefits and costs (Pindyck 1991; Dixit 1992; Dixit and Pindyck 1994). This 'delay value' is equivalent to a call option, which should be taken into consideration when making investment decisions.

Accordingly, the decision rule is to invest when the net present value of project benefits exceeds that of investment costs by an amount no less than the value of keeping the investment option alive. This rule is consistent with the setting of a 'hurdle rate' on net returns in excess of the risk-adjusted cost of capital.

Efficient funding decisions

The main reason why some public infrastructure services will not be financially self-sufficient is the presence of public good benefits. Governments may also choose to subsidise services which could be self-financing in order to promote distributional objectives, although they would forgo the benefits of price signals revealing willingness to pay and informing investment decisions.

The approach to funding of community service obligations can impact on the financing of the project. The payment for such obligations should be directly funded through budgetary processes to help ensure transparency and accountability of project funding decisions (chapter 6).

Considerations of intergenerational equity can affect investment decisions as most infrastructure is long lived, and there is often a trade-off in construction costs and maintenance costs. Funding decisions too have implications for future generations as commitments to subsidies can impose burdens on future generations. Yet intergenerational equity has little intrinsic implication for the use of particular financing vehicles (Brennan 1996) because the costs of money over time is offset by the discount rate.

Efficient financing decisions

Irving Fisher (the Fisher Separation Theorem) postulated that investment and financing decisions can be regarded to be independent of each other — that is, productive investment opportunities that maximise present value can be determined independently of the optimal way of financing (Fisher 1930). This raises the question of whether financing decisions, in contrast with funding and investment decisions, have implications for allocative efficiency in public infrastructure investment at the economy-wide level.

In principle, well-functioning capital markets can provide ‘signals’ to motivate and reward the ‘sustainable’ use of capital. This would help allocate funding and, hence, capital inputs to those investments that offer the highest returns (Modigliani and Miller 1958; Fisher 1961; Jorgenson 1996). Public infrastructure investment, however, may not be subject to the same discipline as private investment even if financing is arranged using the capital market.²

Use of capital funds is *sustainable* when investment is undertaken for projects that ensure the *solvency* of the service provider. This means that the project must yield more than it costs in net present value terms and thus increase net worth. Public infrastructure investments that require public funding (the costs exceed the revenue flow) will be assessed by the market based on the government commitment to the funding. This will be affected by the nature of the financing vehicle as well as views on sovereign risk. It may or may not be influenced by the characteristics of the

² Government may also take an interest in infrastructure investments that are sustainable, but may be constrained by policy settings such as access regulation. In these situations, the government may facilitate the investment process, but not be involved in financing arrangements. These situations are not considered in this study.

infrastructure investment itself. The study returns to this question about the impact of the financing vehicle on allocative efficiency in detail in chapter 10.

At a project level, efficient financing vehicles are those that minimise the total cost of finance. As discussed above this cost is made up of the return on the funds, the cost of contingent liabilities, and transactions costs. The main factors affecting this total cost of finance are the allocation of project risk, negotiation and management costs, other costs associated with the adequacy of finance and its flexibility, and the disciplines brought to bear on investment decisions, notably addressing informational asymmetries.

Allocation of project risk and risk management

A financing vehicle can reduce the overall cost of financing if it can align responsibilities for managing project risks with the incentives to do so. With full information, investors, whether private or public, require a premium to take on risks that they cannot reduce. The lower the risk, the lower the premium required and hence the lower the total cost of financing.

There are numerous risk factors that contribute to the variance of net returns from infrastructure investment (box 2.1). Investors take into account any non-diversifiable risks associated with a project (project risk) in assessing the worthiness of an investment. In making investment decisions, governments, like any investor, compare the risk-adjusted cost of capital — that is, taking all net benefit flows into account, the rate of return that governments would otherwise be able to obtain from alternative projects with the same risk level as the project being undertaken.

Generally, the return required by investors increases with risk and uncertainty.³ To the extent to which a financing vehicle can reduce risk and uncertainty, it can lower the total cost of financing an infrastructure project. The central question is whether a financing vehicle can reduce project risk. Modigliani and Miller (1958) demonstrated that under certain conditions (full information) the overall risk of a project is fundamentally invariant to the method of financing.⁴

The conditions required for project risk to be invariant to the allocation of risk are rarely met in practice. Consequently, a financing vehicle that can allocate project

³ The essential difference between ‘risk’ and ‘uncertainty’ is that, in the latter case, it is practically impossible to assign a probability to every possible outcome.

⁴ Although they allow that an exception could occur where the project risk alters the risk perception held by finance providers or investors (Flemming and Mayer 1997; Jenkinson 2003; Modigliani and Miller 1958).

Box 2.1 Investment risk in infrastructure

The sources of investment risk associated with infrastructure include:

- *Construction risk* arises from unexpected design problems, cost overruns and delays in construction works. This risk, which can be substantial for capital intensive infrastructure projects, exists during the construction and warranty phases of a project.
- *Operational risk* arises because the planned level of service availability from an asset might not eventuate. This risk is commonly associated with unexpected problems in staff management, maintenance and other elements of operating the infrastructure. It is present from the commencement of operations.
- *Demand risk* arises because the demand for infrastructure services and, hence, the project revenue might differ from expectations. This risk is present throughout the life of a project. For example, an unanticipated decline in demand could lead to a reduction in the value of the infrastructure asset.
- *Network risk* arises where the use of a particular network infrastructure depends on decisions made in relation to other elements of the network. This risk is present throughout the life of a project. For example, a relative shift in demand for different transport facilities that compete within the same network area can lead to changes in their revenue potentials and, hence, asset values.
- *Technological risk* arises because purpose-built infrastructure assets might become obsolete or stranded when users switch to a new form of service delivery. This type of risk is present throughout the life of a project.
- *Financing risk* arises because the expected availability and cost of finance might not materialise. This can occur as, for example, interest rates and exchange rates change over time. The financing risk is present throughout the life of a project.
- *Regulatory (sovereign) risk* arises in infrastructure projects, either owned or managed by private entities, because government regulations might affect project profitability. Such a risk can be related to a change in planning and environmental requirements, pricing determinations, and regulatory conditions governing the entry of new service providers. In some cases, governments might expropriate privately owned infrastructure assets. Regulatory or sovereign risk is present throughout the life of a project.

Sources: EPAC (1995); Jennings (1992); Quiggin (2002); TIAC (2004).

risks to those who have the means to better manage those risks can reduce the overall level of project risk. Evidence presented to the 1995 EPAC Private Infrastructure Task Force suggested that construction and operational risks are largely matters that a private investor can manage well. On the other hand, governments are best placed to manage regulatory risks and, to a lesser degree, network and demand risks (Hepburn et al. 1997; London Economics 1995). So, for example, a financing vehicle that can allocate construction risks to the private

investor and regulatory risks to the government will align the incentives for these parties to better manage these risks. Bundling of design, construction and operation can also reduce risk where there is asymmetric information (chapter 8).

Many infrastructure projects have features that militate against standardised approaches to identify and allocate risk. Further, some ‘grey areas’ exist where neither private nor public sector parties has a clear advantage in risk management. Nonetheless, there appears to be an emerging consensus on which party should bear what risk at a particular phase of the project life cycle.

In addition to the alignment of incentives, there may be scope to transfer risk to those more willing to bear such risks. This is more likely in shallow financial markets where a new financial product may offer to reduce portfolio risk through diversification. Governments are seen by some as being able to pool risk over a large number of projects as well as spread risk over a large number of taxpayers with legislative backing (Arrow and Lind 1970; Mankiw 1986; Quiggin 1996a, 2002). Government’s ability to pool risk translates into low credit risk with government debt — but the public has to bear the contingent liabilities, that is, any cost consequences that arise if particular projects fail to deliver as planned. Government’s ability to pool risk does not reduce project risk, only transfer it, and there is a gain only if those taking on the project risk are able to benefit from risk sharing.

Reduced risk premiums as a consequence of beneficial risk sharing or risk transfer imply a reduction in the total cost of financing. Care is needed, however, as imposing a pattern of risk bearing that is not aligned with the ability to manage this risk could increase the total cost of finance through higher contingent liabilities. For example, risks have been ameliorated for the private sector by governments in public–private partnership arrangements through the inclusion of material adverse effect clauses in project contracts. Where government has an influence over these risks, such as with regulated prices, such risk transfer may be appropriate. Alternatively, the risks involved may have been properly priced in the contract reducing the return required by the private investors and offsetting the additional cost of contingent liabilities for the government. But this is not always the case. The danger lies in government taking on risk that they are not able to influence and/or not being compensated for assuming additional project risk.

The capital market can send strong signals about exposure to risk. Relevant market signals include yield spreads (or interest rate differences), liquidity and availability of credit supplies, and the terms and conditions of loans and investments. Auxiliary credit information — such as credit ratings and project reviews by financial institutions — reinforce and support these capital market signals (box 2.2).

Box 2.2 Credit information reinforces market signals

Financial institutions help reveal project risks by gathering public or proprietary information relevant to infrastructure investment:

- *Credit ratings* are predictive opinions of a borrower's likelihood to repay debt in a timely manner. Their reliability varies from time to time as it is subject to the quality, completeness and veracity of information used in the rating process, and the skills of the agency analysts.
- *Bank lending* depends on banks' ability to retrieve credit information through their expertise in credit analysis and their close relationships with borrowers. Relationship banking facilitates screening and monitoring of borrowers' investment activities. It is also instrumental for developing flexibility and discretion in bank loans.
- *Bond issues* convey credit information through numerous bond characteristics apart from their credit ratings. For example, the total principal amount of a bond issue crucially bears on its marketability and liquidity, as do its duration and structure, and its alignment with other bond issues to add depth to that particular part of the market. The yield spread (the difference between the yields of a government bond and any other bond) is thought to reflect the relative risk associated with a project. The frequency with which a borrower issues bonds reveals the borrower's reliability and experience. Other informative bond features include issue purpose, backing (specific revenue sources or general obligation) and sale method (negotiation or auction).
- *Bond insurance* conveys credit rating opinions of specialist insurance companies (known as 'monolines') on particular bond issues. Such opinions are backed by monolines' financial obligation in the event of bond default. For insured bonds, the onus of credit assessment and monitoring is shifted from bond investors to bond insurers.
- *Underlying credit ratings* of insured bonds are sometimes revealed to convey additional credit information to bond investors. One researcher has estimated that this has the effect of reducing coupon rates by 0.04 percentage point on average (Peng 2002).
- *Performance contracts in public-private partnerships (PPPs)* convey information on the contractual capability of private-sector sponsors to exploit economies of scope in designing, building, operating and maintaining infrastructure. If fully realised, these economies have the potential to reduce total project costs. Arguably, the plausible justification for PPPs rests on the comparative strength of the private sector in productivity or technical capacity — not on its strength from ownership or financing (Engel, Fischer and Galetovic 2007; Martimort and Pouyet 2006).

Transaction costs

Transaction costs associated with organising the finance and managing the arrangements, including costs of delay due to cash flow issues, also influence financing efficiency. Flexibility also matters as there can be costs associated with the need to change financing arrangements as market conditions or project requirements change.

Transaction costs include the costs of obtaining information, including credit information, establishing appropriate project contracts and monitoring borrowers' operational and financial performance (Hepburn et al. 1997). These are far from negligible in many cases and could appreciably offset efficiency gains from an improvement in risk allocation. For example, transaction complexities have to be accounted for when governments engage private-sector entities to finance or operate selected infrastructure facilities.

Taxation complicates the conditions for financing efficiency. It affects relative capital costs between projects, depending on the capacity of individual projects to generate tax revenues for government and tax offsets for business. These tax issues can have different effects at each level of government.

The pressure to maintain fiscal prudence could reduce the capacity of governments to undertake and finance on-budget investment. This can affect the adequacy of pay-as-you-go as a financing vehicle as funds may not be available when it is needed for efficient project delivery. The construction of government budgets and accounting conventions can also result in bias in the choice of financing vehicle.

Market and other disciplines on investment decisions

One hurdle to allocative efficiency is the presence of 'asymmetric information', or the uneven distribution of information concerning the risk–return characteristics of projects to be financed (Brennan and Kraus 1987; Claus and Grimes 2003; Leland and Pyle 1977; Myers and Majluf 1984). This problem is especially prevalent for a large-scale infrastructure project where the project proponent possesses more information concerning the financial viability of a project — such as the probability and consequences of potential design changes, cost overruns and unrealised anticipated demand — than the investor. Due diligence required by market players or parliamentary scrutiny provides an incentive to invest in information. The financing mechanism may influence this incentive and can also better align the interests of the different parties to an infrastructure investment to reduce information asymmetry.

Information asymmetry is likely to be severe when funding and financing decisions involve multiple agencies or levels of government. Not all of the parties involved have an incentive to supply credible, verifiable information sufficient to identify the true benefits and costs of a project. A divergence of interest can occur in agency, intergovernmental or public-private relationships, leading to incentive issues that result in inefficient investment or costly financing (box 2.4).

The costs of supplying, absorbing and verifying project information can be high. Moreover, making project details public can result in a loss of value in the project manager's proprietary information.

Finance providers or investors facing an information disadvantage tend to rationally finance projects on terms reflecting their perception of an average risk–return profile, *plus* an additional premium for bearing the uncertainty associated with an asymmetric information risk. This additional premium increases the cost of finance.

Box 2.3 Asymmetric information in public infrastructure investment

Information asymmetry is a prominent issue in the provision of public infrastructure services, as shown in the following examples.

Transnational infrastructure projects

Florio (2006) examined the allocation of capital grants by the European Union to member nations for a wide range of infrastructure projects.

It was noted that information asymmetry exists in a multi-government setting where projects are selected by member nations for EU financing. Members have an incentive to propose unprofitable projects which have the least chance of securing finance from other sources. However, EU authorities do not have sufficient credible information to compare their relative worthiness.

Local public works financed by intergovernmental grants

The financing efficiency of intergovernmental grants for local public works can be beset by the asymmetry of project information between governments, as characterised in the theoretical work by Besfamille (2003).

The case examined involved a local government contracting a business to undertake a project with the aid of capital grants from a higher-level government. The approval of financing depended on the latter's assessment of the project's worthiness and the contractor's productivity.

The theoretical modelling suggested that, given the asymmetry of information favouring the local government, the local government has an incentive to exaggerate a project's merits and the contractor's performance. This leads to the possibility that projects with relatively low net benefits will be financed, unless the financing vehicle includes incentive devices such as cost sharing.

In these circumstances, an *adverse selection* problem can arise, resulting in projects with a relatively high net benefit facing greater costs of financing than their actual risk–return profiles warrant. These projects could potentially be crowded out by projects having a lesser net benefit (but greater certainty).

Particular financing vehicles can be useful for conveying information in an incentive-compatible way — that is, the parties involved can all gain by truthfully revealing private. Provision of a loan guarantee, for example, implies that the guarantor has a better knowledge of and a stronger confidence in the prospects of a project than that possessed by the lender. It can also reflect the lender’s capacity to reduce and/or willingness to assume risk. The lender relies on the guarantor’s financial capacity and obligation.

Financing efficiency does not preclude the financing of high-risk projects but the lender requires returns to be commensurate with risk levels. Both explicit (required rate of return) and implicit (contingent liabilities) costs have to be taken into account in order to attain financing efficiency.

2.3 Financing vehicles used by governments

The financing vehicles used by governments fall into two broad categories:

- ‘pay-as-you-go’ (PAYGO) — various fund sources within the public sector
- capital-market financing — borrowing or equity contribution from private sources.

Public-sector fund sources available for PAYGO financing typically include:

- current operating incomes from the collection of taxes and service charges
- special levies such as development contributions
- reserves set aside for general or specific investment purposes
- proceeds from asset sales
- intergovernmental transfers such as federal and provisional grants.

Traditionally, these funds were largely allocated through capital outlay and work program budget appropriations. Recent decades have seen an increased use of off-budget financing, reflecting the shift of some infrastructure responsibilities to government businesses.

Across the studied countries, governments allocate public-sector finances with different degrees of dependence on particular vehicles. Although it is difficult to

obtain comprehensive information on the share of total investment attributable to each of these vehicles, there is evidence that significant differences exist.

The reasons for variation in financing practices adopted by governments are likely to be numerous and intricate. Those that have been identified by EPAC (1995) and Merna and Njiru (2002) as commonly relevant include:

- infrastructure characteristics — which affect the user profiles and revenue-raising capacities of particular assets
- fiscal and macroeconomic conditions — which could restrict the use of particular financing vehicles because of their budgetary consequences
- institutional arrangements — which define the legal and regulatory framework as well as the intergovernmental relationship within which public infrastructure assets are operated and financed
- perceptions of the role of government — which underlie voters' expectations for the involvement of government in delivering specific services and managing the economy.

The pattern of use of different financing vehicles

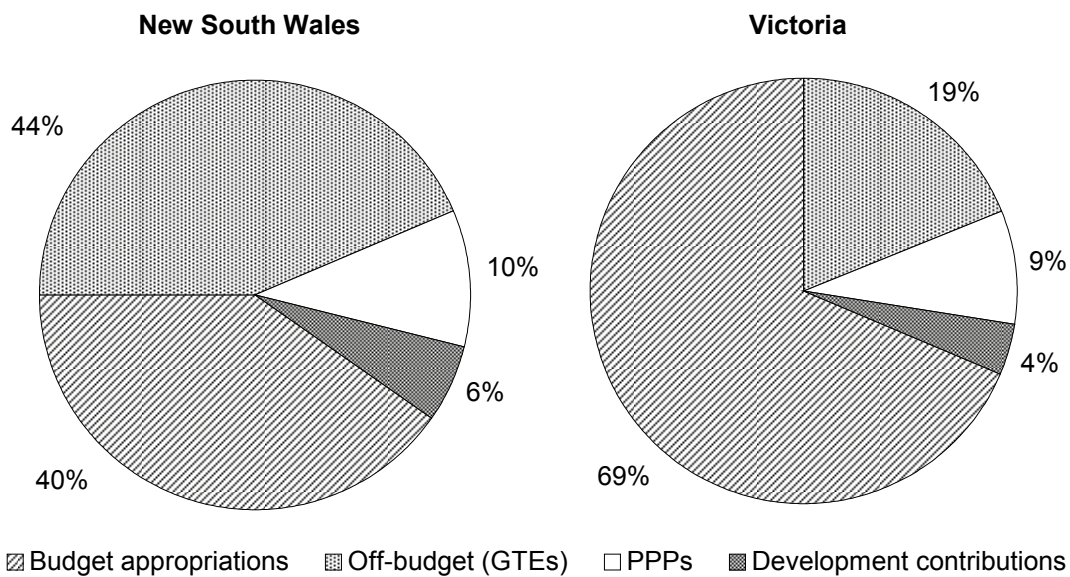
Australian State and Territory Governments rely heavily on budget appropriations and off-budget financing through government trading enterprises (GTEs) (figures 2.1 and 2.2). It should be noted that off-budget financing through GTEs is less prominent in Victoria mainly because its electricity GTEs were privatised in the 1990s.

There has been a greater reliance on PPPs in some Australian states with New South Wales and Victoria using this vehicle extensively. Nevertheless, PPPs account for a small percentage of public investment in infrastructure and their share fluctuates from year to year with the projects undertaken.

In the United Kingdom, there is also a significant reliance on budget appropriations for infrastructure financing. However, a smaller proportion of infrastructure is financed through GTEs than in Australia (figure 2.2). This reflects the extensive privatisation that took place in that country in the 1980s. More recently, a greater relative use of PPPs is also an evident outcome of the Private Finance Initiative (chapter 8).

In the United States, budget appropriations account for a small share of total public infrastructure investment because of the heavy reliance on capital-market financing through specific-purpose borrowing. In 2006, US\$270 billion was raised for

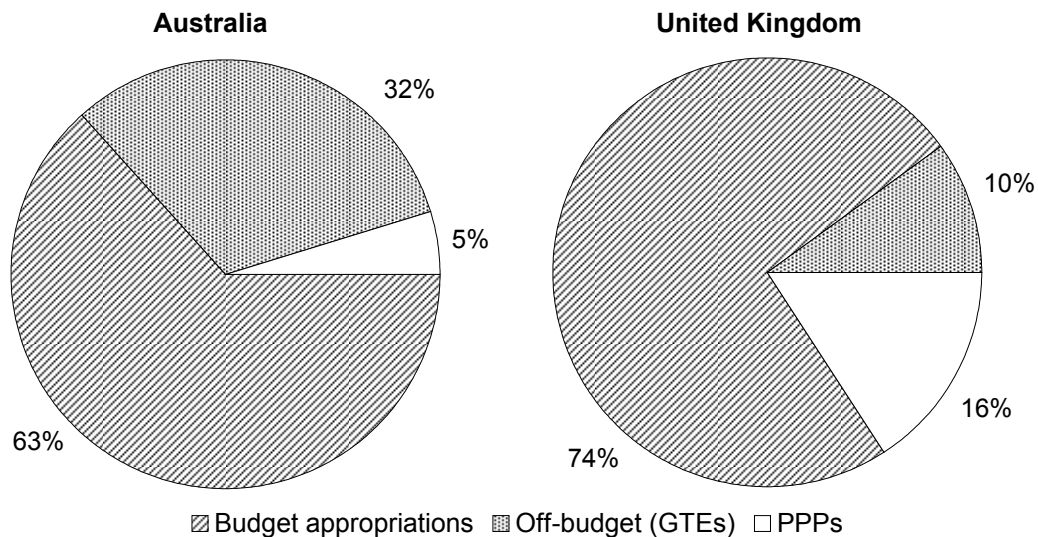
Figure 2.1 Indicative shares of public infrastructure investment by financing vehicle in New South Wales and Victoria (2005-06)



^a Based on State and Local Government 2005-06 data from various published Budget Papers and General Purpose Financial Statements.

Source: Productivity Commission estimates.

Figure 2.2 Indicative shares of public infrastructure investment by financing vehicle in Australia and the United Kingdom (2006-07)



^a Based on Australian Federal, State and Territory Government, and the UK Government, 2006-07 data from various published Budget Papers.

Source: Productivity Commission estimates.

projects financed by municipal revenue bonds. This alone represented approximately 70 per cent of overall infrastructure investment by all levels of government. This reliance on capital-market financing is attributable to institutional factors such as constitutional constraints on taxing and federal tax concessions for infrastructure borrowing.

Changes in the patterns and the significance of financial innovation

Australian and overseas governments alike have increasingly been making use of capital markets to finance public infrastructure. This partly reflects the contributory impact of financial innovation on financing efficiency.

Financial innovation is, in part, as a response to impediments to financing activities (Tufano 2003). New financial processes and products facilitate more efficient allocation of capital and risk if they reduce the extent of information asymmetry between borrowers and lenders, lower transaction and agency costs, or create products that are attractive to a wider range of investors.

During the past two decades or so, significant innovation has occurred in *project financing*. Project financing is based on a non-recourse or limited-recourse capital structure where project debt and equity are paid back solely from the cash flow associated with a project. Project assets, rights and interests are typically used as collateral. As such, a borrower's direct liability exposure is limited by 'ring-fencing' to the project risks (chapter 8).

Another major boost to capital market development has been the innovation of *credit enhancement* (or *credit wrapping*) instruments. These instruments provide borrowers with a potentially cost-effective means of bolstering credit standings and reducing net interest costs of security issues, particularly for lowly-rated projects with an unpredictable cash flow cycle.

Credit enhancement is a credit substitution or reallocation process. It can occur in one of two ways, by:

- a guarantee or insurance from a third party
- 'tranching' — that is, splitting the security into several classes with differing degrees of subordination in claims against the security issuer.

Governments can offer assistance in credit enhancement for desired investments through moral or policy obligation pledges, back-up guarantees, refinancing and maturity extensions, contingent lines of credit, or performance-based grants. Whether they should provide credit enhancement depends on whether they are

adequately compensated, such as through a lower required return or bringing forward an investment that has a significant net benefit to the community.

Securitisation — a process of standardising and packaging financial securities into a new fungible one — has been increasingly used to enhance credit standings and market liquidity for infrastructure projects. This form of structured finance typically involves the pooling of cash flows and the issuance of securities against specific asset portfolios.

To initiate securitisation, an infrastructure development fund or bond bank is set up as the special purpose vehicle (SPV) for issuing securities on the back of a number of specific projects. With the pooling of project assets and their transfer to an SPV, the aggregate cash flow associated with the projects is used to support interest and principal payments. The security payments depend solely on the designated projects' combined cash flows, thereby uncoupling the credit risk of the collateral asset pool from that of the borrower's balance sheet or general financial obligation.

The advent and maturing of innovative capital market vehicles, such as those discussed above, gives the private-sector and governments access to a wider range of finance sources and more options on financing strategies than previously. However, the sub-prime mortgage crisis that emerged in the United States after the mid-2000s illustrates the significance of ambiguous or untested risk exposure in some innovative financial products. As a case in point, low-risk tranches of securitised debt might not always be immune to financial losses even though they are structured to contain smaller portions of the credit risk.

Governments have to ensure that credit enhancement arrangements — particularly when offered as assistance — have a transparent financial structure with all the residual risk being controllable and correctly priced. Governments should also seek to be compensated if they are to bear any residual risk through credit enhancement.

3 Trends in infrastructure investment

Key points

- Infrastructure investment is not distinguished from gross fixed capital investment in the National Accounts. Two measures that provide some guide to infrastructure investment trends are investment in assets to be used by ‘economic and social infrastructure industries’ and total government spending on investment.
- Investment in economic and social infrastructure as a share of GDP declined steadily in many of the studied countries in the 1980s and 1990s.
 - Levels of investment in economic and social infrastructure as a per cent of GDP vary widely across the studied countries. Australian investment has remained towards the top of the group throughout the period since the 1970s.
- Public investment is undertaken by government (general government) and government owned entities (public corporations). General government spending on investment has declined in all of the studied countries since the 1960s, and particularly sharply in some countries during some periods, but there is not a close relationship with movements in investment in economic and social infrastructure.
 - In Australia, declining public spending on infrastructure investment has been partly offset by an increase in the role of the private sector. This reflects, in part, privatisation of some public corporations that are providers of infrastructure services.
- Differences in infrastructure investment across countries and over time can be attributed to structural changes in each economy and government policy developments.
- Trends in investment alone are an imperfect indicator of infrastructure service adequacy.
 - Judgement is required on a case-by-case basis using rigorous benefit–cost analysis to establish the level of economically warranted investment in infrastructure projects.

Trends in infrastructure investment for the selected countries — Australia, Canada, France, Germany, New Zealand, Sweden, the United Kingdom and the United States — are presented in this chapter. Two different measures of infrastructure investment are considered, with section 3.2 presenting trends in investment within ‘economic and social infrastructure industries’ and section 3.3 presenting trends in general government spending on investment. Factors that could have influenced the

trends and the choice of financing vehicles employed by governments are discussed in section 3.4. Finally, the relationship between the infrastructure investment trends and adequacy of government provision of infrastructure services is briefly discussed in section 3.5.

3.1 Measuring infrastructure investment

Infrastructure can be thought of as the long-lived structural assets that either facilitate the flow of goods, information and factors of production between buyers and sellers (economic infrastructure) or underpin the delivery of essential services such as health and education (social infrastructure). Historically, governments were heavily involved in both economic and social infrastructure investment in most developed countries. This section outlines the different measures of infrastructure that will be the focus of the international comparisons in the following sections. It also shows the changing roles of the different levels of government and the private sector in infrastructure investment in Australia

Trends in infrastructure investment can be tracked from data published in the national accounts. Within the national accounts, investment in tangible, productive assets is measured as ‘gross fixed capital formation’ which is the acquisition less disposal of fixed assets used repeatedly in production for more than one year. This is a gross measure of investment. It measures the acquisition of new assets, but neither repairs and maintenance to existing assets, nor ongoing depreciation, are taken into account. In total, Australia spent around \$261 billion (27 per cent of GDP) on gross fixed capital formation in 2005-06, but this figure includes investment in all sorts of assets across the whole economy and only a small portion of this can be considered infrastructure investment.

In this chapter, two measures of infrastructure investment are used. The first measure is overall investment in assets to be used by ‘economic infrastructure industries’ (electricity, gas and water supply, transport and storage, and communications) or ‘social infrastructure industries’ (health and education), which will be referred to as ‘economic and social infrastructure’. (In the context of this chapter, *total* denotes investment across all industries and *overall* denotes public and private spending.) In Australia, around \$55 billion was invested in economic and social infrastructure in 2005-06 of which \$43 billion was invested in economic infrastructure and \$12 billion in social infrastructure.

The second measure is total government spending on investment. For Australia, investment data are available for the general government and for public corporations, but internationally comparable data are available only for the general

government sector. In Australia, total public sector spending on investment was around \$40 billion in 2005-06 (table 3.1). Of this, around \$23 billion was spent by the general government sector and \$17 billion was spent by public corporations. Public sector spending on investment has been trending lower as a share of GDP over recent decades. The decline has been steeper for public corporations than the general government sector since the mid 1980s, and for the national public sector than the state and local public sectors since the early 1990s (figure 3.1).

Table 3.1 Investment in Australia, 2005-06 (\$ billion)

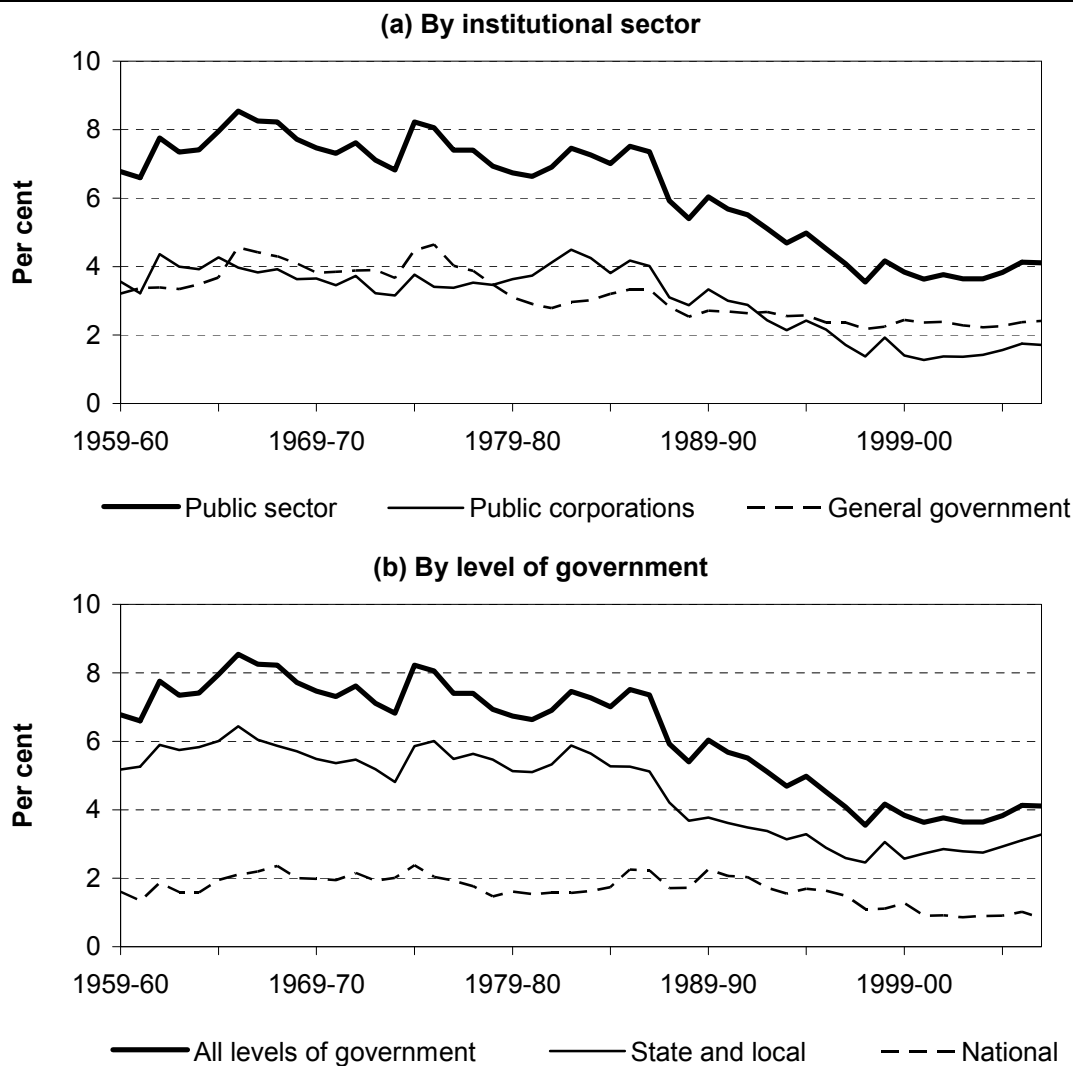
<i>Sector</i>	<i>Industry classification</i>			<i>Total</i>
	<i>Economic infrastructure</i>	<i>Social infrastructure</i>	<i>Other industries</i>	
Public sector				
General government	7.1	5.8	10.1	23.0
Public corporations	15.9	0.0	1.0	16.9
<i>Public sector</i>	<i>23.0</i>	<i>5.8</i>	<i>11.2</i>	39.9
Private sector	19.9	6.4	194.5	220.8
Overall	42.9	12.2	205.7	260.8

Source: ABS, Australian System of National Accounts, 2006-07, cat. no. 5204.0.

Though there is significant overlap between these two measures, they are useful for different purposes. Investment in infrastructure industries focuses on the role of investment in production. Public sector investment provides a gauge of the extent of government money being spent and so is more relevant for indicating budgetary pressures and choices.

In particular, public sector spending on investment should not be used to assess the economic impact of infrastructure investment nor the adequacy of current infrastructure investment because trends in public sector spending over time and across countries are affected by political choices to privatise existing businesses, encourage private sector competition in some industries and engage in public-private partnerships for the construction of new assets. In Australia, the public sector has been spending a decreasing share of GDP on economic and social infrastructure investment since the early 1980s, but much of this decline has been offset by increases in private sector investment (figure 3.2).

Figure 3.1 **Public sector spending on investment in Australia**
Per cent of GDP



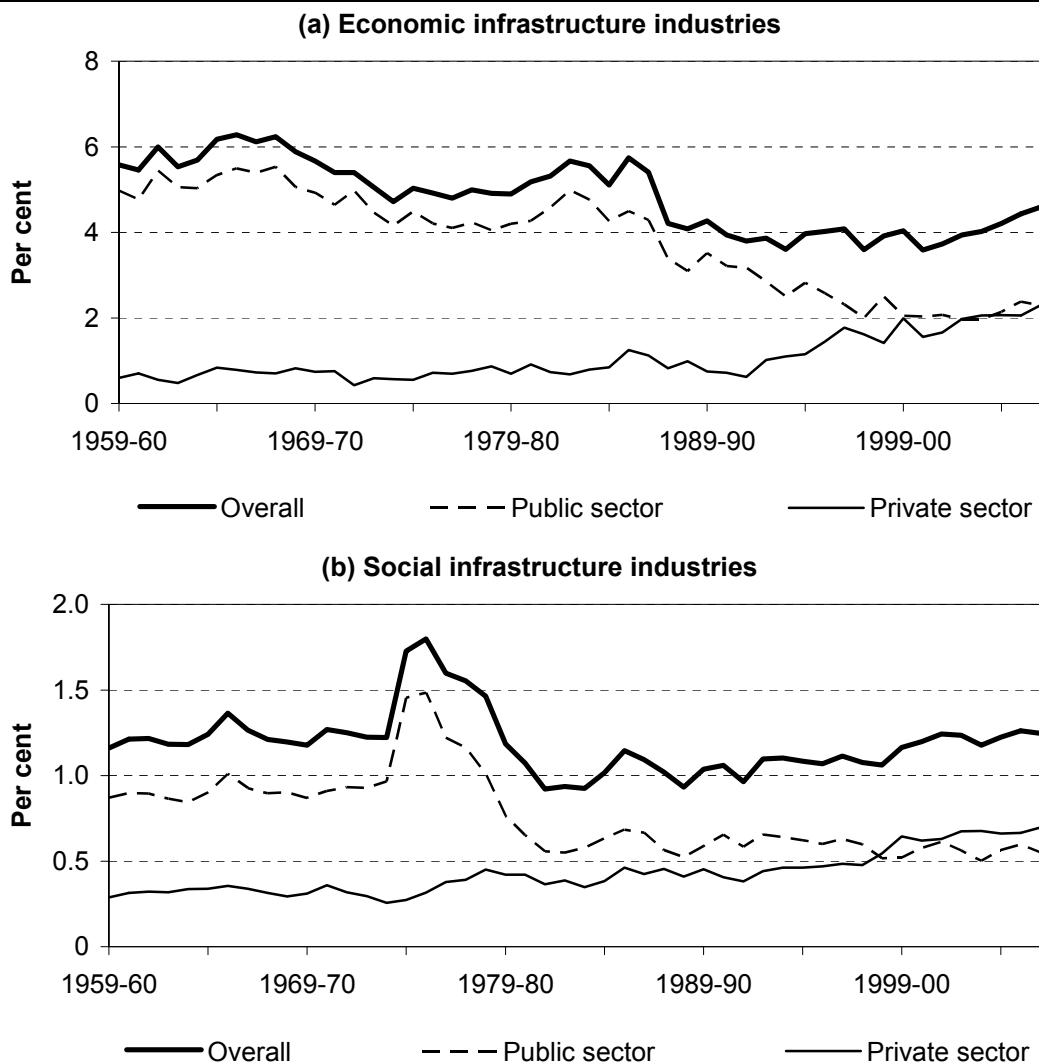
Source: ABS, *Australian System of National Accounts*, 2006-07.

International infrastructure investment trends

The next two sections of this chapter look at investment trends across countries and over time. The data are based on OECD statistics and are the best available that have been calculated in a comparable manner.¹ The two measures used are the

¹ To maintain comparability with the data presented in the current section, Australian data in the next two sections are sourced from the Australian Bureau of Statistics, although these data differ very little from equivalent data sourced from the OECD.

Figure 3.2 Investment in Australia by industry and sector
Per cent of GDP

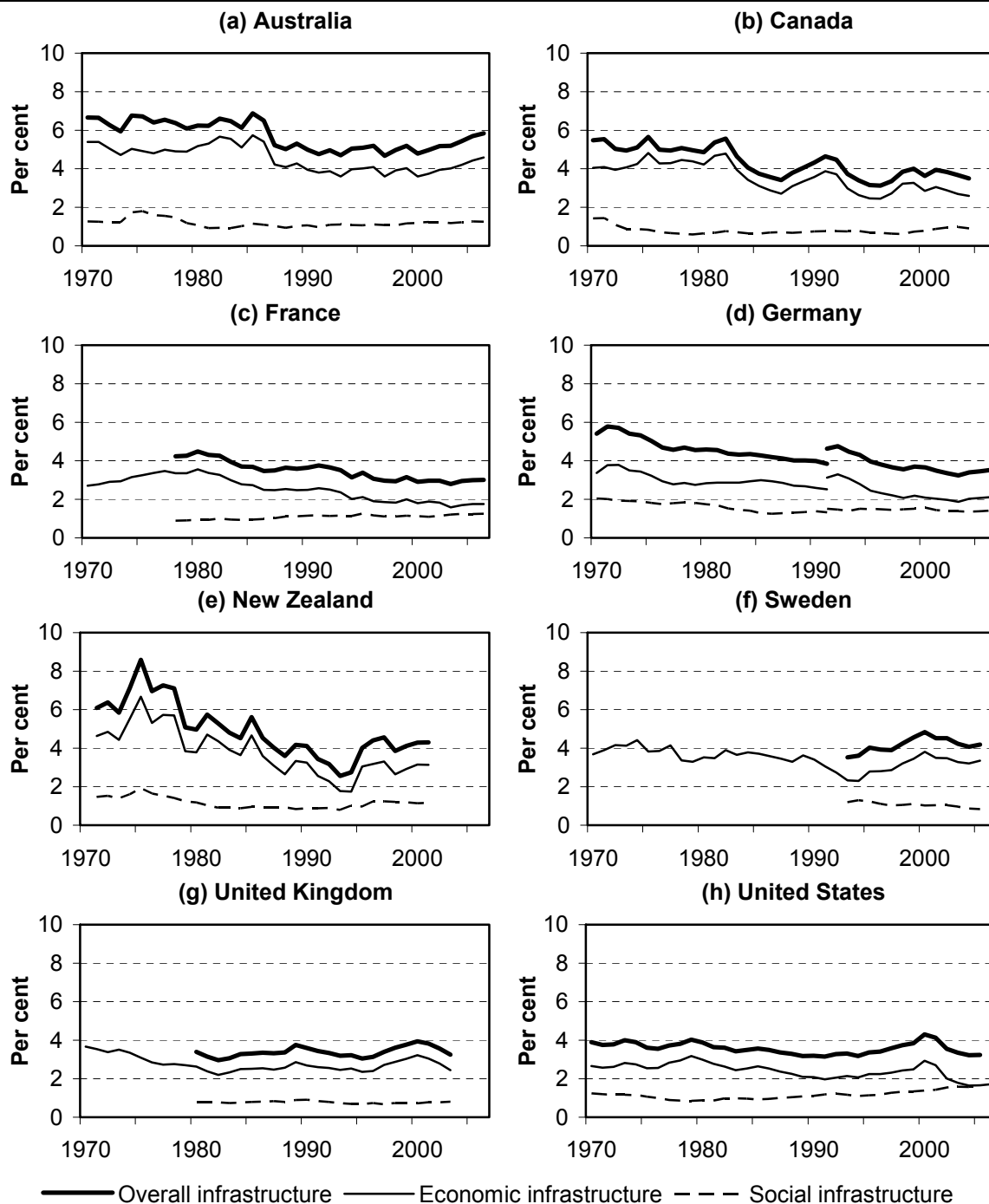


Source: ABS, *Australian System of National Accounts*, 2006-07.

overall investment in assets to be used by the economic and social infrastructure industries and total spending by the general government sector on investment (that is, the data do not include public corporations).

International comparisons are always difficult and inconsistencies could arise in the use of data from various sources because of differences in methodology, assumptions and definitions. The validity of international comparisons depends on which detailed industries are included in the ‘economic and social infrastructure industries’. Variation in relative prices may also affect comparisons. The data are presented in nominal terms as a percentage of GDP and indicate the proportion of a country’s production that was devoted to investment. Some caution is recommended

Figure 3.3 Overall investment in economic and social infrastructure
Per cent of GDP



Sources: Australian data are from ABS, Australian System of National Accounts, 2006-07. Investment data for other countries are from OECD STAN (2008 and 2005 editions) and GDP data are from the OECD Annual National Accounts. German data are for the former Federal Republic of Germany prior to 1991.

because differences across countries and over time may reflect differences in the prices of investment goods (e.g. the price of road or building construction) relative

to the price of final goods and services. No adjustment has been made for these differences.²

3.2 International trends in economic and social infrastructure investment

There is wide variation across the studied countries in the extent of investment in economic and social infrastructure (figure 3.3). Australian investment declined as a share of GDP in the 1980s and, to a lesser extent, in the 1990s, before increasing steadily in the current decade. Nevertheless, the total level of investment in Australia has remained towards the upper end of the group of countries since the 1970s because investment declined as a share of GDP in many other countries through the 1980s and 1990s, including New Zealand, France, Germany and Canada. France, the United States and the United Kingdom were towards the bottom end of the group of countries throughout the period, with each country investing an average of 3.5 per cent of GDP between 1981 and 2000, significantly less than the 4.8 per cent of GDP invested by Australia.

Investment in economic infrastructure was typically much higher than social infrastructure investment. Further, economic infrastructure investment appears to have been more volatile than investment in social infrastructure.

3.3 International trends in general government spending on investment

General government spending on investment has declined as a percentage of GDP in all the studied countries over the past four decades (table 3.2, figure 3.4). This downward trend has been fairly steady for most countries. Australia's experience has been typical — with spending falling from around 4.1 per cent of GDP in the decade to 1975, to 2.3 per cent of GDP in the decade to 2005 — so that the level of spending as a percentage of GDP has remained around the average of the studied countries throughout the period.

² The effect on trends over time may not be large. While capital good prices have generally been rising less rapidly than average prices in other parts of developed economies, this reflects trends in machinery and equipment and particularly computing equipment. The costs of constructing infrastructure assets, such as roads, have probably moved more closely in line with GDP deflators.

Table 3.2 Total general government spending on investment

Decade average, per cent of GDP

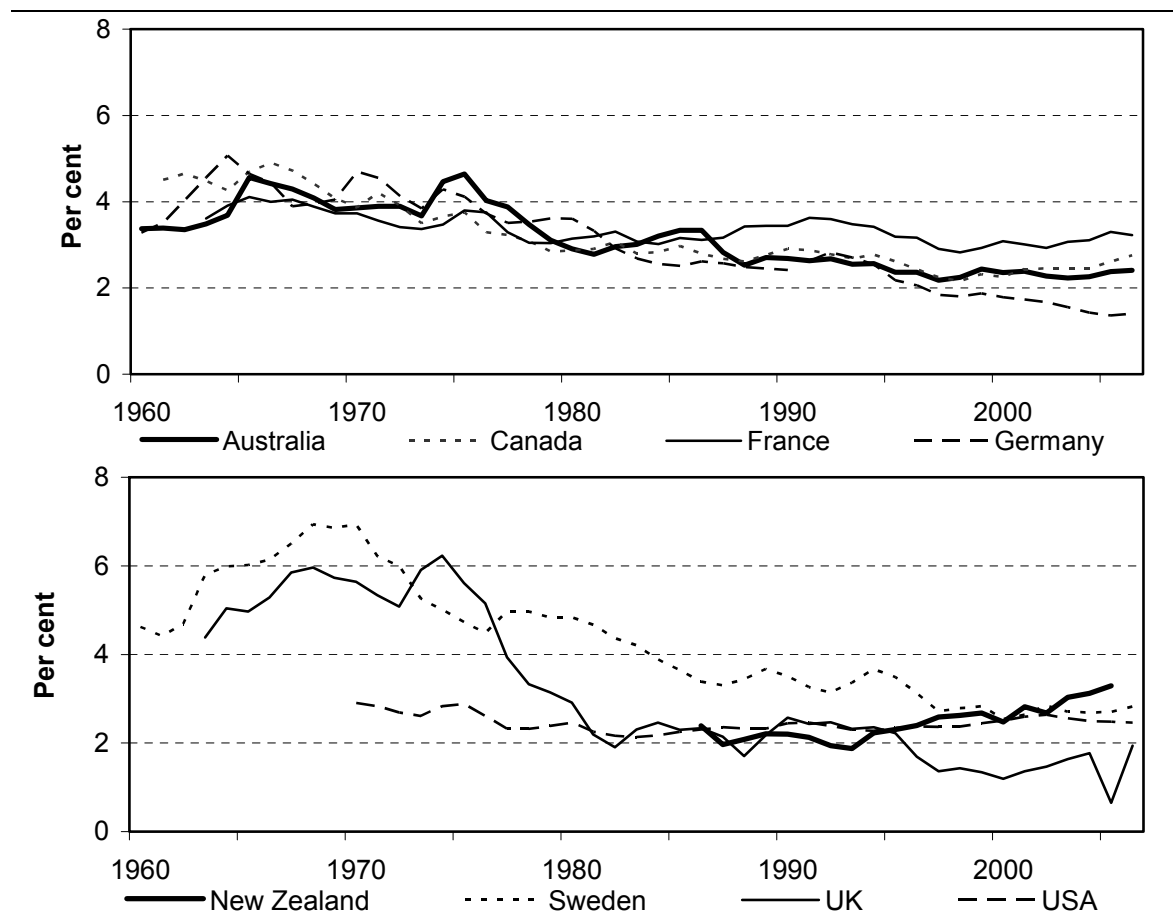
	1966-1975	1975-1986	1986-1995	1996-2005
Australia	4.1	3.3	2.7	2.3
Canada	4.1	3.0	2.7	2.4
France	3.7	3.2	3.4	3.0
Germany ^a	4.2	3.2	2.5	1.7
New Zealand	na	na	2.1	2.8
Sweden	6.1	4.5	3.4	2.8
United Kingdom	5.7	3.0	2.3	1.4
United States ^b	2.8	2.2	2.4	2.5

^a Data are for the former Federal Republic of Germany prior to 1991. ^b The first observation is for the period 1970 to 1975. na Not available.

Source: Australian data are from ABS, *Australian System of National Accounts*, 2006-07. US and NZ data are from OECD Annual National Accounts. Other data are from OECD, *Economic Outlook*, No. 83 (June 2008).

Figure 3.4 Total general government spending on investment, 1960–2006

Per cent of GDP



Source: Australian data are from ABS, *Australian System of National Accounts*, 2006-07. US and New Zealand data are from OECD Annual National Accounts. Other data are from OECD, *Economic Outlook*, No. 83 (June 2008).

There is not a close relationship between changes in government spending on investment and changes in investment in economic and social infrastructure (discussed in the previous section). Declines in general government spending in some countries have been quite sharp and have not been reflected in declines in economic and social infrastructure investment. For example, general government spending on investment declined particularly rapidly in the United Kingdom during the late 1970s and early 1980s and again in the late 1990s with little effect on investment in economic and social infrastructure. Similarly, the increased investment in economic and social infrastructure during the past decade in Australia occurred during a period of decline in general government spending on investment as a share of GDP.

3.4 Possible drivers of observed trends

Differences in the relative level and volatility of overall economic and social infrastructure are observable in the trends presented in section 3.2. There was also a general decline in the relative level of total general government spending on investment across the studied countries (section 3.3). In this section, some of the possible reasons for these observed trends are discussed.

Factors influencing relative levels of infrastructure investment

Country variance in overall infrastructure investment as a percentage of GDP can be the result of differences in demographic and geographic circumstances, factor endowments that affect costs, and the take-up of technology. Institutional and regulatory settings can also play a part in determining the underlying cost of providing infrastructure.

Changes to the structural composition of the studied countries' economies could also have led to differences in investment over time. This can result from changes in demand for infrastructure services derived from activities elsewhere in the economy, or from changes in the aforementioned supply conditions — such as differences in population growth and the rate of regulatory reform.

Improved efficiency of service delivery and investment outcomes in the public sector would also have influenced the observed trends in overall infrastructure investment. However, this is likely to have been of lesser significance.

Demographic and geographic factors

Population characteristics in the studied countries can have an important bearing on the relative level of investment in infrastructure. For example, countries that have a large population size potentially benefit from economies of scale and scope, and of agglomeration (PC 2006a). In addition, population trends — such as the rate of migration and trends in fertility and morbidity — can lead to a requirement to invest more heavily in infrastructure in absolute terms, but this might not show up in GDP terms if the economy is also growing.

Infrastructure requirements can also be affected by the composition of a country's population. An aging population and lower birth rates, for example, can change infrastructure priorities with higher demand for health and aged-care facilities and lower demand for schools.

Demographic and geographic factors set Australia and Canada apart from most other OECD countries. For example, both countries have among the lowest population densities in the OECD. France, Germany and the United Kingdom, in contrast, have relatively high population densities.

Population density and distribution can affect the necessary level of investment in infrastructure. For example, it was found that the average cost of providing local landline telephone services is high in Australia compared to other countries because it has a relatively large proportion of its population, and hence telephone lines, in areas with low population densities (Cribbett 2000).

Other geographic factors that can play an important role in determining the cost of infrastructure include climatic variations, topography, soil type, stability of the land mass and types of raw materials available for constructing infrastructure (Coombs and Roberts 2007).

Regulatory policy

Private-sector investment in infrastructure is influenced by economic conditions. As noted by Pindyck (1991), government policy that creates economic stability and credibility can stimulate investment to a greater extent than tax incentives or interest rate reductions. Conversely, '... a major cost of political and economic instability may be its depressing effect on investment' (Pindyck 1991, p. 1141).

One important factor is regulatory policy. 'Good' regulation can improve efficiency and provide a stable investment environment. However, regulators with wide discretionary powers can affect stakeholder expectations about the regulatory outcomes achievable, thereby creating stronger incentives for disputation,

uncertainty and a higher probability of inconsistency in the application of regulation (PC 2004a). As noted by Gómez-Ibáñez (2003):

Many proponents of private infrastructure view the problem as one of establishing a commitment to a fair and stable set of rules governing the relationship between the government and private infrastructure providers. The usual concern is that the government will renege on commitments to private infrastructure rather than vice versa. Private companies are vulnerable because infrastructure requires expensive, durable, and immobile investments ... that private owners can't withdraw if the government changes the rules. (p. 2)

Various regulations have been imposed on government and private-sector infrastructure businesses across the studied countries in an attempt to curb market power, facilitate competition and promote efficiency. These regulations include:

- Price regulation — arrangements established to oversight the prices charged by infrastructure service providers that retain monopoly power. For example, OECD countries have increasingly adopted price-cap regulations which set maximum allowed prices.
- Access regulation — rules which enable potential competitors to gain access to the services of significant monopoly infrastructure.

Price regulation, or the threat of such regulation, can be a deterrent to private investment in public infrastructure. If prices are set too low over the long term, public infrastructure projects will not be able to generate the revenue necessary to finance new projects or maintain existing facilities.

More significantly, the complexity of access regulations and the degree of regulator discretion can result in errors in pricing determinations. This, along with any suppression of capital returns for facility owners, potentially has a 'chilling' effect on investment.

Another relevant factor is uncertainty about how regulations will change over time. For example, there has been uncertainty in many OECD countries over how climate change policy will evolve, thus creating an additional source of risk for investment in long-lived capital in the energy sector. Any changes to the cost of emissions can influence the economics of whether coal or gas is used to supply base-load power (PC 2007b).

Regulatory uncertainty can result in delays to investment in an attempt by investors to minimise the cost of regulatory risk and retain a range of options. As noted by the Productivity Commission (PC 2004a):

An investor's subjective judgment of risk should include an assessment of how risk would change if investment was delayed (Dixit and Pindyck 1994). This is because delaying an irreversible investment until more is known about future market conditions

can reduce risk and so make a project more attractive. That is, it is worthwhile for investors to consider the timing of an investment, and this requires a subjective assessment of how risk will change over time. (p. 100)

It should be noted however, that the ‘public’ costs of delay — forgone services and any associated spillovers to the broader community and economy — increase over time. There is thus a trade-off between the private benefit to the investor of delay, and the public cost (PC 2008).

The existence of regulatory risk and uncertainty also has direct implications for financing. The public sector is likely to be in a better position to ameliorate the consequential risk and reduce the risk premium or compensation payouts that the private sector would demand with any change in policy (Hepburn et al. 1997).

Within a country, varying institutional arrangements and regulatory regimes can distort investment decisions across sectors.

Changes in structural composition

Changes in the composition of economies can lead to different levels of infrastructure investment as a percentage of GDP. Coombs and Roberts (2007), in assessing the impact of structural change on investment trends, found ‘... [t]he evolving structure of the Australian economy has changed both the level and composition of infrastructure investment, creating ebbs and flows in investment over the past half century’ (p. 7). Moreover, as noted by Smith (1992):

The necessary level of infrastructure investment is also influenced by a number of structural factors ... Structural change within the economy will mean that some parts of the existing capital stock will be less in demand, while other areas may need to be augmented. To the extent that resources move into areas or activities where the existing infrastructure is inadequate, more investment may be needed. This will be offset, to some extent, by reduced needs in other areas. (p. 21)

Structural change is in part driven by technological progress that reduces the prices of factors of production, extends the economic life of infrastructure, makes some services obsolete, and facilitates new services.³ For example, increased demand for high-speed internet access has resulted in the need to increase bandwidth capacity, with investment moving from copper wire to fibre-optic cable.

³ Technological progress plays a role in the development of all infrastructure, but its importance varies across infrastructure sectors. For example, in an assessment of future demand for infrastructure investment in OECD countries, Stevens, Schieb and Andrieu (2006) considered technological progress to be particularly important in telecommunications and water infrastructure, though less significant in the electricity and transport sectors.

The absorption of such significant technological developments has occurred at different times across the studied countries. For example, fibre cabling has been rolled out to around 2.9 million homes in Germany by the end of 2006 (IDATE Consulting & Research 2007) compared to a relatively limited number of homes in Australia, France and the United Kingdom. In other countries, such as Japan and South Korea, there has been a more rapid deployment of fibre networks because of large government subsidies and high population densities that lower average costs (Ofcom 2004).

Volatility in relative levels of infrastructure investment

The strong patterns of volatility in overall infrastructure investment — particularly investment in economic infrastructure — experienced in some countries over time can be attributed to fluctuations in economic growth.

The level of investment in infrastructure is, in part, dependent on the level of overall economic growth, as investors decisions are based on — among other considerations — expectations about changes in economic conditions, including forecast changes in demand and factor prices.⁴ Consequently, fluctuations in actual and expected economic activity can result in investment volatility.

Typically, *private* investment levels over time have generally declined during years of economic recession and tended to increase in periods of economic growth. However, trends in *public* investment do not appear to have been affected to the same extent.⁵ One possible reason for this in the past is that during periods of slow growth, governments have increased capital expenditure in an attempt to stimulate economic activity.

Economic growth can affect governments' ability to raise revenue, with important implications for financing infrastructure projects through general budget appropriations (chapter 4). For example, government tax, which is the major revenue source for appropriations in most countries, typically rises and falls with the level of economic activity.

⁴ As noted by Hall and Taylor (1996, p. 298), '... [w]hen investment rises it may be the result, not the cause, of increased spending elsewhere in the economy'.

⁵ This is supported by Barro (1997) who, in examining the role of investment during periods of recession in the United States from 1960 to 1994, found overall investment to be volatile and strongly procyclical to GDP. Further, it was found that private investment accounted for the bulk of the fluctuations in GDP, and total public investment was not systematically related to recessions.

Why has public investment declined?

For most OECD countries, much of the basic infrastructure was built in major expansionary periods — particularly post World War II. Having built the infrastructure, the rate of investment typically decreased because of the long replacement cycle of the assets. Also, the role of governments in infrastructure provision has generally shifted in recent decades, reducing their role in economic management that was previously conducted through their ownership of infrastructure.

During most of the twentieth century, the public sector in many OECD countries was extensively involved in the provision of economic and social infrastructure. The existence of natural monopolies, the sheer scale of many projects and insufficient depth in capital markets were factors that led to the public sector providing those services.

From the 1980s, governments were increasingly under pressure from concerns about levels of public debt. A frequent response was to reduce the impact of infrastructure spending on government budgets (Kay 1993). In addition, at this time, it was widely acknowledged that considerable scope existed for improving the efficiency of infrastructure procurement and service delivery through broader microeconomic reform, and increased private-sector participation in economic activity (Makin 2003).

Fiscal policy constraints

By the start of the 1980s, governments in a number of OECD countries had introduced fiscal rules applying to taxation, expenditures and borrowings in response to concerns about the consequences of budget deficits and the public debt burden. The application of these policies of fiscal restraint has implications for the use of the various financing vehicles for public infrastructure development.

The amount of spending financed by budget appropriations, including for public infrastructure investment, is limited by the decisions of governments to establish fiscal rules (chapter 4). Reduced investment in infrastructure could reflect the political reality that it is easier for governments to decrease this investment than other categories of public outlays. Moreover, the long-run consequences of reduced government investment are not always noticeable in the short term (Sturm 1998).

As a consequence of such fiscal constraints, governments have been exploring alternative financing vehicles to raise the initial capital for infrastructure projects — such as through private-sector participation.

Government business reforms

As part of their broader economic reform efforts, the studied countries have embarked on significant organisational and operational changes to their government business entities (chapter 6). Reforms, such as the commercialisation and corporatisation of government businesses, have generally imposed more market discipline on public-sector investment in infrastructure in many OECD countries.

Requirements for government businesses to produce a commercial rate of return, and abide by competitive neutrality principles, have gone some way to ensuring efficient investment outcomes. Improved external governance arrangements — such as clearly defined and transparently funded non-commercial objectives — have made investment decisions more accountable. However, the performance of some government businesses in Australia suggests that there is further scope for improvement (PC 2008).

Whereas such reforms aim to draw on market forces, public infrastructure providers are generally not exposed to the actual capital market pressures facing private investors.⁶ Moreover, government businesses do not face the same threat of takeover or bankruptcy, and have some protection from declining credit status, as borrowings are explicitly or implicitly guaranteed by governments. This can lead to an inefficient allocation of investment funds in the form of either under- or over-investment in infrastructure.⁷

Privatisation

Privatisation has been a central facet of public policy in many OECD countries since the early 1980s. There is a wide variety of motives for governments to pursue privatisation, including a view that private ownership tends to raise the internal efficiency of previously government-owned businesses engaged in commercial activities (Kain 1997).

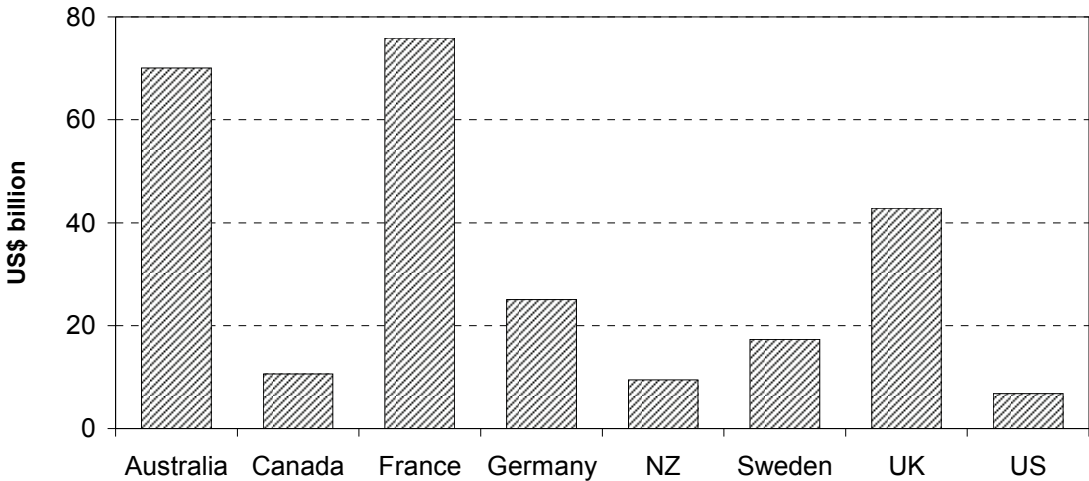
⁶ Debt guarantee fees introduced under competitive neutrality reforms aim to expose GTEs to the commercial borrowing costs in line with private sector competitors.

⁷ Both under- and over-investment in infrastructure are costly to the community. First, such investment represents a drain on community resources for the initial investment and for the upkeep of services which it does not want. Second, inefficient investment ultimately increases the cost of living and production (Smith 1992).

The first countries to commit to privatisation were Germany, starting in the early 1960s, and the United Kingdom at the beginning of the 1980s.⁸ Almost all other OECD countries followed, especially during the 1990s, and reduced the size of their public enterprise sectors (OECD 2005a). In the final decade of the twentieth century, Australia was one of the most active ‘privatising nations’ among the studied countries, particularly considering the relatively small size of its economy (figure 3.5).

Internationally, privatisation of infrastructure has historically been concentrated in the energy, transport and communications sectors. From 1980 to 2001, telecommunication sales were the largest source of privatisation revenue in OECD countries.⁹ Indeed, by the beginning of 2001, telecommunication companies in most OECD countries had been either fully or partially privatised (OECD 2002a, 2003).

Figure 3.5 Gross proceeds from privatisation for selected countries over the period 1990 to 2001^a



^a Gross proceeds from privatisation are in nominal terms. Estimates for the year 2001 are provisional.
 Source: OECD (2002a).

⁸ During the 1980s under the Thatcher Government, the United Kingdom privatised a number of large government businesses, including British Petroleum, British Telecom, British Gas, British Airways, Rolls Royce and the British Airport Authority.

⁹ Over the period 1980 to 2001, telecommunications accounted for roughly 40 per cent of all proceeds raised. Further, public utilities (electricity, gas and water) and transportation accounted for around 14 per cent and 10 per cent of proceeds from privatisation respectively (OECD 2003).

Levels of both public and private infrastructure investment (as a proportion of GDP) across the studied countries have been influenced by:

- transfer of ownership of infrastructure stocks from the public to the private sector
- new private investment in areas formerly the preserve of government, in part as new technologies have reduced ‘natural’ monopolies and facilitated introduction of user charges
- changes in the rate of investment — for example, private owners might be more inclined to delay investment until there is confidence that a commercial rate of return can be generated¹⁰
- technological change and improved productivity in the provision of infrastructure services.

The proceeds from privatisation have also been used by governments to reinvest in public infrastructure. Notably, some governments justified privatisation on the basis of financing capital expenditure in other areas of the economy. However, sale proceeds in Australia and the United Kingdom, for example, have mostly been used to restore fiscal rectitude and finance tax cuts (Quiggin 1996b).

Increased private-sector involvement in the provision of infrastructure would have contributed to the general decline in public investment for the studied countries. For example, Pollitt (2002, p. 67) found that privatisation of government businesses in the United Kingdom had resulted in the transfer of as much as 15 per cent of total investment from the state to the private sector.

Private-sector investment in infrastructure appears to have supplanted public infrastructure investment for a number of countries, including Australia and Sweden.¹¹ As noted by Makin (2003):

... to suggest that considerable scope exists for increasing public infrastructure spending to earlier levels ignores the fact that since the 1990s relatively lower public capital spending has been more than offset by relatively higher private capital expenditure in the economy. This is consistent with the increased involvement of the private sector in the provision of infrastructure services in the electricity, transport and ICT [information and communications technologies] sectors. (p. 36)

¹⁰ Conversely, privatisation could lead to increased investment in areas of infrastructure in which governments were previously unwilling to commit substantial funds (ACG 2005).

¹¹ In Sweden, economic infrastructure investment was predominantly undertaken by the public sector from 1993 to 1995, though from 1996 to 2005 private investment overtook government involvement (Statistics Sweden 2008).

Public–private partnerships

Similar to privatisation, public–private partnerships (PPPs) have contributed to the shift of investment from the public to the private sector (though on a smaller scale). As noted by Clark, Elsby and Love (2001):

It may be that some of the recent decline in public sector investment reflects the increased role of the Private Finance Initiative (PFI). The PFI sees a private company undertaking investment on behalf of the government, which then pays the company an income stream over several years. These payments are not classed as capital spending, so public investment appears lower than it would have been under traditional public procurement — even though the total level of publicly sponsored investment may be no different. (p. 3)

As defined by the ABS (2000), infrastructure projects are classified as public or private sector according to the expected ownership of the project at the time of completion. Accordingly, projects undertaken as PPPs would be classified as private-sector investment although ownership of the asset could eventually reside with the public sector (chapter 8).

An alternative to PPPs is public provision through competitive tendering and contracting (CTC). Under CTC, the government provides most of the finance, though investment in maintenance and replacement could possibly be required by private operators in capital intensive industries.

In addition to the impact on the relative levels of public and private investment, private operation could have led to efficiencies in the delivery and maintenance of infrastructure and, hence, reduced the financial burden of new or replacement investment. For example, the use of government franchises through a competitive selection process could bring enhanced incentives to promote efficiency and innovation in asset management (chapter 9).

3.5 The adequacy of investment

The general decline in total public investment has prompted some observers in OECD countries to express concerns about the adequacy of infrastructure, given the potential impacts on economic growth and productivity. *Prima facie*, falling public investment could be an indicator of inadequate investment. However, there are a number of limitations to inferring that the relative level of investment is inadequate for a country as a whole by simply observing such trends.

As noted above, there are many factors that could have influenced public infrastructure investment. In particular, increased private-sector investment has largely offset the decline in public investment.

Judgements on the adequacy of investment levels in public infrastructure have to be made on a case-by-case basis, using rigorous benefit–cost analysis to establish priorities among competing projects. For example, investment in industry sectors with capacity constraints and bottlenecks should be assessed appropriately before it is undertaken by governments, with consideration of ‘local’ requirements and possible alternatives — including congestion management measures.

The existence of a significant number of potential projects with high rates of return would suggest the existence of impediments and inadequate investment. As noted by Munnell (1993), ‘... [t]o argue infrastructure is underprovided is to argue that the rate of return to public capital exceeds the return to other investments ... and that additional infrastructure spending should be undertaken until the rates of return are roughly equal’ (p. 37).

Rate of return measurements, however, are difficult to assess if prices for infrastructure services do not reflect supply costs.¹² Also, there is a lack of comparable data on the nature and condition of infrastructure in many OECD countries. As noted by the Exports and Infrastructure Taskforce (2005), in Australia:

... Given this lack of data, the taskforce had to rely to a large extent on ad hoc reports and anecdotal evidence of the condition and adequacy of infrastructure and associated regulatory arrangements. (p. 23)

In collecting the necessary data to review the adequacy of infrastructure, it is important to establish sound assessment frameworks that are capable of supporting project benefit–cost analysis to assess whether additional investment is economically justified. Moreover, any review of adequacy would ideally be undertaken independently by a single collection entity to facilitate objectivity, and to establish and maintain a database of nationally consistent information.

On 21 January 2008, Infrastructure Australia was established as a statutory advisory council with members from industry, government and local government. A key function of Infrastructure Australia will be to conduct regular audits to determine the adequacy, capacity and condition of nationally significant infrastructure (including transport, energy, communications and water infrastructure). From the

¹² Another possible explanation for low profitability of government businesses, for example, is that governments are not prepared to fully fund non-commercial objectives, possibly to avoid public scrutiny of the extent of the subsidy or transfers between consumers (PC 2007a).

analysis of this information, Infrastructure Australia will develop a national infrastructure priority list for the Council of Australian Governments to consider.

4 General budget appropriations

Key points

- General budget appropriations are a financing vehicle, authorised by a legislative entity, that enable a government to spend public finances for specific purposes
 - they are framed in accordance with the broader political and policy processes that determine budget parameters
 - they remain a major financing vehicle for public infrastructure investment
 - the funds appropriated can be sourced from general taxation revenue, general government debt, hypothecated taxes or intergovernmental transfers.
- The scope and application of budget appropriations in financing public infrastructure has changed over time in response to budget and financial management reforms, as well as changes in fiscal policies. Pressures for fiscal discipline have tended to reduce the use of budget appropriations in recent years.
- An important advantage of budget appropriations is that they are subject to political scrutiny and monitoring, which makes government infrastructure financing activities relatively transparent and accountable.
- A disadvantage is the potential for fund diversion creating cash flow constraints on efficient development of the infrastructure asset. There may also be less incentive for exploring user charges, or other avenues to improve efficiency. This is likely to be a greater issue where financing is from intergovernmental transfers, although such transfers may help address fiscal imbalances.

In OECD countries, the relevant legislative entity authorises the expenditure of public finances by the general government sector.¹ Although the extent to which these general budget appropriations are applied varies across the studied countries, they have a longstanding role in financing public infrastructure projects (section 4.1).

The applications of budget appropriations have undergone significant changes in many countries over the past two decades (section 4.2). These changes include the revenue sources used to finance appropriations, the impact of public sector reforms

1 The general government sector comprises the core agencies of government, including departments, agencies, offices and other bodies engaged in providing goods and services.

(such as accrual accounting and output-based budgeting), trends in fiscal policy and the use of special (standing) appropriations in financing government spending.

This chapter concludes with an assessment of relative strengths and weaknesses of budget appropriations as a public infrastructure financing vehicle (section 4.3).

4.1 Use of budget appropriations as a financing vehicle

The legislative oversight of public expenditure represents a fundamental principle of modern government. Specifically, the legislature's role is to debate and approve laws proposed by an executive (the government), that compel or permit the executive to spend revenue in its possession, but in accordance with purposes, amounts and timeframes approved by the legislature (Kennedy 2002).

Appropriations principally provide for the ongoing commitments and activities of government (for example, agency staff wages and salaries) and for financing the acquisition, construction and maintenance of capital assets by government.² The broad features of budget appropriations are described in this section and are illustrated by cases where they have been applied to finance public infrastructure.

Characteristics of budget appropriations

Appropriations are typically approved for a fixed amount of money, to be spent by the government up to the authorised amount. Within all of the studied countries, however, there is also limited provision for supplementation of expenditure through additional appropriations. Further, there are provisions in some countries that enable agencies to transfer appropriation monies between government programs or classes of budgetary output.

The duration of authorised budget appropriations can also vary. Annual appropriation legislation provides finance only for the fiscal year to which it applies. Again, some countries allow governments to carry forward appropriations. Other appropriations, commonly known as special appropriations, are generally authorised through other legislation and continue for longer than a fiscal year. Expenditures under special appropriations typically include transfer payments to individuals and some ongoing capital expenditures.

² Unlike most countries, the US federal budget does not distinguish between current and capital expenditures in its appropriation structure (Schick 1995).

The role of the legislature in budget appropriations varies among the studied OECD countries, depending on legal, constitutional and political arrangements and traditions.

In Westminster parliamentary democracies — such as the United Kingdom, Australia, Canada and New Zealand — budget appropriations are usually approved after debate. In the US presidential system, the legislative body plays a more ‘activist’ role in attempting to influence appropriation parameters. Specifically, the Congress typically proposes amendments to the budget proposals of the President, or formulates its own appropriation legislation for presidential approval (Lienert 2005; Premchand 1993; SIGMA-OECD 1998; Sterck and Bouckaert 2006; Wehner 2005).

In non-Westminster parliamentary systems — such as that in Sweden, and the semi-presidential systems of France and Germany — the legislature has some scope to vote on amendments to reducing spending and taxes. However, as in Western parliamentary democracies, these powers are strictly constrained (Lienert 2005).

Budget appropriations for public infrastructure

Inter-country comparisons of the level of public infrastructure investment financed by general budget appropriations are unavailable. This is due, in part, to the significant variation in the level of reporting in appropriation acts and government budget papers. There are also differences in the way public capital is defined across countries, inconsistent accounting frameworks for valuing assets, and program-specific differences in the application of appropriated expenditures.

Given these limitations, the information provided below is only illustrative of public capital appropriations in the studied countries. It cannot be used to infer the overall level of public infrastructure financed by appropriations.

Appropriation bills authorise expenditure or have the effect of increasing, altering the destination of, or extending the purpose of an existing appropriation.³ The annual appropriation bills are passed regularly each financial year to appropriate money from the Consolidated Revenue Fund to provide funds for government and parliamentary expenditure.

³ Section 83 of Australia’s Constitution states that ‘no money shall be drawn from the Treasury of the Commonwealth except under appropriation made by law’. Although Parliament has the ultimate control by way of veto, the Government has what is known as the ‘financial initiative’. Parliament is constitutionally separate and independent from the Government and has separate funding by means of its own appropriations.

As in other federations, the Australian Government provides supplementary funding to the States and Territories to implement projects of national strategic importance. The Australian Government's Roads to Recovery program is one example (box 4.1).

In those States and Territories for which data are available, budget appropriations are significant sources of capital outlays. The Western Australian Government reported in its budget papers that about 25 per cent of funds for public sector capital works would be sourced from appropriations (capital contributions and funding) in 2007-08. By comparison, about 30 per cent of public capital works were funded from appropriations in 2000-01 (Government of Western Australia 2002, 2007).

In Tasmania, it is estimated that about 46 per cent of the State's infrastructure investment in 2007-08 would be sourced from consolidated fund appropriations (Government of Tasmania 2007).⁴ Transport and communications infrastructure

Box 4.1 Appropriation structure of the Australian Government's Roads to Recovery program

In November 2000, the Australian Government announced the Roads to Recovery (R2R) program, which provided \$1.2 billion over the period January 2001 to June 2005. The grants were paid directly to local government authorities for road construction and maintenance purposes, and were additional to financial assistance grants.

The initial R2R program was established by the *Roads to Recovery Act 2000*, and provided a special appropriation capped at \$1.2 billion. The appropriation was also constrained by time, with any amount not spent by June 2005 becoming unavailable to be spent.

In January 2004, the Australian Government announced that a further \$1.2 billion would be provided over the four-year period July 2005 to June 2009. From that date, it became a component of AusLink, the National Land Transport Plan.

The initial R2R program was funded through a special appropriation. The AusLink R2R initiative is funded through annual appropriations, including \$300 million per annum of formula-based payments to councils.

Sources: ANAO (2005); Dollery, Pape and Byrnes (2006); DOTARS (2007).

⁴ In addition, the Tasmanian Government finances some public infrastructure projects through special capital funds. In 2007-08, it was estimated that these funds would account for about 18 per cent of total State infrastructure investment. Further, it was estimated that Australian Government transfer payments would represent about 27 per cent of Tasmanian infrastructure investment.

investment was expected to account for about \$172 million (60 per cent) of Tasmanian general government sector infrastructure spending in 2007-08 (Government of Tasmania 2007). This includes outlays for major highways and additional spending on infrastructure that enhances road safety. Other major categories of appropriated capital expenditure include new and upgraded facilities in the health, education, tourism and public housing sectors.

In New Zealand, capital expenditure in 2007-08 was estimated to account for about 9.8 per cent of total appropriations. In 2002-03, capital expenditure represented around 7.1 per cent of total appropriated expenditures (Government of New Zealand 2007).

In Canada, appropriations are a relatively minor source of funds to finance public infrastructure investment. The Canadian federal government's capital expenditure (including on infrastructure and other capital assets) was around 2.0 per cent of outlays in 2007 (Statistics Canada 2008). Appropriations for capital expenditure at the state government level are also relatively low. Ontario, for example, had an estimated capital expenditure of 3.3 per cent of total (operating and capital) appropriations in 2007-08. In 2003-04, the proportion of capital expenditure to total expenditure was marginally higher at about 3.7 per cent (Government of Ontario 2003, 2007).

In British Columbia, capital expenditure from consolidated revenue was estimated to represent about 1.7 per cent of total (operating and capital) expenditure in 2007-08, up from around 1.3 per cent in 2003-04 (Government of British Columbia 2004, 2007).

In Ontario, the share of municipal capital expenditures financed from annual operating revenues (such as property taxes) increased from 18 per cent of all capital expenditure to more than 23 per cent from 1990 to 2001 (Kitchen 2003). About 45 per cent of all municipal capital spending were sourced from municipal reserve funds by 2001, up from 28 per cent in 1990.⁵ Over the same period, long-term borrowing by many Ontario municipalities declined as a source of funds to finance capital projects.

In the United States, capital projects have been traditionally financed from sources other than appropriations of general government funds. For example, capital project financing in the 2005 fiscal year came largely from dedicated fees and surpluses

⁵ It is reported that '... [s]ince the early nineties, the provincial government has offloaded additional capital and operating expenditure responsibilities to municipal governments, while at the same time reducing the municipal sector's reliance on grant funding' (Kitchen 2003, p. 31). For example, provincial grants for water and sewerage systems and roads declined over the study period.

(37 per cent) and bonds (31 per cent). Federal transfer payments (27 per cent) and state general funds (4 per cent) also contributed to capital spending (NASBO 2006).

Transportation was the largest category of state capital expenditure — at US\$46.5 billion or 64 per cent in 2005. Other major areas include higher education institutions, correctional facilities, environmental amenity projects and public housing (NASBO 2006).

The Californian Government estimates that about 1.5 per cent of proposed capital expenditure in 2007-08 is to be financed out of the general fund (State of California 2007). Further, an analysis of infrastructure financing trends in California by Semler (2005) found that the use of general funds as a source of infrastructure finance declined from approximately 14 per cent in 1960-61 to under 1 per cent in 2002-03.⁶

Care is required in drawing any conclusions about the relative importance of budget appropriations in financing infrastructure over recent years from the above examples. It is important to note that the significant differences across the studied countries can be attributed to a host of factors. These include political priorities and economic conditions, as well as the availability and adoption of alternative financing vehicles, such as bonds and public–private partnerships, to finance public infrastructure investments.

4.2 Policy issues

The policy environment underlying the application of appropriations has undergone significant change in recent decades, namely:

- the revenue sources used to fund appropriations
- public sector budgetary and financial management reforms
- fiscal policy settings
- the use of special appropriations in financing government expenditures.

⁶ The representation of special fund revenues in total infrastructure financing in California also declined — from approximately 44 per cent in 1960-61 to about 8 per cent in 2002-03. Funds from the federal government also declined in relative terms, from around 27 per cent to about 14 per cent over the same period. On the other hand, the utilisation of bonds increased significantly from about 16 per cent of total infrastructure finances in 1960-61 to 78 per cent in 2002-03. Similar findings are published by de Alth and Rueben (2005) and Hanak and Rueben (2006).

These changes, as discussed below, have affected the use of budget appropriations in financing infrastructure investments.

Sources of funds for budget appropriations

Constitutional or legislative provisions in the studied countries generally require that government revenue must initially be collected and deposited into a ‘general fund’ or ‘consolidated revenue’.

Funds that are appropriated to finance investment in public infrastructure, as well as other public goods and services, can be sourced from:

- *general taxation* — the compulsory transfer of money to a government, with no direct link between the base upon which the tax revenue is sourced and the expenditure of the revenue raised (OECD 2006a)
- *general purpose public borrowing* — funds raised by issuing debt securities on domestic or international markets
- *hypothecated taxes* — taxation revenue (usually from specific taxes or levies) directly assigned, or ‘earmarked’, to finance designated expenditures
- *intergovernmental transfers from tax revenues* — the transfer of finances between different levels of government.

Careful consideration is required in deciding how to raise funds for budget appropriations because of their economic incentive and fiscal management impacts.

General taxation

Total taxation revenue as a proportion of gross domestic product (GDP) has increased in most of the studied countries (table 4.1).

General taxation is perceived to be a relatively straightforward method of raising funds to finance infrastructure development. Further, the imposition of general taxation is considered to be a relatively efficient way for spreading the costs of provision at a given point in time where the social benefits of public infrastructure are diffused throughout society and specific users cannot be identified (ACG 2003).

Table 4.1 Total taxation revenue as a proportion of GDP (per cent)^a

Country	1975	1985	1995	2005
Australia	25.8	28.3	28.8	30.9
Canada	32.0	32.5	35.6	33.4
France ^a	35.4	42.8	42.9	44.1
Germany	34.3	36.1	37.2	34.8
New Zealand	28.5	31.1	36.6	37.8
Sweden	41.6	47.8	48.1	50.7
United Kingdom	35.3	37.6	34.7	36.5
United States	25.6	25.6	27.9	27.3

^a Includes tax collected by national, state and local governments. ^a Total taxation revenue for France has been reduced by the amount of capital transfers that represents uncollected taxes.

Source: OECD (2006a).

Box 4.2 Estimates of the efficiency costs of general taxation

The use of broad-based taxation tends to discourage mutually beneficial market exchanges by driving a wedge between the prices that suppliers want to receive for their output, and what consumers are willing to pay. By altering economic incentives at the margin, taxes can lead to an excess burden (or 'deadweight loss') that is borne by the wider community.

A number of surveys have presented estimates on the efficiency costs attributable to general taxation. These estimates typically show that the deadweight cost associated with raising taxation ranges from a minimum of ten cents to well in excess of one dollar for each additional dollar of revenue raised.

Robson (2004) found that the marginal (social) cost of funds from personal income taxes in OECD countries ranged from 1.2 to 1.3 — that is, to raise an extra dollar of taxation costs the wider economy between \$1.20 and \$1.30.

A review of the US tax system found that '[a] conservative estimate of the deadweight loss imposed by taxation in the United States was 40 cents for every additional dollar in taxes collected' (Vedder and Gallaway 1999). In a separate study, Feldstein (1999) found that the marginal excess burden of income taxes was about 78 per cent.

Australian research revealed that the marginal excess burden of capital taxation was about 48 per cent in the 1990s (Diewert and Lawrence 1998). In a study of NZ taxes, Diewert and Lawrence (1994) found that the marginal excess burden of labour and consumption taxes in the early 1990s ranged from 14 to 18 cents per additional dollar of revenue raised respectively.

Although the presented estimates vary considerably, they nonetheless illustrate how general taxes can have a detrimental effect on a range of economic outcomes.

General taxation has the potential to distort economic decisions (including private investment activities) and create perverse incentives, imposing ‘deadweight’ efficiency losses on the broader economy (box 4.2). Nevertheless, in comparing the cost of financing vehicles only the opportunity cost of the choice of source of finance should be considered as it is the *funding* decision, not the financing decision, that determines the overall cost to the taxpayers. Pay-as-you-go funding through budget appropriations from current revenue simply brings this burden forward onto current taxpayers. Budget appropriations funded by general public debt defer this funding burden to taxpayers in future years, but at a cost of interest payments (on public debt). Other considerations associated with the funding vehicle aside, as the best estimate of the discount rate to apply is reflected in these interest or opportunity costs, the present value of the pay-as-you-go and the public debt options should be identical.

General purpose borrowing by national governments

The relative importance of general purpose borrowing by national governments over time for all purposes can be gauged from changes in the debt-to-GDP ratio for the studied countries (table 4.2).

The debt-to-GDP ratio has declined in Australia, which had the lowest total central government debt ratio of the studied countries, at 6.5 per cent in 2005. Canada and New Zealand have also reduced their relative reliance on public borrowing activities. On the other hand, France and Germany have increased their debt-to-GDP ratios.

Table 4.2 Total national government debt as a proportion of GDP (per cent)^a

<i>Country</i>	<i>1980</i>	<i>1985</i>	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>
Australia	8.3	11.6	6.3	19.1	11.7	6.5
Canada	na	41.0	46.6	56.8	40.9	30.4
France	na	na	na	41.5	47.4	53.8
Germany	13.1	18.5	19.8	21.1	34.1	40.3
New Zealand	na	na	na	49.7	32.6	22.7
Sweden	38.5	60.8	40.0	76.9	58.3	48.0
United Kingdom	na	na	na	na	43.4	45.6
United States	25.7	35.4	41.5	49.2	34.4	36.5

^a Excluding state or provincial and local government debt and social security funds. **na** Not available.

Source: OECD (2008).

These changes in the relative importance of general-purpose borrowing for central governments, however, do not imply commensurate changes in the level of public infrastructure investment financed through budget appropriations. In Australia at least, privatisation of public companies generated revenues allowing considerable debt retirement. More importantly, data presented in chapter 3 suggest that there has been a shift in infrastructure investment responsibilities to lower levels of government. Consequently, debt ratios for lower levels of government may be more indicative of debt financing trends, although this needs to be married with their investment data to provide reliable evidence.

General purpose borrowing by sub-national governments

At the sub-national level government borrowing is undertaken on the government's behalf by their central borrowing authority (CBA). The rationale for establishing CBAs was that they would be able to achieve a more efficient and coordinated approach to raising loans as well as creating deeper, and more transferable securities, thereby minimising borrowing costs (box 4.3).

Central borrowing authorities are able to source finance at very fine margin over the relevant Commonwealth Government bonds. Bonds issued by CBAs automatically assume the credit rating of the issuing state government. The interest rate difference between a Commonwealth Government bond and a comparable CBA bond can be quite small, depending on the credit quality of the government.

As at the end of September 2007, the interest rate on a 10-year maturing CBA bond issued by the Treasury Corporation of Victoria was 6.63 per cent, while a comparable Commonwealth Government bond was issued for 6.46 per cent (TCV 2007). However, in the mid-1990s, the margin between the two bonds was greater due a deterioration of the then credit rating of the state government.

Recent developments such as the reduced supply of Commonwealth Government securities and the Reserve Bank of Australia decision to accept CBA bonds as collaterals are likely to increase the appeal of CBA bonds to large institutional investors (RBA 2004). This, in turn, will improve their liquidity in the secondary market and thereby increase demand.

Borrowing through CBAs has a number of advantages including sourcing funds at a lower rate (due to relatively high credit rating of state governments) and the financial expertise of CBAs. However, when government issues bonds for infrastructure investment in general, there is no mechanism to price the risk associated with individual projects. It is also possible that excessive borrowing could adversely affect the government credit rating.

Box 4.3 Australian central borrowing authorities

Central borrowing authorities (CBAs) are statutory authorities established in the mid-1980s across all jurisdictions.

The key function of CBAs is to borrow funds on behalf of the state or territory government they represent. They also borrow funds for public entities such as government trading enterprises, local authorities and other governmental entities including education institutions and health and community service providers.

Central borrowing authorities raise funds by issuing debt instruments such as bonds in both the domestic and international debt markets. They then re-lend the funds to their participating authorities.

Borrowing through CBAs is compulsory for statutory bodies, publicly-owned enterprises and government departments in most jurisdictions, while it is voluntary for local governments.

The rationale for establishing CBAs was to bring borrowing under one umbrella for greater efficiency. The efficiency is derived from:

- the rationalisation of approaches to the capital market to avoid unwarranted competition for scarce capital funds
- improved liquidity of the bonds, improved debt management and enhanced secondary market turnover
- increased marketability resulting in lower yield and thereby lower cost of capital
- the provision of improved quality of information to investors, particularly in regard to the volume and maturity of existing securities
- the facilitation of new debt instruments to target household investors
- developing expertise and specialist financial skills at a jurisdiction level rather than at an individual authority level.

Source: Campbell (1981).

General purpose borrowing has often been cited as an effective means of ensuring that future generations of taxpayers contribute to the funding of long-lived infrastructure assets, consistent with the intergenerational equity principle. However, there is a risk that the funds raised might be used to finance uneconomic projects and current consumption expenditure. Such an outcome would impose a burden on future generations without a commensurate benefit.

The potential macroeconomic consequences of excessive levels of public debt are also an issue:

... unless the government ensures that it seeks an appropriate (community) return from infrastructure substantially in excess of the cost of funds, there is a bias in favour of

excessive ... provision ... relative to other areas of investment where funding costs must take account of the intrinsic risks of the venture. (Smith 1995, p. 184)

Specifically, general purpose borrowing that exceeds government capital formation — effectively a reduction in public sector net worth — could potentially lead to adverse credit ratings. This could in turn translate into generally higher financing costs that raise the overall cost of future public infrastructure investments.

Hypothecated taxes

It has been observed that the hypothecation of tax revenue is a relatively common practice in OECD countries (Premchand 1993), although there is no comparable data available to confirm this observation.

Fuel and other motor vehicle taxes, for example, have been used in some countries primarily to finance transport infrastructure.⁷ In the United States, all revenue from the federal fuel excise is dedicated to a highway trust fund for state and local government road infrastructure. Many state fuel taxes in the United States are also earmarked, at least in part, to fund road construction and maintenance.

Similar hypothecation schemes for road infrastructure spending exist in Canada, New Zealand and some European countries.⁸

7 The hypothecation of fuel and similar taxes was prominent in Australia throughout much of the twentieth century. During the period 1926 to 1959, and again in 1982, all or part of the revenue raised by Commonwealth petroleum excises was hypothecated to finance public expenditure on roads. Since 1991-92, successive Commonwealth governments have effectively discontinued this practice (Webb 2000).

State and territory governments also hypothecated a portion of their fuel franchise fee revenues to road infrastructure projects, until the High Court invalidated the use of franchise fees by the States in 1997. The Commonwealth subsequently entered into an arrangement to the effect that it would increase its excise duties, and return all revenue collected (less administrative costs) to the States as 'revenue replacement payments'. Under the 2000 Intergovernmental Agreement between the Commonwealth and the States, it was agreed that the revenue replacement payments would cease from 1 July 2000.

Most State and territory governments hypothecate a vehicles registration and licencing fees to road maintenance and construction. But these revenues only partly meet the expenditure requirements and require budget authorisation on an annual basis.

8 In Alberta and British Columbia, a gas tax fund has been established by the national government, whereby a portion of the federal excise tax on gasoline is transferred to municipal governments for infrastructure investment. In New Zealand, portions of fuel excise duties, road user charges and motor vehicle registration fees are hypothecated to a national land transport fund. The national government is currently investigating full hypothecation of the fuel excise duty to the fund.

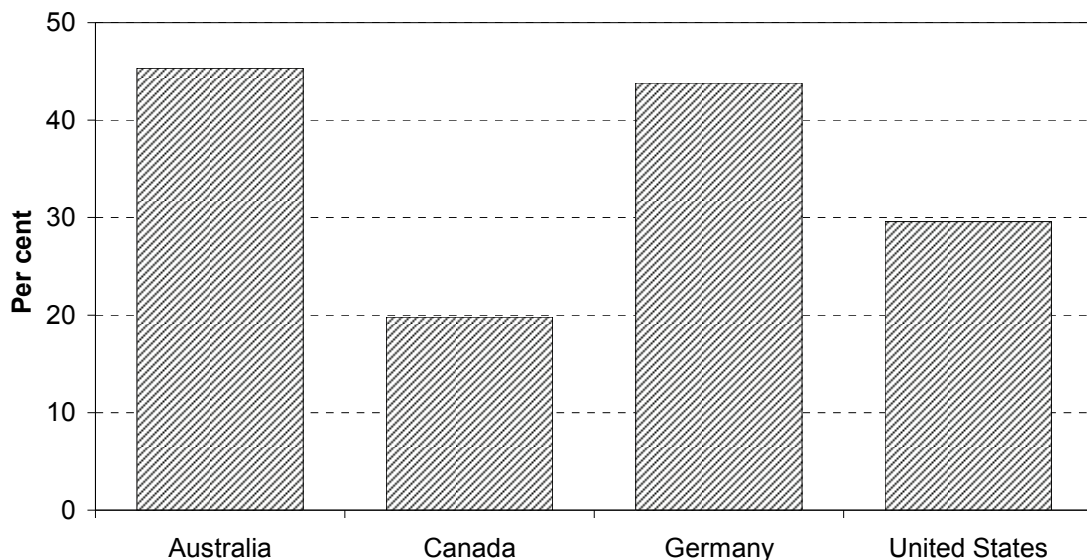
If properly constructed, a key benefit of hypothecating tax revenues to finance public infrastructure investments can be that it creates a more transparent and efficient link between the amount of services consumed by users and the taxes levied. A type of ‘quasi-pricing’ is established by imposing a tax on a good or service that is complementary in consumption with the publicly-provided infrastructure, and earmarking the revenue to financing infrastructure (Commonwealth Treasury 1996; Teja and Bracewell-Milnes 1991).

Intergovernmental transfers

The relative importance of intergovernmental transfers for sub-national government revenues varies considerably across the studied countries (figure 4.1). In Australia, intergovernmental transfers account for about 45 per cent of state and local revenues, whereas in Canada they represent only about 20 per cent of revenue for provincial and municipal governments (figure 4.1).

Some of these transfer payments are used to finance specific public infrastructure projects. In Australia, about \$3.7 billion of specific purpose capital payments were provided by the Australian Government to the States in 2006-07, and through the

Figure 4.1 National government transfers as a share of state and local governments revenue, various years^a



^a Includes conditional and unconditional transfer payments. Data for Australia are presented for 2000-01 and the other countries for 1995-96. Conditional transfers for Canada include funding under the Canada Health and Social Transfer (CHST) program.

Source: Watts (2005).

States to local governments (Commonwealth of Australia 2007). In the United States, federal intergovernmental transfers for highway construction, transit system development, water services and public housing were estimated to total approximately US\$57 billion in 2003 (OMB 2003).

Central governments also provide capital grants to local authorities in unitary systems of government, including France, New Zealand, Sweden and the United Kingdom. According to the OECD, the UK national government provided over €7 billion in capital grants to local authorities in 2004, and a similar amount was provided in France. Local governments in Sweden received €718 million from the national government in 2004. In New Zealand, total central government assistance (operating and capital grants, as well as subsidies) accounted for over 10 per cent of local authority revenue in 2006.

Grant assistance from central governments for capital infrastructure is generally regarded as being economically sound if the projects for which funds are provided generate spillovers within a country, or if they are projects in which donor governments have a specific interest or need (Boadway 2001; Kitchen 2004a; Oates 1972).

Intergovernmental transfer payments assist in alleviating fiscal imbalances at the sub-national government level. They can also close funding gaps where some state and local governments have inadequate revenues to meet their infrastructure and other expenditure needs, compared to wealthier regions of the country.

One criticism levelled at conditional intergovernmental transfers is that they can reduce the flexibility of sub-national jurisdictions to finance the public infrastructure projects that have the highest local priority (Walsh 1992). Further, conditional payments are ineffective unless they are tied to enforceable output-based performance criteria. Without such requirements, the grant receiving entity is not directly accountable for the effective and efficient use of the funds. Under these circumstances, the government making the transfer might not achieve its objectives, potentially with adverse consequences for efficient resource use.

Recipient governments can be required to provide matching funds, again resulting in sub-national governments spending on infrastructure projects that might not be their highest local priority (Kitchen 2004a). Kitchen (2004a) also argues that intergovernmental transfers could lead to inefficient sub-national revenue decisions. For example, there might be reduced incentives to pursue efficient pricing policies for infrastructure services where grants cover a large share of capital costs.

The provision of intergovernmental transfers can also create perverse incentives for ‘cost-shifting’ between levels of government. This occurs when one level of

government obliges another to assume new responsibilities or extend existing functions without fully financing the required expenditure. Such cost-shifting is likely to lead to shortfalls in infrastructure construction, maintenance and replacement or a lowering of service standards.

Moreover, intergovernmental transfers could lead to a confusion of objectives where different governments are involved (IC 1994). A shared responsibility for public infrastructure development could also weaken budget accountability since the community has greater difficulties in identifying which level of government is responsible for infrastructure investment.

Lower level governments can be vulnerable to changes in the level of transfers adversely affecting planning and financial management. For example, the Canadian city of Toronto received 75 per cent of public transit capital funding from the Ontario provincial government prior to 1998. This funding was abolished in 1998, only to be reinstated in November 2001 at a lower level than the historical amount of grant funding (Brittain 2002).

There are concerns that intergovernmental transfers, especially for capital projects, can be subject to political abuse. Milligan and Smart (2005) found that in Canada, seats with ‘swing’ voters and those with higher representations by members of the incumbent government are likely to receive relatively larger funds by way of intergovernmental transfer. Cadot, Roller, and Stephan (2006) reach similar conclusions on the regional allocation of intergovernmental transfer for roads in France. A Swedish study also found that seats with many ‘swing’ voters are likely to receive larger grants than other groups on average (Johanssen 2003).

In Australia, a recent report by the Commonwealth Auditor-General on the Regional Partnerships Programme found that:

... Regional Partnerships applications were received at a considerably higher rate from applicants located in electorates held by the Coalition parties than in electorates held by other parties. (ANAO 2007, p.23)

Budget and financial management reforms

In general, the framing of budgets has changed significantly throughout the OECD over the past two decades. Prominent reforms to government budgeting include the introduction of accrual accounting and budgeting standards,⁹ and the introduction of output- and outcome-based budget frameworks.¹⁰

9 There is a distinction between accrual accounting (the use of accrual accounting measures in reporting government financial activities) and accrual budgeting (the use of accrual accounting

Objectives of these reforms include ensuring that government decisions reflect the full cost of service delivery, and improving the effectiveness and transparency of financial and economic decision-making within the public sector. In turn, these reforms have important consequences for the use of budget appropriations as a financing vehicle.

Accrual budgeting standards

Since the 1990s, a number of countries — including Australia, New Zealand and the United Kingdom — have expressed government budgets and appropriations in full accrual terms. Accrual budgets recognise assets, liabilities, equity, income and expenses in the reporting periods to which they relate, regardless of when cash is received or paid. By contrast, cash budgeting systems record transactions only when payments are made or revenues are received.

A range of potential benefits have been attributed to accrual budgeting, including:

- improved cost information available to decision makers and greater discipline on budget execution — by facilitating decisions based on the total cost of producing outputs, rather than only on the immediate cash outlays associated with them
- the illumination of the long-term sustainability of public finances — by highlighting the long-term consequences of current expenditure and revenue decisions
- providing a catalyst for other public sector management reforms — by facilitating output- and outcome-based budgeting
- its synergies with accrual accounting practices of the public sector (Blöndal 2004; Champoux 2006; MAB 1997; Parliament of Canada 2006).

The proponents of public sector accrual budgeting also highlight its potential benefits in managing capital stocks (Blöndal 2003). Accrual budgeting is seen as providing better incentives to manage assets, plan investments and dispose of obsolete capital because capital is fully costed (box 4.4).

in the publication of government budgets, estimates and appropriations) (Blöndal 2003, 2004; Parliament of Canada 2006).

10 A number of OECD countries have embarked on other reforms that affect the budget appropriation environment. These include increasing government agency spending flexibility, relaxing input controls and publishing forward estimates of spending and revenue. These reforms, although at times relevant, are not discussed in this chapter.

Box 4.4 Capital financing and investment planning in the United Kingdom under cash and accrual budgeting

Until 1998, the UK public spending control framework made no distinction between current and capital expenditure in the budget. It had been increasingly argued that the practical effect of this was that government departments tended to divert capital spending at the margin to deal with short-term operating pressures. Over the long term, the result was that the UK public sector significantly under-invested compared to its published plans.

The UK Government introduced, in 1998, an accrual budgeting regime (known as Resource Accounting and Budgeting) to improve the departmental management of assets and their balance sheets. This included recording capital asset depreciation, a cost of capital charge and other provisions in Departmental Expenditure Limits.

These changes strengthened the incentive to manage capital assets more effectively, by recognising and placing limits on the economic costs of holding and using them. Departments were also set separate current and capital budgets with some limited flexibility to transfer resources between them.

Source: Emmerson, Frayne and Love (2004); OECD (2005b).

Under capital budgeting — an extension of accrual accounting — capital is not recorded as an expense when it is purchased. Instead, it is expensed over time as the capital is ‘consumed’ (Booth 1993). This has the effect of smoothing the budgetary impact of capital investment, and addresses the biases perceived to exist when capital investments are recorded as a ‘lump sum’ in the year of acquisition, as occurs with cash accounting (Blöndal 2004).

It should be noted that the countries with accrual budgeting have differing approaches to valuing government infrastructure assets. In New Zealand, for example, highway infrastructure is recorded at depreciated replacement cost, which is based on the estimated present cost of constructing the existing asset after allowing for the accumulated consumption of that asset. On the other hand, in Sweden, roads are recognised at acquisition value minus depreciation (Parliament of Canada 2006).

Despite widespread support for accrual accounting across the studied countries, some commentators have criticised aspects of its implementation. In a submission to a parliamentary inquiry into the transparency and accountability of Commonwealth public funding, Harris (2006) contended that appropriations for depreciation were inappropriate:

Depreciation is clearly an expense of conducting an activity requiring substantial capital assets. However, the cash so made available to the government is not required unless and until the asset is replaced. Moreover, the appropriation seems to have

neglected that, at the outset of the new financial arrangements, the Parliament had already provided the funds to acquire the assets being depreciated. Appropriating for depreciation reimburses the government for appropriations it has already received. (pp. 1–2)

Similarly, Bartos (2006) has criticised agencies being funded for depreciation while still receiving additional funding for new capital assets.

These issues suggest that the implementation of accrual budgeting can compromise its effectiveness. It is argued that ‘... [a]ccrual budgeting rests far more on assumptions and adjustments than cash-based budgets, and this implies the scope for politics is greater and the rules and accountabilities will inevitably become a contested terrain’ (Wanna, Kelly and Forster 2000, p. 269).

Notwithstanding the issues of infrastructure cost attribution and valuation, the value of accrual budgeting ultimately rests on the notion that the economic cost of providing capital assets is measured and recognised more accurately than under cash accounting budgets. This will, in turn, lead to more informed decisions regarding the extent to which governments finance their public infrastructure investments through budget appropriations.

Fiscal policy and fiscal rules

After World War II, many governments of OECD countries abandoned pre-war explicit or implicit fixed budget rules (such as the balanced budget principle). They did so in favour of a flexible Keynesian fiscal policy stance more responsive to changes in economic conditions (Buchanan and Wagner 1977; Schick 1998). Since the 1970s, however, concerns emerged over the consequences of the ‘crowding-out’ of spending options, such as productive public infrastructure investment, by increasing expenditure on welfare and debt interest costs (OECD 1995).

In response to these pressures, many governments introduced fiscal responsibility policies that apply fiscal rules to expenditure and taxation, as well as public debt limitation rules (box 4.5). However, they had the effect of limiting the amount of funding available to finance infrastructure investment, which in turn adversely affected economic efficiency (Clark, Elsby and Love 2002; IMF 2004a). As a consequence, there were calls for reform:

A relaxation of these [fiscal] rules could in fact improve economic performance if the bias against capital investments is lessened. (Mintz and Smart 2006, p. 3)

In the United Kingdom, HM Treasury has also expressed concerns about this apparent historic bias against public capital investment. They noted that it was rare

Box 4.5 Fiscal rules in selected OECD countries

Expenditure

In the United States, a *Budget Enforcement Act* was introduced in 1998 to cap discretionary spending, with sub-limits for specific expenditure categories. The Act also stipulated that legislated changes affecting revenues or mandatory spending programs (excluding social security) should be 'budget neutral'. Most of the provisions of the Act, however, lapsed in 2002, without being extended or replaced.

In 1996, Sweden established fiscal rules that set nominal expenditure limits for 27 expenditure areas (including social security) for a period of three years.

A number of governments also introduced legislation that specifies their stance on fiscal policy over time. In Australia, the *Charter of Budget Honesty Act 1998* requires that the government provide an annual statement of its fiscal strategy based on the 'principles of sound fiscal management' as specified in the Charter. Similarly, the United Kingdom's *Code for Fiscal Stability*, introduced under the *Finance Act 1998*, requires that the UK Government formally outline its fiscal policy objectives and fiscal rules each year.

The NZ *Fiscal Responsibility Act 1994* requires the national government to run operating budget surpluses on average over a 'reasonable' period of time.

Taxation

A number of states in the United States have employed constitutional or statutory limits on the power of governments to tax. For example, a referendum (Proposition 13) was passed in California in 1978 to impose a cap on property tax rates. Some OECD countries also impose limits on tax rates that can be set by sub-national governments.

Public debt

The European Monetary Union (EMU) Stability and Growth Pact obliges member states to avoid 'excessive deficits'. This is defined as general government sector deficits not exceeding 3 per cent of GDP and general government debt remaining below 60 per cent of GDP.

For many governments, arrangements are in place to monitor and limit borrowing by sub-national governments. The Australian Loan Council, established in 1927 to coordinate public borrowing, placed strict limits on overall public borrowing from the 1950s until mid 1995. Since then the Council operates on a voluntary basis, where each jurisdiction nominates a Loan Council Allocation for the forthcoming year. This indicates Commonwealth, state and territory governments intended net borrowing, which can be compared with their notional 'loan allocation'. The emphasis is on enhancing the transparency and accountability of public sector finances. These changed arrangements were designed to enhance the role of financial market scrutiny as a discipline on borrowing by the Australian public sector.

In the United States, by contrast, most states have legislative or constitutional limits on the issuance of general obligation debt.

Sources: Buiter (2001); Kennedy and Robbins (2001); OECD (2002b); Sutherland, Price and Joumard (2005); HM Treasury (1998).

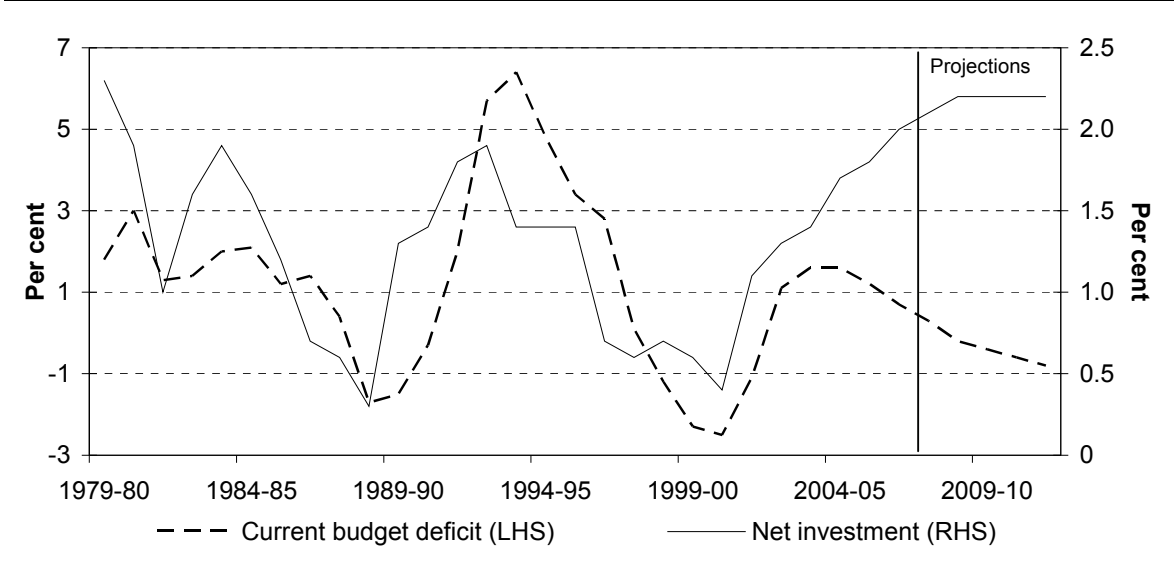
for public investment to grow during periods of fiscal consolidation aimed at reducing budget deficits. Accordingly, a new budget framework that made a distinction between current and capital spending was introduced.¹¹ This framework facilitated the application of two fiscal policy rules.

First, the so-called fiscal ‘golden rule’ requires that the government maintain an ‘operating’ or current budget balance over the economic cycle — rather than a cash balance or a zero ‘public sector net borrowing’ requirement. Balancing the current budget does not limit government borrowing to finance net investment in public capital. Second, the net public debt rule required that the government maintain net debt below 40 per cent of GDP — to ensure that borrowing for net investment is fiscally sustainable (Mintz and Smart 2006).

HM Treasury claims that the introduction of the new budget framework and fiscal rules has been successful in removing the bias formerly created against investment. As evidence of this success, it cites a recent break in the relationship between borrowing for current spending and borrowing for public investment (figure 4.2).

Most Australian state governments have also adopted fiscal strategies that enable them to fund most public investment through borrowing without incurring

Figure 4.2 Current budget deficit and net government investment in the United Kingdom, 1979-80 to 2011-12 (per cent of GDP)^a



^a Data for 2006-07 is an estimate and for 2007-08 to 2011-12 are projections. A negative current budget deficit is a current budget surplus.

11 The UK Government introduced a new budget framework in 1998 under its Code for Fiscal Stability.

operating' budget deficits.¹² The Australian Government, in contrast, have targeted a balance on the underlying cash surplus — or its accrual equivalent, the fiscal surplus — which necessitates funding public investment from current revenue.¹³

Commentators have argued that the imposition of such rules, in certain circumstances, provides governments with an increased incentive to make more efficient investments. Although limits are placed on the scope of government borrowing, beneficial government investment is not prevented (Schiavo-Campo and Tommasi 1999).

Output-based budgeting

In addition to developing a budget framework based on accrual accounting principles, some of the studied countries (Australia, New Zealand and the United Kingdom) have implemented output-based budgeting. This form of budgeting focuses on the delivery of outputs (the goods and services produced by agencies) to meet policy and program outcomes specified by government. The underlying rationale for this mode of budgeting is to place the government budget on an 'internal market' or 'purchaser-provider' footing to provide a greater focus on public sector performance.

The appropriations structure accompanying output-based budgets has changed significantly compared to previous budget frameworks (such as program-based budgeting). Under the Australian Government's output budgeting framework, appropriations are made for departmental operating expenses. These are made against one or more 'outcomes' for each agency. Appropriations for non-operating expenditure are made separately under 'equity injections' for each agency and not against outcomes.¹⁴

Appropriation-financed capital investment is generally sourced from both equity injections and payment for outputs (via funded depreciation). However, own-source funds held by departments, which do not require specific parliamentary

¹² For example, between 1995 and 2005 the NSW Government's fiscal strategy was based on the *Debt Elimination Act 1995*, which focussed on achieving cash budget surpluses (or accrual net lending surpluses from 2001-02) and the reduction of net debt. Since July 2005, the fiscal strategy has been based on the *Fiscal Responsibility Act 2005*. In addition to net debt and net financial liability targets, this Act uses the *operating* budget balance as the measure of the budget surplus.

¹³ Both the Australian Government and state governments have fiscal principles or 'rules' that seek to limit public net debt, either as a proportion of gross state product or as a proportion of revenue.

¹⁴ See the Australian Government's Appropriation Bills 1 and 2 (Budget Paper No. 4).

authorisation, have also been used to finance investment under output budgeting. Indeed, it has been argued that ‘[t]he significance of funded depreciation and own-source capital financing is so great that a department’s equity injection appropriation usually bears little relation to its capital expenditure’ (Robinson 2000, p. 5).

Criticisms have been levelled at the detail of reporting on appropriated outputs, specifically the consolidation of outputs into fewer categories. According to Harris (2006), ‘[w]hatever merit there was in linking appropriations to the programs managed by government disappeared when those program outcomes were severely contracted in number and broadened in scope’ (p. 2). Others have also pointed to the overly abstract manner in which government budget outputs and outcomes are described.

Difficulties in comparing spending measures across portfolios have also been raised (Bartos 2006; Wanna, Kelly and Forster 2000). In the New Zealand context, it has been stated that the similarity between classes of output has ‘... not provided a meaningful basis for organising departmental expenditure operations, much less for effective parliamentary scrutiny and debate of expenditures’ (Webber 2004, p. 336).

Despite these accountability and transparency issues, budgeting and financial management reforms have potentially enhanced ex ante and ex post scrutiny of government infrastructure financing priorities through parliamentary committees, auditing of government programs and broader community debate. General parliamentary debates and ongoing scrutiny given to particular activities or budget measures can significantly influence the executive’s formulation of the next budget (Wanna, Kelly and Forster 2000, p. 46).

Use of special appropriations

The importance of annual scrutiny by the legislature have been traditionally emphasised in the budget processes of the studied countries. However, over the past few decades, the degree of spending authorised in legislation through special appropriations which are not subject to annual scrutiny, has increased (OECD 2005b). This appears to be driven by, among other things, changes in the composition of government budgets due to the growth of ongoing welfare expenditure commitments.

In Australia, special appropriations are provided in Acts of Parliament for a particular spending purpose. Some special appropriations state an amount to be appropriated for a particular purpose — referred to as ‘limited by amount’. Others

do not state an amount, but are determined by legislative criteria. These are known as ‘standing’ appropriations.

Standing appropriations continue to have effect until the law containing them is repealed by the Parliament or until provisions within that law (such as, a ‘sunset clause’) end the effect of the appropriation (ANAO 2004).

The relative importance of special appropriations varies across the studied countries. In Australia, special appropriations at the Australian Government level comprise about 80 per cent of total appropriations in 2002-03. In contrast, special appropriations account for 25 per cent of total government expenditure in the United Kingdom (Parliament of Australia 2007).

Although it is not possible to quantify the use of special appropriations across the studied countries, it is likely that they are a significant financing vehicle (OECD 1995). A trend of increasing representation of special appropriations, however, inevitably reduces the proportion of discretionary funding available to finance new capital investments in the short term as circumstances change.

4.3 Strengths and weaknesses

Strengths

The main strength of the budget appropriation process, regardless of the method of raising funds, is the parliamentary scrutiny of appropriations. While there is still a cost of capital in either debt interest costs or opportunity costs, the transactions costs are low compared to most other financing vehicles.

Budget appropriations invite scrutiny

Budget appropriations have represented an enduring aspect of legislative control over the resources used by executive governments. The extent to which public infrastructure is financed through appropriations is a consequence of institutional arrangements and political processes, together with such factors as the maturity and depth of the capital markets as an alternative source of finance.

Appropriations enable a legislature, on behalf of the electorate, to exert some ex ante accountability over the expenditure of public finances. Indeed, ‘... without annual appropriation, parliaments begin to lose a degree of oversight on government spending’ (Parliament of Canada 2006, p. 30).

Transparency of government activities is promoted to the extent that government budget estimates are published for external scrutiny and examination.¹⁵ It ensures that legislatures retain a key position in holding governments accountable for infrastructure financing (OECD 1995). The quality of public budgeting across the studied countries is improving with budgetary reforms aimed at reflecting the full costs of asset acquisitions and related future liabilities.

There is less *ex ante* scrutiny for infrastructure financed by government trading enterprises (chapter 6), development contributions (chapter 7) and (in practice) public–private partnerships (chapter 8).

That said, the disciplines on investment and capital management provided by budget appropriation process are not necessarily as strong as those that are imposed with specific-purpose borrowing in mature capital markets. In raising finances directly in debt markets, governments and their entities have to submit project proposals to potential lenders, although scrutiny is likely to depend on the reliance on user-charges to fund the investment (chapter 5).

Intergovernmental transfers can address inequalities

Intergovernmental transfers tend to improve welfare where they generate spillovers within a country, or address vertical fiscal imbalance. They may also respond to equity concerns, helping close funding gaps where some state and local governments have inadequate revenues to meet their infrastructure and other expenditure needs, compared to wealthier regions of the country.

Weaknesses

The main weakness is the uncertainty that can arise in the availability of cash as required for the most efficient approach to building the asset. It is also possible that budget appropriations, like intergovernmental transfers, could reduce the incentives to explore the option of user charges with possible implications for efficiency. Full public funding can also reduce the scope to allocate project risks to those best able to manage them. These issues are discussed further in the rest of the study.

15 However, ‘... [i]t is essential not only that information be provided, but that it be relevant and in understandable form. Dumping on the public immense amounts of raw budgetary material does nothing to improve fiscal transparency’ (Schiavo-Campo and Tommasi 1999, p. 10). According to the IMF Code of Practice on Fiscal Transparency, other issues to consider include the clarity of fiscal roles and responsibilities, open processes of budget preparation, execution and reporting and independent assurances of fiscal integrity.

Other uses of government revenue may result in cash flow constraints on investment timing

A particular disadvantage of cash-based appropriations is the potential effect of ‘lumpy’ capital expenditure on the integrity of the overall budget. Lumpy expenditure reduces the scope to employ annual appropriations to finance infrastructure investment to the extent that other spending priorities are perceived to be non-discretionary.

Financing from higher level government grants can distort incentives for efficiency

There is potential for economic inefficiencies with provision of intergovernmental transfers to finance infrastructure:

- federal priorities may not reflect local priorities, a problem compounded if matching funds are required;
- the grant-receiving entity may not be directly accountable for the effective and efficient use of the funds, and conditional payments are ineffective unless they are tied to enforceable output-based performance criteria;
- there might be reduced incentives to pursue efficient pricing policies for infrastructure services where grants cover a large share of capital costs; and
- the arrangement may encourage cost-shifting which is likely to lead to shortfalls in infrastructure construction, maintenance and replacement or a lowering of service standards.

Key characteristics of budget appropriations

These strengths and weaknesses are reflected in the characteristics of the financing vehicle:

Risk management — while budget scrutiny provides one discipline on risk management, there is nothing in budget appropriation financing to force the management of project risks. For intergovernmental transfers, the accountability is further weakened.

Transaction costs — while the costs of arranging finance are low for budget appropriations, there may be high costs if projects are delayed due to constraints on the cash flow. Budget appropriations offer little scope to refinance the asset, although corporatisation of the entity ‘owning’ the asset and privatisation are avenues for refinancing.

Market and other disciplines — budget scrutiny provides some discipline on the investment decision and may address some informational asymmetries. There are no other mechanisms inherent in this financing vehicle that impose allocative efficiency.

5 Specific-purpose securitised borrowing

Key points

- Specific-purpose securitised borrowing refers to the issuance of debt instruments such as bonds, debentures and inscribed stocks in the capital market to finance a particular project.
 - Their use by quasi-government entities to finance infrastructure investments in areas such as water, electricity and transportation dates back to the mid-1800s.
- Debts incurred through these bonds are usually repaid from income generated from the investments or government grants and funds.
 - More recently in the United States, issuance is predicated on future anticipated federal-aid funds (Grant Anticipated Revenue Vehicle (GARVEE) bonds).
- In Australia, the use of specific-purpose bonds peaked in the post-World War II era and virtually disappeared by the late 1970s.
 - The corporatisation of government businesses, and reforms in the financial sector were instrumental in their demise.
 - Currently, public borrowing is undertaken through bonds issued by central borrowing authorities (CBAs) in each jurisdiction, and bonds are not linked to specific assets or activities.
- Among the other studied countries, specific-purpose securitised borrowing (through revenue bonds) is only common in North America.
 - In France, Germany and the United Kingdom, public-sector borrowings (other than by the national government) are sourced from financial institutions such as municipal banks.
- In North America, revenue bonds are one of the main sources of debt financing of public infrastructure.
 - They are exempt from US federal income tax but taxable in Canada.
 - The US tax benefits amount to a reduction in the direct cost of financing by up to two percentage points compared to similar taxable bonds, but at a cost of forgone tax revenue.
- Some of the strengths of revenue bonds are exposure of publicly-owned entities to market disciplines and more equitable cost spreading.
 - On the other hand, tax-advantaged revenue bonds have been criticised for distorting market mechanisms, encouraging rent-seeking activities and imposing costs on taxpayers who do not benefit from the infrastructure asset.

Specific-purpose securitised borrowing refers to the issuance of debt instruments such as bonds, debentures and inscribed stocks for the purpose of financing infrastructure by the public sector.¹ In the United States, these instruments are mainly issued by:

- quasi-government entities such as water boards and utility commissions (30 per cent)
- cities, towns and districts (30 per cent)
- local authorities, counties and parishes (27 per cent)
- state and local governments (10 per cent).²

Specific-purpose bonds are issued to finance a particular project such as water treatment facilities, bridges or fire stations. The debt is repaid from the income the project generates, or grants and funds allocated for the purpose. For example, bonds issued to finance the construction of water treatment plants, pumping stations, collection facilities and distribution systems are typically repaid from revenues generated in the form of connection fees and user charges.

Specific-purpose bonds have been used more commonly in countries with a federal system of government (such as Australia, Canada and the United States) than in countries with a unitary and more centralised systems of government — such as France, New Zealand and the United Kingdom (section 5.1).

Specific-purpose bonds are not limited to economic (income generating) infrastructure projects, but have also been used for social infrastructure such as schools and hospitals, where taxation is the source of debt repayment. Indeed, the use of specific-purpose bonds for social infrastructure has increased significantly over the past 20 years (section 5.2).

5.1 Use of specific-purpose bonds as a financing vehicle

The use of bonds to finance infrastructure in countries such as Australia, Canada and the United States dates back to the mid-19th century. With the exception of

¹ The term ‘securitised’ has recently been used in different ways. Traditionally, it was used to refer to borrowings through the issuance of debt instruments in the capital market which are distinguished from borrowings from banks. However, most recently, the term has been used more commonly in reference to mortgage-backed and asset-backed debt instruments (Thompson 1995). In keeping with the traditional terminology, ‘securitised’ refers here to the issuance of debt instruments in the capital market that are usually asset backed.

² The figures are based on the average volume of issuance from 1986 to 2006 (The Bond Buyer (various issues)).

Australia, these bonds have continued to be used as the primary source of debt for infrastructure financing by quasi-government entities.

The experience in Europe

In the studied European countries, borrowing for public infrastructure (other than by national governments) has been through public and private agencies (such as municipal banks) in the form of long-term bank loans (Peterson 2000; Venkatachalam 2005). For example:

- in the United Kingdom, borrowing for public infrastructure projects by local governments has been through the Public Works Loan Board (PWL 2007)
- in Germany, public and private municipal banks play an active role in facilitating debts to local governments in most jurisdictions (bunds)
- in Sweden, the public agency called Kommuninvest i Sveriges Aktieförbund is the dominant lender with a 42 per cent share of the municipal loan market (Moody's Investors Service 2006)
- in France, Spain and other European countries, borrowing is undertaken primarily through private financial institutions such as Dexia, following the privatisation of municipal banks (box 5.1).

The vehicles used for specific-purpose borrowing to finance infrastructure across the studied countries have been influenced by the historical development of institutional and legal frameworks. For example, in the United States, local entities such as cities and counties have constitutionally guaranteed rights to levy tax. The stream of revenue from this secure source made it feasible to issue bonds. In many of the European countries, local entities do not have this source of revenue. Consequently, they have traditionally borrowed through financial institutions.

However, there appears to be some signs of convergence with increased use of bonds in some of the European countries. For example, local governments in Sweden have become an important part of the municipal bond market (Jackson 2007; Peterson 2000).

The Australian experience

In Australia, quasi-government entities such as electricity commissions and water boards used specific-purpose bonds to finance capital works from the mid-1800s. For example, Victoria passed legislation in 1855 — the *Water Works Debenture Act*

Box 5.1 **Municipal banks in Western Europe**

Municipal banks in some Western European countries have a long history of financing local government infrastructure projects. For example, in France Caisse des Depots was established in 1816 before it was replaced by Credit Local de France (CLF) in 1987. In Spain and Belgium, municipal banks were also established in the late 1800s.

Historically, municipal banks in Europe were publicly owned or heavily regulated in monopolistic municipal credit markets. For example, municipal banks in Germany were allowed exclusive access to local savings accounts paying below-market rates on deposits. Some of the municipal banks also received substantial government subsidies in the form of capital contributions as well as government guarantees on the loans (Magrassi 2000; Peterson 2000).

Since the late 1980s, however, municipal banking across Western Europe had been reformed as part of financial sector liberalisation across the wider European Union. The reforms were geared towards decreasing government subsidies including debt guarantees, as well as changing the ownership of municipal banks. Consequently, in some countries (Belgium, France and Spain) municipal banks were privatised. Indeed, CLF merged with Credit Communal Belgique (Belgian municipal bank) in 1996 to form what is now a global public finance company — Dexia.

In the remaining European countries (such as Germany and Sweden) municipal banks still remain in public ownership, although they operate in a less regulated environment with virtually no government subsidy (Rhee and Stone 2003). Indeed, most of the publicly-owned municipal banks now source their funding from global financial markets. For example, *Kommuninvest* in Sweden issued bonds worth over US\$9.5 billion in the global market in 2004 (Kommuninvest 2007).

1855 — allowing the Metropolitan Board (which later became Metropolitan Water and Works Board) to issue debentures and inscribed stocks to finance water-related infrastructure projects.

Debentures and inscribed stocks were also used in other jurisdictions to varying degrees throughout the 1900s. By the mid-1970s, there were a large number of entities, each with their own capital-market instruments competing in a reasonably small domestic financial market. This resulted in a relatively high cost of financing.

In response, policy makers took up alternative financing vehicles such as the provision of loans at favourable terms from state government-owned banks. However, with the microeconomic reform of government trading enterprises (GTEs) during the 1980s and 1990s, these subsidies were removed.

As discussed in chapter 4, all borrowings by state and territory governments (including by GTEs) have now been brought under their respective CBA. In issuing bonds, CBAs do not distinguish between the purposes of borrowing nor do they

communicate on whose behalf (the Crown or a specific GTE) they are borrowing. Thus, specific-purpose borrowing no longer exists in Australia.

The North American experience

Specific-purpose bonds in the United States are known as *revenue bonds* and together with *general obligation (GO) bonds* make up what are known as *municipal bonds*. The key distinction between revenue and GO bonds is that revenue bonds are payable from specific project-related revenues, while GO bonds are primarily paid from general appropriations (box 5.2).

Municipal bonds have been used in Canada and the United States to finance public infrastructure for over a century (Peterson 2002). The nature of municipal bonds, however, is slightly different in the two countries. For example, in most Canadian provinces, municipal bonds are mainly issued by borrowing agencies called *municipal authorities*. In the United States, on the other hand, individual entities have a mandate to issue municipal bonds in their own right (El Daher 2000; Moody's Investors Service 2007).³

Municipal bonds in the United States are generally exempt (over 90 per cent of those issued) from the federal (and often state) income taxes, while this is not the case in Canada.

In the United States, the municipal bond market is the third largest debt market, behind those for Treasury securities and corporate bonds. As at December 2006, there was over US\$2.4 trillion outstanding against municipal bonds. In contrast, the Canadian municipal bond market is relatively small.

The discussion in the remainder of this chapter is concentrated on US revenue bonds because of the prevalent use in that country to finance public infrastructure.

5.2 The US experience

In the United States, revenue bonds have been widely used for economic infrastructure projects, although their use for social infrastructure investments such as schools and hospitals has increased significantly over the past twenty years.

3 In Canada, municipal governments face various restrictions in raising debt from the capital market. For example, municipal governments are only allowed to borrow solely for capital expenditure, and are also constrained by requirements prohibiting municipal deficits (FCM 2002).

Box 5.2 **Difference between revenue and GO bonds**

There are two key differences between revenue and GO bonds — relating to the income source of debt repayment and the legislative requirement of issuance.

With revenue bonds, repayment of debt (both principal and interest) can come from either income generated by the issuing entity (such as user charge revenues) or grants and funds appropriated by higher levels of government for a specific program (such as annual recurrent funding to hospitals or payments similar to Medicare).

General obligation bonds, on the other hand, are backed by the *full-faith-and-credit* of the issuing government and could take a form of *limited* or *unlimited* tax claims:

- *Limited tax bonds* are backed by a specific tax such as those on assessed property value. With such bonds, the full taxing power of the issuing entity does not apply. For example, special-purpose district bonds are issued to finance a specific project and the repayment of such bonds comes directly from taxes levied on the district neighbourhood rather than from general taxation across the jurisdiction.
- *Unlimited tax bonds* are those GO bonds supported by the general taxing power of the government. State governments derive their revenues from sales and income taxes, while local governments rely mainly on property-related taxes.

In most jurisdictions, a plebiscite is required to approve a GO bond in excess of a certain threshold.

The extent to which revenue bonds are used to finance infrastructure projects across the United States is not available from reliable data sources. Nevertheless, based on data on the total amount of municipal bonds issued, revenue bonds accounted for about 65 to 70 per cent of the annual municipal bonds issued over the past twenty years.

Revenue bonds for economic infrastructure include those issued to finance long-term investments in utilities (water and sewer, gas and electricity) and transportation (airports, seaports, roads, bridges, tunnels and mass transportation facilities). The details of one such bond issue are outlined in box 5.3.

Revenue bonds for social infrastructure are issued to finance facilities in education, healthcare (including hospitals, aged-care facilities and rehabilitation centres), housing and public facilities (such as fire stations, prisons and recreation facilities). Over 45 per cent of the total value of municipal bonds issued over the past six years was for social infrastructure projects (table 5.1).

Revenue bonds are used for projects with varying sizes. For example, among the revenue bonds issued in 2007, one of the smallest issues (US\$400 000) was to finance the construction of part of an elementary school in Simpson County, Kentucky.

Box 5.3 Example of utility revenue bonds — Omaha Public Power District

The Omaha Public Power District (OPPD) issued a series of Electric System Revenue bonds worth US\$245 million in 2007. The proceeds of the bonds were to be used for capital expenditures.

Both the principal and interest on the bonds are secured by the revenues, income, receipts and profits from the electricity supplies. The utility retails electricity to 47 cities and villages. It also wholesales electricity to five municipalities.

The due diligence makes it clear that OPPD has no taxing power and that the bonds are not the obligations of the State of Nebraska. It is also clearly stated that the State or any of its political subdivisions is not liable for the repayment of the bonds.

Source: OPPD (2007).

Table 5.1 US municipal bonds sales for infrastructure by use of proceeds

Use of proceeds ^a	2000		2003		2006	
	Principal amount	Market share	Principal amount	Market share	Principal amount	Market share
	US\$m	%	US\$m	%	US\$m	%
Utilities	20.1	10.0	51.8	13.5	54.9	14.2
Transportation	26.7	13.3	40.4	10.5	41.6	10.7
Education	48.4	24.1	91.2	23.8	106.6	27.5
Healthcare	17.9	8.9	28.6	7.5	40	10.3
Housing	20.1	10.0	26.5	6.9	30.5	7.9
Public facilities	9.3	4.6	12.9	3.4	14.6	3.8
Other	58.4	29.1	132.1	34.4	99.6	25.7
All	200.9	100.0	383.5	100.0	387.8	100.0

^a Utilities comprises water and sewer, gas, flood control and sanitation. Transportation refers to airports, seaports and marine terminals, toll roads, highways, streets, bridges, tunnels, parking facilities and mass transit. Education comprises primary, secondary and higher education infrastructure. Healthcare includes hospitals, nursing homes, continuing-care community services, assisted living and general medical facilities. Housing includes both single-family housing and multi-family housing. Public facilities include government buildings, fire and police stations, prisons, civic and convention centres, parks and zoos. Other includes infrastructure for general-purpose, industrial and economic developments, as well as non-government office building and environmental facilities (such as solid waste disposal, resource recovery, pollution control and recycling).

Source: The Bond Buyer (various issues).

Traditionally, GO bonds were the most commonly used financing instruments for social infrastructure projects. However, the use of revenue bonds to finance social infrastructure projects has grown because of:

-
- the commercialisation of certain activities undertaken by agencies such as housing and hospital financing authorities — that is, the need to detach the activities of these agencies from general government and its taxation power, and to provide a separate source of finance to those agencies
 - a desire to place certain activities on an efficient and equitable basis, whereby users (rather than the taxpayers at large) pay for benefits through user charges and fees
 - an expanding definition of what constitutes the public purpose or ‘*publicness*’ of goods or services. For example, historically, facilities such as stadiums and convention centres were not considered to be public purpose facilities and consequently were financed by the private sector with no (limited) public subsidy (Jacobson and Tarr 1995)
 - a growing reluctance of voters to approve GO bond issues — as required in over 40 states (Elmer 2005)
 - constitutional and statutory GO debt limits — as imposed in most jurisdictions (44 states) at both the state and local government levels.

Sources of income for debt repayment

The source of funds for the repayment of revenue bonds is generally determined by the nature of the investment. For investments in economic infrastructure, funds typically come from income generated by the project. For example, toll fees are mainly used for toll-road bonds, while fares are the most common source of funds for the repayment of transit bonds.⁴

Funds for the repayment of social infrastructure bonds primarily come from sources such as government grants, local tax revenues and lease payments. Government grants include those from the federal as well as state and local governments.

Local tax revenue is usually hypothecated from existing taxes (such as payroll tax) or new taxes levied through specific legislation. For example, almost 60 per cent of the Los Angeles County Metropolitan Transport Authority transport revenue bonds were backed by incomes from specifically legislated sales tax (LACMTA 2007).

Recently, other sources of debt repayment have been used. For example, anticipated federal government grants — known as Grant Anticipated Revenue Vehicles (GARVEE) — have been used to finance highways and bridges (box 5.4).

⁴ Debt repayment, more often than not, may come from revenues generated from organisation-wide operations, as opposed to from incomes exclusively generated by the project the debt is sought for.

Lease payments are another source of funds used to repay bonds issued for social infrastructure such as schools, police stations and correction centres. Typically, the bond issuing authority operates as a separate entity from the lessor. For example, monthly lease payments from the Bath County (in Kentucky) Board of Education are used to repay bonds issued to finance the renewal of a primary school by the Bath County School District Finance Corporation (RSA 2007).

Other sources of funds for social infrastructure bonds include rent and monthly mortgage repayments (housing bonds) as well as patient charges, private insurer payments and government funding (hospital bonds).

Revenue bonds are not backed by the issuing entity's taxation powers. Further, when default occurs, the US municipal bankruptcy code does not provide for the liquidation of assets and the distribution of the proceeds to creditors (box 5.5).⁵

Consequently, credit analysis of revenue bonds is focused on the nature of the income sources that back the bonds. For example, revenue bonds are required to have a debt coverage ratio — the ratio of annual revenues to the annual debt service charges — of around 1.5 to 2. No such requirement exists for GO bonds.

Box 5.4 Grant Anticipated Revenue Vehicle Bonds

Grant Anticipated Revenue Vehicle (GARVEE) bonds allow states to finance the construction and upgrading of highways with the pledge that the repayment will come from future federal-aid highway grants.

GARVEE bonds have existed since the mid-1950s. However, their use was limited by various conditions. One such condition was that states could only use their apportioned federal-aid highway funds to repay the principal component of the debt. Interest repayments were only eligible for some interstate projects.

A 1995 amendment, however, removed these restrictions, allowing states to use their apportioned federal-aid highway grants to meet both interest expenses and the retirement of principal. Consequently, their use grew significantly. For example, at the end of December 2006, the cumulative value of GARVEE bond issues reached US\$6.2 billion, financing projects in 18 states.

Source: FHWA (2007a).

5 The bankruptcy code governing revenue bond issuing entities is known as 'municipal bankruptcy' or commonly referred as 'Chapter 9'. Filing for Chapter 9 provides a financially distressed municipality protection from its creditors while going through debt restructuring.

Box 5.5 Default experience — Valley Health System, California

Valley Health System is a California Local Health Care District. It owns and operates three acute hospitals and a skilled nursing facility with over 500 beds.

Unable to meet its ongoing financial commitments including repayments on hospital revenue bonds worth \$US34 million, Valley Health System filed for bankruptcy (Chapter 9) in December 2007.

Filing for Chapter 9 sheltered the organisation from any litigations or claims over its incomes while restructuring its operations. As part of the restructuring process, the board approved a bond measure that would have refinanced existing borrowings. However, this proposition and an attempt to sell the organisation to a private health care company were voted down by the public.

Source: Bagley (2007).

In addition to stringent credit analysis, revenue bonds face a series of restrictive covenants. They include establishing funds (such as operating reserve and debt service reserves), setting the minimum user charges (to satisfy both expenses and debt servicing), and restrictions on further leverage (whether additional bonds with the same lien may be issued or not).

5.3 Policy issues

The most contentious policy issue associated with municipal bonds in the United States has been their exemption from federal income tax. The tax-exemption status has been a subject of court cases and congressional committee hearings. Furthermore, the extension of the tax advantage to the private sector has created conflict between federal and state governments.

Tax exemption

The exclusion of municipal bond interest from the federal income tax lowers the interest cost of financing public infrastructure projects. This tax concession, borne by federal taxpayers, is effectively a subsidy to state and local government infrastructure investment. In theory the tax exemption is equivalent to an intergovernmental transfer, and as such suffers from some of the same risks to efficiency (see chapter 4). In practice it is an opaque subsidy that is not explicitly costed nor subject to the same political scrutiny that an intergovernmental grant would be subject.

The tax-exemption was first introduced in the early 1900s. The rationale was the doctrine of intergovernmental tax immunity, rather than any policy or economic considerations (box 5.6). However, various economic rationales based on the theory of public goods and spillover benefits have since been articulated to justify the subsidy.

According to the theory of public goods, goods and services that have positive externalities may not be provided by the private sector at a ‘socially optimal’ level (chapter 2). The provision of such goods and services by state and local governments can add to the welfare of a nation.

Economic rationales based on the theory of public goods, on its own, do not necessarily justify federal government subsidisation of state and local governments’ activities. From an economic perspective, a federal government subsidy can only be justified when some of the benefit from public provision should accrue to taxpayers who reside outside the state or local area providing the service (Zimmerman 2000).

Beyond the public goods and spillover benefits arguments, tax exemption has also been justified on the basis of income redistribution (APPA 2006). Consequently, tax-exempt bonds have been used to subsidise facilities such as housing for low-income earners and publicly-owned utilities in rural and regional areas.

Box 5.6 The origin of tax exemption of municipal bonds in the United States

The origin of the tax exemption of state and local government bonds in the United States dates back to 1913, when the federal income tax was first adopted. Incomes earned from holding state and local government bonds were excluded from the federal income tax base on legal basis and the doctrine of intergovernmental tax immunity.

For a long time, the legal basis was believed to stem from the *Tenth Amendment* of the Constitution. In 1988, however, the US Supreme Court (*South Carolina vs Baker*) ruled that the legal doctrine is a statutory law, not a Constitutional one. This implies that, as a statutory law, the Congress can revoke the exemption.

Thus far, the Congress has not moved to revoke the tax advantage. However, Congress has enacted measures, most notably in the late 1960s and in 1986, that placed restrictions on the use of tax-exempt bonds.

Some of the restrictions are intended to curb the private use of municipal bonds and prevent state and local governments from engaging in arbitraging opportunities for the purpose of making profit.

Source: GFOA (2005); Zimmerman (1991).

Private-activity bonds

Tax-exempt private-activity bonds are issued by state and local governments (and their authorities) to be used by the private sector for broadly defined public purposes. The state or local government does not generally pledge its credit for payment of the debt. The bonds are repaid solely from the users of the financed infrastructure.

The increased use of private activity bonds for facilities that do not necessarily exhibit the characteristics of public goods became quite prevalent before the 1980s tax reforms. State and local governments increasingly stretched the definition of public purpose. Bonds issued for facilities such as stadiums, retail outlets and hotels were given tax-exemption status under the premise of economic development.

Indeed, by the early 1980s, state and local governments issued more private-activity bonds than bonds to finance traditional public projects. For example, over 70 per cent of the total dollar value of municipal bonds issued between 1983 and 1985 were tax-exempt private-activity bonds (Maguire 2001).

Alarmed by the ever expanding application of these bonds, the US Congress introduced strict conditions and limits on the use of private-activity bonds in 1986 (box 5.7). Subsequently, the use of private-activity bonds fell by 28 percentage points between the early 1980s and the end of 1995.

In the early 2000s, private-activity bonds have been predominantly used for social infrastructure such as housing and student loans. For example, the housing sector accounted for over 25 per cent of the total private activity bonds issued between 2003 and 2005, while student loans accounted for almost 10 per cent (Maguire 2006).

Private-activity bonds and public–private partnerships

Some of the restrictions on private-activity bonds militate against their use in public–private partnerships (PPPs) arrangements. For example, limits to the proportion of proceeds to be used by the private sector (under the private business use condition) discourage PPPs which involve revenue sharing, private equities and long-term operating contracts (Saunders 2007).

Further, the ‘private business use’ restriction makes some of the PPP arrangements unattainable because the restriction requires that no more than 10 per cent of the proceeds of the issue are to be used by the private sector.

Box 5.7 Federal law restriction of private-activity bonds

To qualify for tax exemption, private-activity bonds must fit into one of the seven eligibility categories, meet the volume cap requirement, and adhere to the 'private use' tests.

One of the tax-exempt categories is publicly-owned entities while the remaining six are:

- small issue bonds — bonds issued to finance manufacturing facilities with capital less than US\$10 million
- mortgage bonds
- veterans' mortgage bonds
- student loan bonds
- redevelopment bonds
- facilities for non-profit corporations.

The volume cap restriction applies to the amount of private-activity debt that can be issued within a state, in a given year, to the greater of either US\$80 per capita or US\$239 million.

In addition to the above two requirements, private-activity bonds must meet at least one of the following tests to qualify for tax-exemption:

- 'private business use' — no more than 10 per cent of the proceeds of the issue are to be used in the trade or private business. The 10 per cent threshold was, recently, reduced to 5 per cent for certain private businesses
- 'private payment' — no more than 10 per cent of the payment of principal or interest on the issue is secured by properties used in a trade or private business.

Sources: GFOA (2003); Solomon (2007); Zimmerman (1991).

Another restriction is that private-activity bonds cannot be issued for a single project if the total cost exceeds US\$20 million unless it is for an exempt facility.

Financing costs of revenue bonds

The direct cost of financing

Data on revenue bond yields are not readily available. However, based on municipal bonds data, as would be expected tax-exempt bonds typically command lower interest rates than comparable corporate bonds. For example, between 2000 and 2006, the yields on AAA-rated municipal bonds were lower than corporate bonds (of the same rating) by between 0.9 to 1.9 percentage points (table 5.2). The

Table 5.2 Yields and yield spreads between AAA-rated tax-exempt municipal bonds and AAA-rated corporate bonds (per cent)

<i>Year</i>	<i>Tax-exempt municipal bonds</i>	<i>Corporate bonds^a</i>	<i>Yield spread^b</i>
2000	5.8	7.6	1.8
2001	5.2	7.1	1.9
2002	5.0	6.5	1.4
2003	4.7	5.7	0.9
2004	4.6	5.6	1.0
2005	4.3	5.2	0.9
2006	4.4	5.6	1.2

^a From December 2001, data for corporate AAA series were industrial bonds only. ^b Corporate bond yield minus yield on tax-exempt municipal bonds.

Source: Council of Economic Advisors (2007).

interesting question is whether the cost saving to the issuing government is less than the revenue loss to the federal government.

In principle, the yield spread between comparable revenue and corporate bonds should equal the average marginal federal tax rate of the typical investor. This has been estimated to range between 30 to 35 per cent (Dwek 2002). This implies a yield spread between 1.6 to 2.7 percentage points. In reality, however, the spread was generally less than this between 2000 and 2006 (table 5.2). This suggests that municipal bonds are less attractive to investors than comparably rated corporate bonds, or that investors in fact face lower marginal tax rates.

The relative aversion to revenue bonds is not explained by a difference in default rates. A study by Litvac, McDermott and Koo (2007) found that ‘essential purpose’ enterprises — which are typically natural monopolies or those strongly protected against competition — have consistently lower default rates than private-sector entities issuing similarly rated corporate bonds. Based on data over the period 1987 to 2002, the five- to 15-year cumulative default rates averaged 0.24 per cent compared with the 10-year cumulative default rate of 0.43 per cent for AAA-rated corporate bonds. Where default occurs, revenue bonds generally have relatively higher likelihood of a recovery rate than comparable corporate bonds. For example, between 1970 and 2000, the average recovery rate on defaulted municipal bonds was 66 per cent of the par value, while for corporate bonds it was around 42 per cent (Fidelity Investment 2007).

While the data suggests a puzzle about why such revenue bond yields do not reflect the full value of the tax exemption, it difficult to compare the price of bonds solely on the basis of the underlying risk rating associated with the issuing entity. The

observed yield on a bond depends on a range of other factors, such as call provisions, maturity dates, liquidity, issuance costs, insurance coverage and tax incidence. For example, it may well be that revenue bonds are less liquid than comparably rated corporate bonds.

Flexibility

Revenue bonds generally lack some of the flexibilities common in institutional lending such as renegotiating repayments and loan restructuring. With revenue bonds, any change to the contractual agreement (indenture) usually requires securing votes from the majority bondholders. There are, however, some mechanisms (such as call and put provisions) whereby bondholders can hedge against some of these inflexibilities. For example, call provisions can be used to mitigate risk associated with changes in interest rate.

Call provisions allow bond issuers the right, but not the obligation, to buy back the bonds from the bondholder at the call price. Both the call dates and the call prices are set at the time of issuance. The attraction of this provision is that bond issuers are able to engage in a form of refinancing if the interest rate at the time of the call date is going against them. Indeed, this provision is prevalent, being contained in over 80 per cent of revenue bonds issued over the past ten years.

Transaction costs

Transaction costs are incurred to facilitate the bringing together of bond issuers and investors. These costs include fees paid to financial advisers, bond counsels and bond-rating agencies. Transaction costs also include the underwriters' spread, which is the difference between the price the underwriters pay the bond issuing entity and the price the underwriters receive from the resale of those bonds to investors.

Bond counsel fees are costs unique to municipal bonds. The primary role of a bond counsel is to certify the issuer's legal authority to issue the obligation and provide legal opinion on the tax-exempt status of the security being offered. Bond counsels also provide legal advice such as the procedures issuers must follow to obtain authorisation prior to issuing (Joseph 1994).⁶

Transaction costs are determined by a number of factors including the size of the bond issue, the bargaining power of the issuing entity and the market conditions. The larger the size of the bond issue the lower the average transaction costs due to

6 Bond counsels do not have to be engaged for the issuance of corporate bonds or the US treasury securities.

economies of scale. Indeed, economies of scale are one of the main benefits of issuing bonds through third parties such as the CBAs in Australia or bond banks in the United States.⁷

Reliable and up-to-date data are not available on transaction costs. However, based on earlier research, underwriters' margins are the largest issuance cost, followed by either financial adviser fees (for smaller issues) or bond counsel fees (larger issues) (table 5.3). For example, for bonds worth in excess of US\$75 million, the underwriters' margin is around 0.9 per cent of the value of the bond. For those bonds with values less than US\$5 million, the underwriters' margin is estimated around 1.3 per cent of the value of bond (table 5.3).

Table 5.3 Components of issuance costs^a, 1988

<i>Type of issuance cost</i>	<i>Unit</i>	<i>Size of bond issue in US\$million</i>					
		<i>5 or less</i>	<i>6–10</i>	<i>11–24</i>	<i>25–49</i>	<i>50–74</i>	<i>75 +</i>
Amount of costs							
Underwriter's margin	'000	35.4	83.4	180.9	362.5	560.2	1 962.5
Financial adviser	'000	14.3	21.8	32.9	29.9	32.1	63.5
Bond counsel	'000	11.5	17.9	37.2	59.2	56.6	81.9
Moody's rating	'000	3.4	5.2	6.8	8.3	11.5	15.8
Standard & Poor's rating	'000	4.3	5.7	6.9	9.4	10.6	15.2
Proportion of costs							
Underwriter's margin	%	1.31	1.25	1.06	1.03	0.92	0.90
Financial adviser	%	0.63	0.31	0.02	0.09	0.05	0.04
Bond counsel	%	0.47	0.24	0.04	0.16	0.09	0.06
Moody's rating	%	0.15	0.07	0.04	0.02	0.02	0.01
Standard & Poor's rating	%	0.16	0.08	0.04	0.03	0.02	0.01

^a Components of issuance costs not shown include independent audit, notice of sale and official statements.

Source: FMRC (1989).

Loss of tax revenue

The tax deduction of incomes from revenue bonds by investors results in forgone tax revenues for both the US federal and state governments. The loss of revenue can be significant. Assuming a marginal tax rate of 30 per cent and taxable interest rate

⁷ Bond banks are government agencies that sell securities and re-lend bond proceeds to governmental entities such as local governments and government-owned business. Bond banks are more common in small states in the United States and some European countries. They are more suitable to small entities who would otherwise face steep transaction costs and whose bonds are difficult to market. Bond banks are able to consolidate many smaller loans into a size that is more readily adaptable and marketable to the credit markets.

of 7 per cent, the federal tax loss can amount to 2.1 percentage points for each dollar of the bond issue.

Empirical evidence suggests that, over the past ten years, forgone federal government revenue amounted to around US\$27 billion a year (Marron 2006). The tax loss is not limited to the federal government, since state governments also exempt revenue bonds from their income taxes.⁸

5.4 Strengths and weaknesses

Strengths of specific-purpose bonds include exposure to market-based disciplines and user-based funding of public capital works. However, revenue bonds can lack some of the flexibilities of bank loans and may also result in a relatively higher transaction costs. Further, tax-advantaged revenue bonds have been criticised for causing market distortions and encouraging rent-seeking activities. Any estimates of the financing costs of revenue bonds need to take into account forgone tax revenues as well as the yield and transaction costs.

Market-based disciplines

Ideally, revenue bonds are not backed by taxpayers other than the direct beneficiaries, so that investment and funding of projects will be based more on commercial merit rather than other considerations.

Specific-purpose bonds are more efficient where they are backed by income generated from the infrastructure investment, including government payments for services. This link between the performance of the asset and servicing of the debt provides a greater incentive for due diligence about the asset by investors in the bonds. However, the strength of this incentive depends on the nature of the funding arrangements. Exposure to market-based disciplines is weaker if the bond servicing payments are sourced from revenues unrelated to the performance of the asset.

User charges can also improve efficiency in the planning and operation phases of an infrastructure asset. The efficient provision of services is enhanced if consumption benefits are linked to the costs of providing the services via fees, service charges or local taxes (Leigland and Thomas 1999; Martinez-Vazquez 1999). Revenue bonds are usually backed by income streams from any of these three sources. For example,

⁸ Because state income tax rates are much lower than the federal government, the tax loss at a state government level is likely to be much lower.

the use of toll-road bonds requires that the issuing entity generates sufficient funds to repay the debt servicing as well as the principal.

Access to competitive debt markets enhances the efficient pricing of bonds. The vast majority of revenue bonds are issued through competitive tendering as opposed to negotiation mechanisms. The issuer invites underwriters to bid for the purchase of bonds, then chooses the most attractive offer. Competition among bond underwriters is likely to ensure the least cost of the services provided by the bond issuing entity which will be reflected in lower yields. Empirical evidence suggests that yields declined by between 1 and 1.5 percentage points following the entry of commercial banks to underwriting revenue bonds.

Market discipline can be imposed through the contractual agreement of revenue bonds, which typically includes conditions such as the minimum user charge. Such provisions require the borrower to maintain a level of net project revenues at a specified minimum margin on the debt service (Fabozzi 2000). Further, indentures can specify the status of new loans (in terms of hierarchy) or a limit to further debt. These conditions are aimed at ensuring that bond issuers are making sensible investments and that they do not over leverage, as well as protecting the bond purchasers (Temel 2001).

User-based cost spreading

The use of revenue bonds to finance infrastructure can potentially encourage user-based cost recovery of public services across multiple generations. The term to maturity of revenue bonds can be designed in a way that matches the expected useful life of the assets in most cases (Fabozzi 2000). Thus, the consumption of services can be broadly matched with payments for those services. Matching the duration of assets with those of liabilities prevents some users making a disproportionate contribution, or debt being passed from one generation to following generations, that do not benefit from the investment.

Further, the debt is typically repaid from user revenue collected through fees or hypothecated taxes, rather than general government appropriations. This reduces transfers across taxpayers in different regions and between users and non-users.

Nevertheless, with tax-exempt bonds, the general taxpayers' subsidy of the interest remains. As a result, the tax-exempt nature of revenue bonds can result in inequity when some communities use revenue bonds to finance projects that do not provide a benefit to all taxpayers. For example, the tax exemption of bonds issued by public utilities benefits customers (by way of lower prices) at the expense of the broader community.

Market distortion arising from tax-exempt status

The use of tax-exempt revenue bonds enables publicly-owned businesses to sell their goods and services at a lower price than their private-sector counterparts, all other things being equal. This advantage is said to encourage monopoly government ownership with implications for competition and innovation (Edwards 2006).

It should be noted, however, that in many of the studied countries, there are policies aimed at ensuring the private sector is not disadvantaged by unfair competition from the public sector (that is, competitive neutrality). For example, in Australia, GTEs are subject to debt guarantee fees on their debt to offset other competitive advantages implicitly provided by government guarantees.

Another type of market distortion relates to private investment. The ability to source capital below the market rate can potentially increase the after-tax return of investment financed by tax-exempt bonds, thereby reallocating resources away from non-tax exempt investments that have a fundamental higher rate of return.

In addition to the market distortions, tax-exempt bonds have implications for the distribution of the overall tax burden on the community. Tax exemption encourages higher marginal taxpayers to invest in bonds to minimise their tax burden, especially when marginal tax rates are relatively high. The effect of this is that individuals on lower marginal tax rates contribute relatively more to the overall tax burden. The overall tax burden on the community becomes less progressive as a result.

Rent seeking

The tax-exempt nature of revenue bonds has also been criticised for encouraging rent-seeking activities. Rent-seeking refers to making money by manipulating the economic environment rather than by undertaking activities with the intent of a profit through trade and production of wealth (Kaufman 2004; Pasour 1983).

Zimmerman (2004), a critic of tax-exempt bonds, has identified rent-seeking activities by those promoting the private use of revenue bonds to access low-cost debt such as developers of stadiums and convention centres. He has also claimed that parties such as underwriters tend to increase bond volumes and issuance costs to take advantage of tax subsidies. The latter concern seems to have had been shared by legislators, who since 1986 have limited the issuance cost to a maximum of 2 per cent of revenue bond proceeds.

Key characteristics of specific-purpose bonds

These strengths and weaknesses are reflected in the characteristics of the financing vehicle:

Risk management — specific-purpose bonds should force better management of project risks than funding by budget appropriation. However, the link between the productive efficiency and bond service could be weak where debt service payments are met from revenue sources unrelated to project service delivery.

Transaction costs — competition in the underwriting market lowers transaction costs, but these can still be considerable with brokers and rating agencies required to provide information on the investment to the market. As long as the market for these types of bonds remains sound, cash to finance projects should be readily available and projects delays can be avoided. Some revenue bonds contain provisions for greater flexibility for both investors and issuers. In general, they are less flexible than most corporate bonds and other market funding mechanisms, which may result in higher costs if refinancing is desirable during the life of the asset.

Market and other disciplines — specific-purpose bonds should provide the underwriters and investors with an incentive to undertake due diligence on the investment. Public agencies that have carriage of the investment will also have an incentive to be better informed in order to assess the potential to service the bonds. This may improve the information going into the investment decision and hence allocative efficiency.

6 Off-budget financing by government trading enterprises

Key points

- In a number of the studied countries, public infrastructure is financed through legally independent enterprises owned by the governments (known as government trading enterprises (GTEs), or by similar descriptors).
 - Investments by GTEs are typically not included in government budgets and are separately reported.
- Over the past two decades, there has been a reduction in overall GTE investment in countries such as Australia and the United Kingdom.
 - This trend is, in part, an outcome of privatisation initiatives in these countries.
 - Nevertheless, GTEs remain responsible for significant economic infrastructure investment.
- Across the studied countries, GTEs have undergone significant corporate governance and financial reforms that have enhanced their independence and accountability for performance, with positive consequences for investment and financing decisions.
 - As a consequence of these reforms, they are in a stronger position to finance investment from retained earnings and (off-budget) borrowing.
 - However, governments continue to provide equity injections to finance investment in some circumstances.
- GTEs are suited to infrastructure industries with substantial public good aspects because of their potential to generate revenue through user charges to help fund infrastructure capital and operating costs.
- Borrowing places limits on discretionary use of cash flows, and enhances scrutiny and discipline on investment and financing decisions.
 - However, these disciplines are exercised by central agencies, rather than markets if the GTE is required to borrow through a central borrowing authority.
- The use of off-budget financing through GTEs has raised concerns over the possibility of bypassing budget processes which were established to ensure accountability and transparency of capital expenditure decisions.
 - However, this can be addressed by transparent external governance processes.

In many OECD countries, off-budget transactions are conducted through businesses commonly known as government trading enterprises (GTEs).¹ GTEs have a corporate structure and are subject to Corporations Law, and may be fully or partly owned by government. The distinguishing characteristic of a GTE is that government has a controlling interest. Most GTEs in Australia are fully owned by state or territory governments. These entities play an important role in providing economic infrastructure services in sectors such as communications, energy, transport and water supply (section 6.1).

GTEs are generally operated to provide goods and services on a commercial basis by either substantially or fully covering their costs (PC 2007a). While user charges are the main source of revenue, governments also may directly purchase or subsidise services.

The GTE sector has undergone significant reform in recent decades. The reforms have tended to enhance their independence and increase their accountability to their shareholder – the government. As a consequence they have greater control over their investment, funding and financing decisions, and greater incentives for efficient investment (section 6.2).

The resultant changes have had a bearing on the overall appropriateness of financing public infrastructure projects through GTEs (section 6.3).

6.1 Applications and trends

In many OECD countries, the financial and other activities undertaken by GTEs are not recognised in their owner-government budgets. These activities are known as ‘off-budget’ transactions, and are pervasive throughout most of the studied countries.

The broad characteristics of these entities, and trends in their infrastructure financing in the studied countries, are discussed in this section.

Characteristics of government trading enterprises

In most OECD countries, GTEs are legally independent and notionally operate at ‘arms length’ from government. From a corporate governance perspective, the key manifestation of this independence is an independent board of directors that is

¹ Government trading enterprises are also variously known as ‘public trading enterprises’, ‘government business enterprises’, ‘public corporations’, ‘state-owned enterprises’ or ‘government-owned corporations’.

responsible for setting the strategic direction of a GTE. The board appoints a chief executive officer who is responsible for investment and operational decisions (recognising that the board might wish to have the final determination in all major decisions).

GTEs are involved in the provision of infrastructure and the production and provision of services in key sectors of the economy, both at the national and sub-national level. They have played an important historical role in economic development in most of the studied countries.

GTEs finance their public infrastructure investments through a variety of revenue sources, including:

- retained earnings — earnings not paid out as dividends or taxes that are available for subsequent reinvestment by the GTE
- budget appropriations — public finances set aside by a legislature, on behalf of a government, and allocated to GTEs (usually as an equity injection or as payments for community service obligations)
- borrowing — debt security instruments, including those issued on behalf of the GTE by a central government borrowing agency.²

The relative importance of these sources of finance differs according to the fundamental nature of the business (for example, its capital intensity and security of cash flow), policy circumstances and their operating environments.

The capacity of GTEs to borrow for their capital projects, and limits on such borrowings, are established by their Act or other owner guidelines. In addition, GTEs can be required to borrow through a central borrowing agency which can issue corporate bonds or project bonds (chapter 5) on behalf of the GTE, or issue a loan to the GTE financed from general borrowing (chapter 4). Alternative financing vehicles are borrowing from banks or other financial institutions, or issuing bonds directly to the market.

The use of retained earnings to finance investment depends on cash profits and on the government's dividend policy. Most GTEs raise revenue from user charges and access fees, however, these are usually subject to economic regulation. The scope for GTEs to generate cash profits will also depend on the cost of obligations to implement certain non-commercial services on behalf of their owner governments (Bottomley 2000), and whether these are explicitly funded.

² GTEs in some countries are also responsible for receiving and managing contributed infrastructure assets (chapter 7).

As the services provided by GTEs are typically capital-intensive in nature, generally requiring large or lumpy investments, retained earnings are a limited financing option, so the bulk of large investments are financed through borrowings or capital (equity) injections from the government. Substantial capital resources have been vested in these entities, and they continue to be significant providers of economic infrastructure services.

Infrastructure financing by government trading enterprises

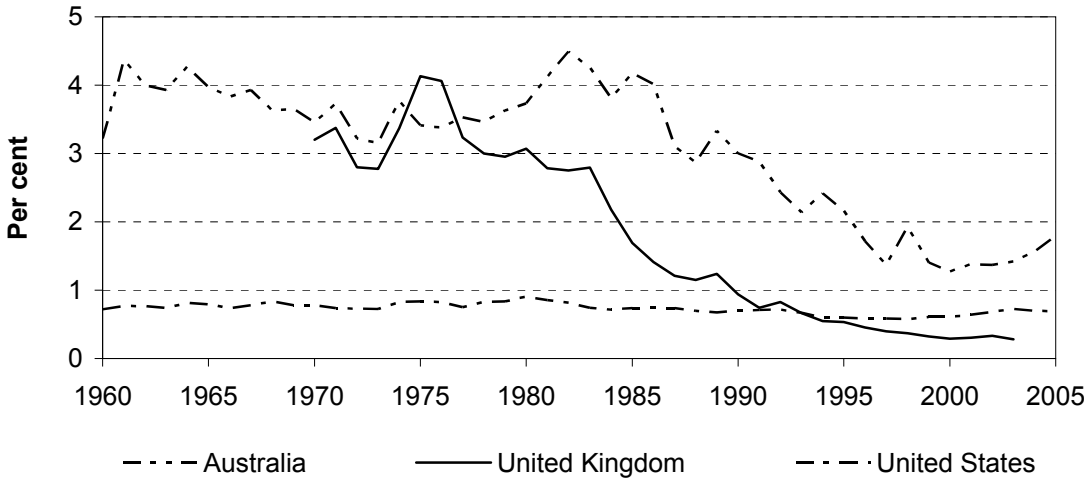
Inter-country comparisons of the public infrastructure financing activities of GTEs are not generally available. In large part, this is attributable to the variation in reporting activities across countries. However, examples of the experience in Australia and overseas were drawn on for this study.

Although the examples cited in this section are necessarily selective, they nonetheless illustrate that investment and financing decisions by GTEs are influenced by a complex interplay of factors — such as the demand for infrastructure services, asset renewal requirements, technological change and the impact of government policies.

Trends in investment by GTEs

Comprehensive timeseries information for total GTE investment expenditure is available from the national accounts of three of the studied countries (figure 6.1).

Figure 6.1 Government trading enterprise investment as a proportion of GDP, 1960–2005



^a The data used in this figure are expressed in nominal prices.
 Sources: ABS (2007a); UK Office for National Statistics (2007); BEA (2008); World Bank (1995).

For two of the three countries, capital investment by GTEs, as a share of GDP, declined over the past two decades. In Australia, GTE investment fell from 4.5 per cent of GDP in 1982 to 1.8 per cent in 2005. Similar trends have been experienced in the United Kingdom, with investment declining from 4.1 per cent of GDP in 1976 to about 0.3 per cent in 2003. On the other hand, the share of investment by GTEs in total economic output has remained relatively steady in the United States, albeit at less than 1 per cent of GDP throughout the period.

To some degree, the reduction in relative GTE investment in Australia and the United Kingdom reflects the impact of privatisation. For example, the privatisation of UK telecoms, gas, airports, water, electricity and railways during the 1980s resulted in as much as 15 per cent of gross domestic fixed capital formation being transferred from the public to the private sector (Pollitt 2002).

GTE's use of different financing vehicles in Australia

In Australia, GTEs accounted for about 7 per cent of national gross fixed capital formation in 2005-06 (PC 2007a).

Australian GTEs finance a large proportion of their capital investments through debt (box 6.1). The weighted average debt-to-equity ratio for the 84 GTEs monitored by the Productivity Commission (excluding Telstra) in 2005-06 was 48 per cent.³

Debt-to-equity ratios have generally increased considerably over time. For example, they increased from 88.5 per cent in 2000-01 to 97 per cent in 2005-06 for electricity GTEs and from 35.6 per cent to 100.3 per cent for urban transport GTEs. In the water sector, the average debt level increased by 9 per cent (\$34 billion) between 2004-05 and 2005-06 — leading to an increase in the debt-to-equity ratio of 4 percentage points to 28.6 per cent. On the other hand, the ratio declined in railways (from 74.7 per cent to 22.4 per cent) and remained steady for ports (32 per cent to 31.2 per cent) (PC 2002, 2007a).

³ The average gearing levels of GTEs in Australia are relatively lower than that of the private sector involved in equivalent activities (with the exception of port GTEs) (PC 2006c).

Box 6.1 Borrowing activities and capital structure of government trading enterprises in New South Wales

Debt is a major source of capital funds for GTEs in New South Wales, with the remainder of the capital expenditure financed from retained earnings. Borrowing is constrained by a gearing requirement for each enterprise imposed by the government.

As a percentage of gross state product, net debt of NSW GTEs has fluctuated over the past decade.

NSW GTE net debt as a proportion of gross state product (per cent)

1995	2000	2005	2010
4.2	3.2	4.3	7.4 (est.)

According to the NSW 2007-08 Budget Statements, net debt is expected to increase over the next four years in line with additional capital expenditure, particularly in water, electricity, transport and port infrastructure.

Gearing levels are projected to increase from about 27 per cent in 2005-06 to about 43 per cent in 2010-11. According to the Budget Statements:

Although this increase is significant, it remains well within commercially prudent levels. As a guide, for price-regulated electricity and water businesses (which account for most of the borrowings), gearing levels of less than 50 per cent are consistent with a strong investment grade credit rating. (p. 5)

These gearing ranges are assessed in accordance with the NSW Government's Capital Structure Policy for Government Businesses guidelines.

Source: NSW Treasury (2007a).

In Australia, GTEs have also occasionally received equity and capital contributions from their owner governments to finance infrastructure. Currently, equity injections account for only a small proportion of overall capital financing (box 6.2).

In addition to debt and retained earnings, some water GTEs have established renewals annuities whereby funds are set aside out of each year's revenue for periodic refurbishment and replacement of infrastructure assets.⁴ For example, Goulburn–Murray Rural Water in Victoria allocated over \$20 million to capital works through renewals annuities in 2005-06.⁵

⁴ Estimates of the future profile of capital expenditure are made, and an annuity is calculated to provide the funds in advance. The calculated annuity is then raised through fixed access charges to the service provided (Roper, Sayers and Smith 2006). It is an alternative to setting prices based on the consumption of existing fixed assets using an accounting measure of depreciation (PC 2004b).

⁵ A pricing review recommended changes to pricing policy by this GTE, including the adoption of a 'regulatory asset base' approach to pricing for infrastructure replacement and rehabilitation

Box 6.2 Examples of Australian GTE infrastructure projects partly financed by equity injections, 2005-06

In reporting the financial performance of GTEs in Australia, the Productivity Commission noted that a relatively small number of GTEs received equity and capital contributions from governments in 2005-06, namely:

- The Port of Melbourne Corporation's capital investment program of \$90 million, as well as dividend payments of \$19 million, was financed, in part, from internally generated sources, borrowings of \$15 million and a \$3.6 million equity contribution.
- The Public Transport Authority investment expenditure of \$484 million was partly financed by capital contributions from the WA Government of \$425 million, and a \$135 million increase in debt.
- SunWater received an equity injection of \$50 million from the Queensland Government, secured borrowings of \$86 million and dividends of \$3.2 million were reinvested to assist in financing capital projects such as the Burdekin-Moranbah Pipeline in central Queensland. In addition, SunWater recorded \$5.6 million in government grants for undisclosed reasons.

Sources: PC (2007a); Port of Melbourne Corporation (2006); PTA (2006); SunWater (2006).

Energy GTEs in New Zealand

New Zealand energy GTEs reflect the same trend to increased reliance on debt finance as observed in Australia. In 1999 three electricity generation GTEs — Genesis Energy, Meridian Energy Ltd and Mighty River Power Ltd (MRP) — were established through the break-up of the former Electricity Corporation of New Zealand (ECNZ). These GTEs produce over 60 per cent of the combined output of the larger generation entities, with the remainder provided by self-generation and independent operators of small generators (New Zealand Electricity Commission 2005).

All three GTEs have been active in recent years in developing new generation facilities, largely in response to concerns over the long-term availability of adequate electricity supply (PWC 2005). These projects have been financed, in part, by borrowings. For example, as at 30 June 2006, MRP had raised about NZ\$440 million in debt finance — of which NZ\$310 million was in the form of unsecured fixed rate bonds — to help support expanded geothermal and wind power activities. It is also in the process of lengthening its debt maturity profile and reducing its reliance on short-term bank financing (MRP 2006).

instead of the renewals annuity approach. This change was adopted in the 2006-07 financial year (GMW 2006).

Genesis Energy also increased its debt levels in recent years, in part to finance the expansion of existing facilities and the construction of new natural gas-fired power stations. The amount of debt finance raised by Genesis increased from over NZ\$150 million in 2002 to a total of around NZ\$300 million in 2006 (Genesis Energy 2006).

Over the five years to June 2005, Meridian spent NZ\$500 million in new generating capacity, and was active in renewable energy investment (Meridian Energy 2005). Improvements to cash receipts along with increases in debt were used to finance these projects (Meridian Energy 2006).

Box 6.3 Evolution of rail infrastructure financing by government trading enterprises in France

The Société Nationale des Chemins de fer Français (SNCF) was established in 1938 as part of the nationalisation of France's five main railways. Its functions include the operation of rail services for passengers and freight, and the maintenance and signalling of rail infrastructure.

Prior to 1997, the SNCF maintained ownership of the French rail infrastructure network. However, the SNCF had accumulated significant debts associated with building tracks for the high-speed TGV train network and other infrastructure developments. By 1994, the SNCF had cumulative debts of over €28 billion, or 2.6 per cent of France's GDP. This raised widespread concerns about the capacity of this enterprise to finance new infrastructure investment into the future.

In response to earlier EU directives to separate railway activities into the infrastructure network and train operations, the Government transferred ownership of the rail network to the Réseau Ferré de France (RFF) in 1997. However, it maintained the SNCF as a rail transport operator. The RFF had subsequently contracted out the maintenance and servicing of the network to the SNCF, and the SNCF pays access charges to the RFF for use of the infrastructure.

The French Government transferred SNCF's rail-related debts to the RFF in 1997. The RFF was assigned the responsibility to stabilise, and reduce over time, the accumulated debts transferred from the SNCF. The French Government has continued to subsidise the RFF in order to pay the interest on the debt previously borne by the SNCF.

A greater focus has been placed on infrastructure investment since the 1997 reforms. Total investment expenditure has increased from under €3.5 billion in 1997 to around €4.3 billion in 2005. Approximately €2.5 billion was invested by the RFF in 2005.

Sources: Freshfields Bruckhaus Deringer (2004); OECD (2005c); Perkins (2005); French Road Federation (2006).

Europe

GTEs provide infrastructure services in many continental European countries. For example, in France there are approximately 1500 GTEs with a combined total output of €150 billion, representing over 4 per cent of GDP (Wong 2006; The Economist 2007). GTEs in France have major interests in the aviation, electricity, rail (box 6.3) and telecommunications sectors.

North American experience

In Canada, GTEs play a significant role in delivering infrastructure services at both the national and provincial government levels in sectors such as electricity and rail transportation. However, the extent of involvement varies across provinces. For example, the western ‘prairie’ province of Saskatchewan provides telecommunication services through a GTE (box 6.4), as compared to the Manitoba Telecommunications System, which was privatised in 1996 with Bell Canada the major shareholder.

In the United States, most infrastructure services are typically provided by regulated private-sector entities. However, GTEs continue to maintain some presence in key sectors such as rail, electricity, ports and water supply.

At the US federal government level, the United States Postal Service, Tennessee Valley Authority and the National Railroad Passenger Corporation (box 6.5) are the most notable GTEs. These entities finance infrastructure investments through retained earnings and borrowings mainly from the Federal Financing Bank.⁶

At the state and local government level, public infrastructure services are provided by authorities and commissions rather than GTEs. However, the majority of services are typically provided by privately-owned businesses. For example, publicly-owned utilities supply just under 24 per cent of the total electricity supply, while the remainder is supplied by privately-owned power companies (EIA 2007).

The same can be said of sea ports and water supplies across the United States. Most sea ports are publicly-owned entities typically run as a statutory body under a state

⁶ The Federal Financing Bank (FFB), a federal government-owned corporation, borrows funds from the US Treasury to lend to federal agencies at a rate lower than what the borrower would have in the private credit market. FFB may also lend to private borrowers that have federal guarantees. Indeed, in 2007, all of the debts in FFB’s portfolio were federally guaranteed, except those of the United States Postal Service (FFB 2007).

Box 6.4 Financing activities of SaskTel (Saskatchewan, Canada)

Saskatchewan Telecommunications (SaskTel) is a Canadian provincial GTE that provides telecommunications services to over 425 000 business and residential customers in the province. It also conducts operations in other Canadian provinces and in over 30 countries.

SaskTel has invested over C\$2.7 billion in its provincial telecommunications networks since 1997. In 2006 alone, it invested approximately C\$233 million in areas such as internet and mobile telephone services. In early 2006, SaskTel announced a Next Generation Access Infrastructure plan with additional capital expenditure of C\$310 million to 2010 for new fibre-optic cable services.

In recent years, much of SaskTel's investments have been self-financed through retained earnings. In 2006, cash used in investing activities was C\$87 million higher than in 2005. The amount of long-term debt, which is issued through, and guaranteed by, the Province of Saskatchewan, was reduced by about C\$40 million over the 12 months to 2006. This reduced the debt to equity ratio to 30.5 per cent in 2006, down from 40 per cent in 2002.

There remains a longstanding debate in Saskatchewan regarding the possible privatisation of SaskTel. Against the background of a more competitive telecommunications market, commentators have questioned the financial performance of a number of high-profile investments by SaskTel outside of Saskatchewan — such as the Navigata Communications venture in Vancouver, British Columbia — which yielded revenues below expectations.

Sources: SaskTel (2002); SaskTel (2006a); SaskTel (2006b).

jurisdiction, except the Port of New York and New Jersey. Generally, these ports finance their infrastructure investment through either specific-purpose (unlimited) port improvement bonds or through municipal bonds (chapter 5).

Water supply is another area where much of the service is provided by the public sector commissions or authorities. However, with the advent of public-private partnerships (PPP), around 7.5 per cent of the water entities are engaged with the private sector, while another 8 per cent of the water entities are privately-owned companies (chapter 8).

The publicly-owned water entities mainly finance their infrastructure investments from retained earnings, debt and grants. Those engaged in PPPs typically source debt from the private capital markets or through private-activity bonds (chapter 5). For example, the Tampa Bay seawater desalination facility, which became operational in 2005, was partly financed by a private-activity bond worth US\$108 million (Deane, Hedlund and Shea, 2005).

Box 6.5 Rail infrastructure financing in the United States

The National Railroad Passenger Corporation (Amtrak), established in 1970 under the *Rail Passenger Service Act*, provides rail passenger transportation service in the major intercity travel markets. Amtrak operates commuter rail operations on behalf of several states and transit agencies. It also provides equipment maintenance services and has leasing operations.

Amtrak has a history of substantial operating losses and is highly dependent upon Federal Government subsidies to sustain its operations. As recently noted by KPMG in their Independent Auditors' Report, Amtrak would not be able to continue to operate in its current form without such subsidies (Amtrak 2006). This financial position has been influenced, in part, by strong competition from other modes of passenger and freight transport (CBO 2003a).

As a consequence of its operating performance, Amtrak has been unable to use retained earnings to finance infrastructure investment and instead relies on borrowings and grants. In 2006, Amtrak recorded debt of US\$390 million, which included bonds of around US\$62 million. This is slightly lower than the US\$440 million debt in 2005.

For the 2007 financial year, Amtrak requested funding from the US Government of US\$1.6 billion. This includes US\$730 million for capital (rolling stock and infrastructure), US\$500 million for operating support, US\$300 million for debt service (to service Amtrak's long term debt of US\$3.6 billion), and US\$75 million for working capital and restructuring support.

Sources: CBO (2003a).

6.2 Policy issues

In Australia, reform of GTEs over recent decades has been undertaken in response to concerns about poor economic and financial performance. This was attributed to:

- inappropriate governance structures and the existence of competing policy objectives
- the lack of separation of their policy setting, purchasing, service provision and regulating roles
- muted competitive pressures facing monopoly GTEs and the associated failure to improve productivity and to modernise services and facilities
- the absence of capital market disciplines, including the threat of bankruptcy, takeovers or buyouts and, to an extent, a decline in credit status (EPAC 1990; Smith 1992).

These problems were thought to have increased the risk of poor investment decisions adversely affecting overall resource efficiency.

In response, GTEs were reformed to operate on a more commercial basis. The stated intention was to replicate, as far as possible, the economic, financial and corporate governance arrangements that apply to the private sector — a process generally known in most countries as ‘corporatisation’. These reforms included:

- changes to corporate governance arrangements such as the appointment of independent GTE boards with greater investment and operational flexibility
- measures to ensure ‘competitive neutrality’ between GTEs and the private sector, including the application of general corporate laws and business regulation to GTEs, and the payment of taxes or tax-equivalent payments, dividends and debt guarantee fees by the GTE to their owner government
- restructuring GTE activities, including the creation of separate entities to manage otherwise conflicting objectives in service delivery, policy making and regulation.

Some aspects of these reforms, which are discussed below, have a significant bearing on the role of off-budget infrastructure financing through GTEs.

Capital structure issues

A key objective of the reform was for GTEs to operate commercially. In order to meet this objective, managers and boards have to identify the ‘optimal mix’ of financing — the capital structure where the weighted cost of capital is minimised — to maximise shareholder value. Both the choice of capital structure and ongoing government interventions potentially affect a board’s ability to realise and maintain an appropriate capital structure.

Effect of highly leveraged structures

It has been argued that leveraged capital structures increase discipline on GTE investment decisions (PC 2006c; Tirole 2006; Williamson 1996). First, having a significant proportion of capital expenditure financed through debt and having to make interest payments serves as a discipline on managers. The reduced cash flow also constrains the ability of managers to over invest. Second, debt financing potentially exposes managers to greater external scrutiny by lenders, disciplining investment and limiting managerial discretion (box 6.6).

Box 6.6 External limits on managerial discretion in private-sector businesses

Asymmetries of information provide management with the opportunity and incentive to pursue their own objectives rather than maximise profit. However, for private-sector businesses, there are incentives for managers to make investment and financing decisions that maximise shareholder returns (including remuneration and job security).

Stock markets create incentives to analyse performance and prospects of public companies and this information is capitalised in the price of companies' shares. They also create a market for corporate control, where the buying and selling of shares provides an avenue for changes in ownership and management. Competition serves to maintain pressure on manager's performance, with bankruptcy the ultimate sanction against poor management in the private sector.

Source: Church and Ware (2000).

For GTEs shareholder activism takes a different form than experienced by private companies as it can reflect government objectives other than profit maximisation. Creditors may take a greater interest in cash flow to meet debt service obligations than does the government shareholder, and hence creditors should provide increased pressures for efficient investment. However, if the debt comes with an implicit or explicit government guarantee, this commensurately reduces the incentives for creditors to provide such discipline.

Increased leverage (the debt to equity ratio) will raise the cost of financing as the exposure to default risk rises for the creditors. At some point the benefits from debt financing will be outweighed by this rising risk premium. The higher overall cost of capital discourages, at some point, the debt financing of projects.

For GTEs in particular, there could be reduced scope for gains from a highly leveraged capital structure. They commonly have a high proportion of specialised assets that have limited alternative uses. This could raise the cost of debt finance (Williamson 1996).⁷

GTEs are also generally subject to price regulation. However, if a highly leveraged and financially distressed GTE has to increase prices in order to meet interest payments on debt, a regulator might have limited ability to protect consumers. This effectively results in a transfer of some of the risk from creditors to consumers (OFWAT and OFGEM 2006).

⁷ Certain assets support more debt than others. A private-sector business with highly specialised assets — which would not have good resale value in a 'fire sale' situation — typically has a lower leveraged capital structure.

Centralised borrowing arrangements

In some countries (including Australia), governments require GTEs to borrow through central borrowing authorities (CBAs), or other entities established for the purpose of raising debt finance.⁸ In other countries, such as Canada, sub-national governments (including Alberta, British Columbia and New Brunswick) coordinate the borrowing of local government bodies (including, where applicable, GTEs).⁹

A number of potential benefits of GTE borrowing through CBAs have been identified (chapter 4). First, governments can more effectively monitor the loan-raising activities of GTEs. This facilitates the coordination necessary to achieve the overarching macroeconomic and fiscal policy objectives of governments (chapter 2).

Second, governments and, in some cases, GTEs can benefit from a lower cost of financing through central borrowing efficiencies (box 6.7). Economies of scale associated with centralised borrowing arrangements can help reduce the transaction costs for smaller GTEs compared with the alternative of stand-alone borrowing in the open market. Economies of scale can also result in deeper market liquidity and lower financing costs because the number of common maturity date instruments is increased.

Finally, centralised borrowing protocols prevent unproductive intra-governmental competition within the capital market.

However, investment disciplines are attenuated when GTEs borrow through CBAs. For example, in Australia, all jurisdictions guarantee their Treasury Corporation debt (at least implicitly) and there is not a direct relationship between the bondholder, the GTE or the investment.¹⁰

⁸ These bodies are common in Australia. For example, approximately 56 per cent of borrowings undertaken by the New South Wales Treasury Corporation in 2006 were on behalf of the State's GTEs (Standard & Poor's 2006).

⁹ In the United States, on the other hand, GTE borrowings are often sourced through the market, for example by issuing specific-purpose securities. GTE borrowings in other countries, such as New Zealand, are also largely conducted in the open market (chapter 5).

¹⁰ The implicit government guarantee of GTE debt could be considered as the provision of 'off-balance sheet' equity finance by government. In other words, debt markets expect that in the event that a GTE becomes technically insolvent, government will meet outstanding liabilities (NSW Treasury 1988).

Box 6.7 Central borrowing and competitive neutrality

GTEs can face lower debt costs than their private-sector counterparts because lenders perceive that there is negligible risk of default by virtue of government ownership (PC 2002). Other things being equal, a GTE with borrowings that are either explicitly or implicitly guaranteed by its owner government is able to raise capital at a lower interest cost than its private-sector counterparts.

In response to this, the Competition Principles Agreement (CPA), which all Australian jurisdictions signed in April 1995, requires a debt guarantee fee to be imposed on GTEs to offset the competitive advantages implicitly provided by government guarantees.

The CPA stipulates that the fee should be commensurate with the credit risk the GTE would face if it had no guarantee — exposing the GTE to the full risk-related cost of its debt (TOIRGTE 1991a, b; PC 2002). As an effective premium on GTE borrowings, debt guarantee fees restore competitive neutrality between the public and private sectors.

Some OECD countries, including Canada, have initiated similar policies, whereas in other countries such as the United States, competitive neutrality issues are addressed through anti-trust and other general competition laws.

As noted in chapter 5, the use of specific-purpose securitised borrowing on appropriate projects can overcome the limitations of centralised borrowing by providing exposure to capital market disciplines and greater transparency.

Project bondholders have an incentive to ensure that the projects supporting the debt have commercial merit when the repayment of revenue bonds is not backed by taxpayers — increasing the likelihood of efficient investment and financing decisions by GTE managers. These market-based disciplines can also improve the overall financial performance of GTEs by compensating for the weak external limits on managerial discretion. Moreover, governments would be required to make explicit any non-commercial objectives and fully fund the cost of achieving them.

Specific-purpose securitised borrowing undertaken through centralised borrowing agencies, as it is by US state governments, avoids any loss of the scale economies discussed above. There is no impact on general-purpose borrowing because the overall level of public borrowing remains the same. Indeed, the offering of a wider range of debt instruments is potentially advantageous to governments.

Equity withdrawal policies

Governments can influence the capital structure of GTEs through equity injections or withdrawals. Governments withdraw equity to:

- facilitate the restructuring of a GTE's capital and debt levels with the objective of better aligning the capital structure with those of similar GTEs within a sector or with similar businesses in the private sector
- allow governments to utilise capital in a way that maximises its overall returns to the community
- bolster the general government sector's budget position, by increasing on-budget revenue at the expense of off-budget debt
- realise a return from its investment (PC 2006c).

The manner in which equity is returned to government can vary. It can be in the form of direct capital repayments from a GTE to the shareholder, a transfer of an entity's equity that is directly financed through an increase in debt (debt-for-equity swaps), the payment of special dividends, and the use of share buyback schemes or interest-free loans provided by the GTE to the government (PC 2006c).

Alternatively, equity can be returned indirectly by GTEs through dividends that exceed profits (after tax) over a sustained period of time. When this occurs, the GTE is required to fund the dividend payment from borrowing as well as retained earnings, increasing their capital leverage.

In practice, the level of dividends varies across countries and individual GTEs, depending on the dividend policy of owner governments. In Australia, governments generally insist that GTEs provide an acceptable stream of dividends. However, for some GTEs — such as a number of regional water authorities — governments forgo their dividend entitlement (PC 2007a).

Dividend payments also vary over time. For example, GTEs in the Australian electricity sector as a whole recorded a dividend payout ratio of over 100 per cent in 2004-05 — implying that dividends paid, or provided for, exceeded after-tax operating profit. However, in 2005-06, the ratio fell to below 100 per cent.

The amount of dividend payments made by GTEs overseas has also been substantial. In New Zealand, the GTE sector returned approximately NZ\$1 billion (0.6 per cent of GDP) in dividends to the government in 2005-06 (including NZ\$878 million from Meridian Energy) (New Zealand Treasury 2007). GTEs in Sweden returned dividends in the order of SEK 9 billion (0.4 per cent of GDP) in

2001, with electricity utility Vattenfall accounting for over 11 per cent of total GTE sector dividends to the Swedish national government.

Concerns have been raised about a parent–subsidiary relationship existing between governments and GTEs where governments behave like a head office. The main manifestation of these concerns is withdrawal of equity that appears excessive at times. Extracting dividends from GTEs in excess of their profits potentially deprives the GTEs of finance that otherwise could have been utilised for capital projects:

... there are serious concerns where equity is stripped out of the GOCs [government owned corporations], and the funds are channelled into recurrent expenditure. This equity stripping is not sustainable. (Commerce Queensland 2003, p. 2)

Similar concerns have been raised with respect to GTE dividend payments in Canada and other countries.

In Australia, dividend payout ratios for GTEs do not appear to be unduly high relative to those prevailing in the private sector. For example:

- although GTEs generally reported higher dividend payout ratios than that of the top 50 Australian Stock Exchange (ASX) listed businesses between 1999-2000 and 2003-04 (PC 2005a),¹¹ research suggests that this and other forms of equity withdrawal have not significantly affected their financial performance (PC 2006c)
- payment of special dividends by Queensland electricity distribution businesses was found to have not affected their ability to undertake infrastructure network expenditure (PC 2005b).

Non-commercial objectives

Governments require some GTEs to provide services to address regional and income distribution concerns, among other things. These objectives are generally specified by government in the form of explicit or implicit community service obligations (CSOs). In some cases, these obligations are legislative requirements. Activities that potentially qualify as CSOs are:

- the delivery, at no charge or below cost, of services or service levels which would not be provided on purely commercial grounds — for example, some suburban off-peak rail and bus services

¹¹ The average dividend payout ratios for the public and the private sector were around 79 per cent and 66 per cent respectively between 1999-2000 and 2003-04 (PC 2005a, p. 21).

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- requirements to grant price concessions to particular groups of customers — for example, discounts for senior citizens or students that use bus services
 - requirements imposed on GTEs to purchase inputs at levels or types that differ from purely commercial levels in order to achieve other objectives — for example, employment creation goals (Queensland Treasury 1999).

Obligations to deliver services to final consumers or industry at uniform prices, regardless of variations in the cost of supply are also a form of CSO. For example, a uniform electricity tariff rate or postal rate necessitates transfers from some customers to others in cases where it might not be in the commercial interest of a GTE to do so.

In Australia, CSO payments accounted for 37 per cent and 23 per cent of total revenues in the urban transport and rail sectors respectively (PC 2002). Although the relative importance of CSOs varies across the studied countries, the obligations in Canada, France and the United Kingdom are most similar to Australia.

Ideally, CSOs should be directly funded by governments through budget appropriations to ensure transparency and accountability of decisions. In practice, however, many CSOs are funded internally through transfers and cross-subsidies. This involves some consumers meeting the direct cost of providing CSOs through prices that are higher than the (long-run incremental) cost of supplying the service to them (SCNPMGTE 1994).

An alternative method of funding a CSO is for governments to accept lower rates of return on GTE capital investment. In this case, revenues do not cover the full cost of providing the infrastructure service, including the opportunity cost of capital — effectively a transfer from taxpayers to customers (BIE 1995; PC 2002, 2008).¹²

Internal transfers and other failures to transparently fund CSOs can potentially distort prices and consumer behaviour and result in the misallocation of resources. In the case of GTEs, this can divert their resources away from alternative productive infrastructure investment, as well as compromise the pursuit of commercial objectives. Moreover, the non-payment of CSOs can affect the level of investment decisions by individual GTEs, their liquidity levels and short-term borrowing requirements.

The extent to which governments adequately fund CSOs that are imposed on GTEs is difficult to measure. For example, while many Australian GTEs disclose CSO

¹² Other forms of CSO funding include levies on users, direct cash transfers to users, vouchers, contracting out and explicit government reimbursement of losses incurred by the enterprise (SCNPMGTE 1994).

appropriations, several GTEs appear to provide non-commercial services at the direction of government without direct funding (PC 2002, 2005a).

The overall financial performance of Australian GTEs suggests that either CSOs are underfunded, prices regulated below the level required to make a commercial rate of return, or there is substantial inefficiency in the production of services for a significant share of GTEs in Australia. According to the Productivity Commission (PC 2007a), around half of the GTEs monitored did not achieve a return on assets — earnings before interest and tax divided by average total assets — that exceeded the risk-free benchmark return in 2005-06.

Nevertheless, the GTE reforms in Australia are improving productive efficiency and financial performance as GTEs become more commercially focussed. Investment decisions are being made more on a commercial basis, and the choice of financing vehicle reflecting considerations of ideal capital structures. In addition, some GTEs have been either privatised or their activities outsourced for commercial purposes (including in the form of public-private partnership arrangements — chapters 8 and 9).

6.3 Strengths and weaknesses

GTEs continue to play an important role in investing in large-scale infrastructure projects in some countries, especially in communications, energy, transportation and water supply. When operated commercially these businesses can generate adequate revenues to fund specialised infrastructure assets and cover operating costs.

Although the historical, economic and political circumstances that led to their establishment varies across the OECD, GTEs are widely perceived as:

... a pragmatic response to economic problems, such as the need to eliminate, reduce or control a monopoly or to ensure an adequate supply of essential goods and services at reasonable prices when excessive financial or technical risks deter private-sector involvement or in cases where the private sector is not able to deliver what the government feels is required in the public interest. (Aharoni 1986, p. 4)

GTEs have a degree of financial independence from shareholder governments when after-tax and dividend profits can be retained. Thus, they are potentially able to make investment and financing decisions without recourse to the same level of bureaucratic controls, or budgetary constraints, which are typically faced by core government departments.

Moreover, governments have found it advantageous to delegate responsibility for some infrastructure investment decisions to GTEs (Rees 1984). It has been argued that GTEs have a capacity to provide better investment decision-making than the general government sector because they are managed by boards with the necessary financial and technical expertise (Kitchen 2004a).

However, in Australia, unlike in parts of the United States and New Zealand, GTEs do not directly face capital market pressures in financing infrastructure investment. Further, government controls or ad hoc equity withdrawals can dilute the potential benefits of the reform arrangements. Similarly, governments that use their ownership leverage to achieve a variety of non-commercial objectives can create difficult-to-resolve trade-offs that bear on investment, funding and financing decisions unless carefully managed through external governance arrangements (box 6.8)

The use of off-budget financing has raised concerns over the circumvention of budget processes established to ensure financial accountability of capital expenditures and fiscal control. In the absence of transparent external governance decisions, there is reduced exposure of investment performance to parliamentary and broader community scrutiny. Only ratings agencies — such as Standard and Poor’s — are likely to consider the whole-of-government position when determining overall sovereign credit ratings for governments.

A number of countries have taken measures to improve transparency and promote accountability in the sector. For example, in Australia, investment and borrowing intentions have to be outlined in statements of corporate intent as agreed upon annually between the GTE board and their shareholding Ministers. Moreover, GTE boards are required to obtain ministerial approval before entering into joint ventures or forming subsidiaries. In some jurisdictions — such as Tasmania — parliamentary approval is required for the acquisition or disposal of certain assets.

GTE accountability is further promoted in some jurisdictions through specific parliamentary scrutiny committees — such as those in Tasmania and the Canadian provinces of New Brunswick and Saskatchewan. These provide public transcripts and reports on their deliberations into the infrastructure financing activities of GTEs. Also some countries, such as Australia¹³ and Sweden, produce annual reports that compare the financial performance of GTEs over time, and thus facilitate the potential role of ex post monitoring in enhancing long-term GTE performance.

13 The Productivity Commission (2007a) prepares a Research Paper annually on the financial performance of GTEs.

Box 6.8 Management of conflicting objectives through the external governance of GTEs

The corporatisation model has inherent tensions arising from commercial performance and other public interest objectives being pursued concurrently. Various systems of governance have been developed by governments in Australia to address these tensions. These systems are comprised of a patchwork of arrangements, many of which fall short of best practice.

Best practice external governance — the authority and systems utilised by ministers and government agencies for the control and supervision of public organisations (OECD 2002c) — has the potential to mitigate these tensions by the clarification of government policy objectives and the appropriate role of GTEs. This involves a clear distinction between external and internal governance, with greater transparency and scrutiny of the external governance role played by ministers.

Under best practice external governance, the non-commercial public interest objectives of GTEs would be made explicit and weighed against commercial performance. This would improve the performance of boards, resulting in better customer service, investment decisions and asset management. Further, without such clarification, it is not possible to assess whether the corporatisation model best achieves the public interest.

Other elements of best practice include:

- independence of GTE boards, with board members to be appointed solely on merit
- strong accountability, including the public availability of statements of corporate intent which express objectives as target outcomes
- rigorous reporting of outcomes, with sufficient resources available for substantive performance reporting and for national harmonisation of that reporting
- appointment of CEOs by GTE boards to further reinforce the delineation between external and internal governance, with CEOs subsequently being accountable only to the board.

Finally, governments should be prepared to expose to public scrutiny their rationales for ongoing public ownership. This is important in clarifying the non-commercial objectives of GTEs.

Source: PC (2005a)

Key characteristics of GTE use of financing vehicles

As discussed above, GTEs rely on three types of financing vehicles – retained revenue, borrowing and capital injections from the government as shareholder. In Australia, reflecting broader trends, GTEs are increasing their debt to equity ratio, moving to capital structures that have higher leverage. New infrastructure

investments, consequently, are more likely to be predominantly debt financed, although a mix of instruments is often used. Government largely determines the capacity of GTEs to finance through retained earnings as it sets the dividend requirements, and through other regulations that may limit the scope for revenue to exceed costs. In Australia, the potential for GTEs to conduct their own borrowing is also limited by requirements to borrow from the CBAs. Hence the main financing decision for GTEs once an investment decision has been made is whether to seek capital injections or to borrow from its government's CBA. The relative merits of the two approaches are similar to the government's own direct financing decisions (chapter 2).

The critical issue raised by this chapter is whether it is better for government to invest in infrastructure through a GTE or directly. The relative merits can be assessed against the three criteria for efficiency:

Risk management — Much of the discussion above focused on the greater incentives GTEs have for efficiency in production and potentially for investment decisions. The greater the government commitment to independent and accountable governance the greater incentive the GTE has to manage the project risks of their investment, regardless of the financing arrangements. Debt finance may make the GTE more sensitive to the cash flow implications of the investment, hence to risks posed to outcomes such as timeliness of construction and quality.

Transaction costs — The costs of arranging finance for GTEs depends on their expertise as well as the vehicle chosen. Given their specialisation and commercial focus, GTE expertise could be considerably greater than in a government department. The current arrangements for borrowing to be undertaken through a CBA provide for economies of scale that lower transaction costs, but limit the potential for market disciplines to be imposed.

Market and other disciplines — GTE investments are off-budget for government and hence may attract less political scrutiny than for direct public investment. However, the commercial imperatives facing a GTE should provide incentives for scrutiny of any proposed investments. The role of regulators, where the GTE operates in a regulated market, can impose discipline on the investment decisions where price rises are not justified solely on a cost basis.

7 Development contributions

Key points

- Development contributions have been widely used in Australia and overseas to fund 'basic' infrastructure associated with the development of land.
- Since the early 1980s, the range of infrastructure subject to contributions has expanded in Australia and overseas to include major headwork infrastructure (arterial roads, pumping stations), and social infrastructure (parks, libraries, affordable housing).
- The scope of mandated contributions varies significantly across jurisdictions in Australia, with greater flexibility in New South Wales and Victoria than in other jurisdictions.
- Contributions are equivalent to an up-front user charge for future infrastructure services. The contribution is equal to the benefit when a nexus is established between the development, the infrastructure and the mandated contributions.
 - When a nexus does not exist, they are more akin to taxes than up-front user charges.
- Contributions are generally required prior to construction, allowing more efficient timing of infrastructure provision.
 - Where these contributions are less than the full cost of the infrastructure, or where they are 'in-kind' such as land for a park, the publicly funded 'gap' has to be financed from other sources, including borrowing.
 - To the extent that they are passed forward to the home buyers, contributions also lead to price signals that promote more efficient investment decisions.
- Transaction costs can be high, particularly where negotiation or disputation occurs.
 - They can also place undue emphasis on 'greenfield' development over urban infill because legislation usually links the ability to impose contributions on subdivision or rezoning approvals.

In the studied countries, local governments have a key role in the provision of infrastructure associated with local residential and business developments. Until the mid-1950s, the majority of urban infrastructure in Australia was financed from local government rates or state or federal government grants. User charges existed for connection and use of services such as water, but were limited in application beyond this.

Over recent decades, local governments have embraced alternative sources of funding and financing, including development contributions. The use of development contributions in Australia and relevant overseas experience are discussed in section 7.1. In section 7.2, the policy concerns associated with the implementation of development contributions systems are discussed. In section 7.3, the strengths and weaknesses of development contributions as a source of funding are explored.

7.1 Applications and trends

Urban infrastructure includes sewerage, drainage, water, electricity, roads, public transport networks and facilities such as parks and libraries (box 7.1). It is fundamental to the wellbeing of local communities, and also contributes to the performance of Australian businesses (ACG 2003).

It has been common practice in Australia from the 1950s for developers to provide basic ‘private’ economic infrastructure (such as roads and drainage) as part of new subdivision developments, with electricity and telephone connection being provided by the relevant authority (Neutze 1997; PC 2004c). Other types of infrastructure (such as parks, libraries and recreational facilities) were funded by grants from higher levels of government, local council property rates and, to a lesser extent, direct charges for connection and service use (McNeil 1998).

The trend in many developed economies has been to require developers to contribute to an increasing range of urban infrastructure (Neutze 1995). The Productivity Commission, for example, observed that for at least the past 20 years:

... the trend has been to install infrastructure from the outset, with more of the initial funding burden shifted onto developers through upfront charges. Developers have in turn sought to pass the charges on in higher prices for serviced lots and house and land packages. (PC 2004c, p. 156)

These changes represent a response to a number of significant developments, including:

- *Increasing demand for, and cost of, infrastructure* — urban expansion and higher expectations from more affluent societies have increased the demand for high quality and a broad range of urban infrastructure (Neutze 1997). In addition, urban expansion — with new developments typically located in outlying, low-density locations — raises the cost of infrastructure. This increases

Box 7.1 Urban infrastructure

Urban infrastructure is traditionally defined as the economic and social networks which are essential for social cohesion and for the efficient functioning of the economy (OECD 1991; Neutze 1997).

Economic infrastructure comprises the physical networks such as hydraulic facilities (water, sewerage and drainage), roads and other transport facilities, energy distribution networks and telecommunications (PC 2004c). This can be further differentiated as:

- Basic economic infrastructure — infrastructure within a subdivision, in most cases connecting each lot to major infrastructure (for example, roads, water, sewerage, gas and electricity connections). Basic infrastructure is sometimes referred to as 'private' infrastructure, because the benefits accrue overwhelmingly to the residents of the particular subdivision.
- Major (shared) economic infrastructure — infrastructure that services a number of land subdivisions. Examples include trunk water, sewerage and drainage, gas and electricity service headworks, urban rail services, major roads and airports.

Social (or community) infrastructure comprises infrastructure used in the provision of welfare and general community support. It can primarily be for the use of residents within a subdivision (for example, parks), or it can service a whole range of subdivisions (for example, libraries, sporting facilities, schools and hospitals).

Environmental infrastructure comprises public investment to protect ecosystem services. Ecosystem services are services provided by the environment that provide resources directly into the economic system (including fisheries, forests and minerals reserves), or services to sustain human life (such as climate regulation, pollination, water purification, genetic diversity and visual amenity) (PC 2006a).

- Examples of public investment to protect ecosystem services include expenditure on national parks, catchment management, wetland restoration, revegetation planting, and bio-diversity protection. Environmental infrastructure that is focused on protecting and restoring natural ecosystems is also termed 'natural capital'.

Sources: Applied Economics (2003); OECD (1991); Neutze (1997); PC (2004c, 2006a).

directly with distance from essential headworks and inversely with the density of development (Slack 2002).¹

- *Fiscal constraints on local governments* — the traditional sources of infrastructure finance available to local governments (such as local taxes and grants from higher levels of government) have been significantly reduced since the 1970s. Local government tax revenues have been constrained by measures

¹ An alternative argument is that urban expansion paves the way for higher-density infill development in the future. Under this argument, infrastructure costs will eventually be recouped and the cost of expansion is simply the cost of providing the infrastructure in advance of when it is needed (Slack 2002).

such as California's Proposition 13 referendum 'tax payer revolt' and rate capping in Australia. Higher levels of government have withdrawn support in response to general economic conditions, changing attitudes toward the role of government and a policy bias in favour of greater fiscal responsibility. The net effect has been a political unwillingness or inability to use national or local taxes to finance urban infrastructure (Grant 1999).

- *A shift towards the use of economic instruments* — during the same period, public policy has increasingly embraced solutions based on economic incentives. Instruments such as user-pay or beneficiary-pay charges have been favoured as a method of influencing development decisions and promoting efficient investment — as well as being a way of recovering infrastructure costs.²

These responses by governments have shifted part or all of the costs of development infrastructure to the private sector through development contributions and other mechanisms.³

Data on the level of, and trends in, development contributions are not readily available for Australia.⁴ According to published financial reports, NSW local governments received at least \$232 million in development contributions in 2005-06.⁵ Accumulated (unspent) contributions amounted to more than \$1.1 billion at the end of that year. The reliance on contributions varied significantly across councils. For example, the largest ten recipients accounted for 41.7 per cent (\$97 million) of contributions received by all 152 NSW local governments in that year (table 7.1).

Similar estimates for Victoria reveal that local governments in that State received around \$454 million in development contributions in 2005-06. The uptake of

² The users and beneficiaries of public infrastructure are not always the same. A landowner can benefit from proximity to public infrastructure — through higher land values for example — without actually using that infrastructure (Bell et al. 2005).

³ Useful overviews of developments are available for Canada (Kitchen 2004b; Slack 2002), the United Kingdom (Grant 1999) and the United States (Mullen 2007a; Galardi 2003).

⁴ Data compiled for official collections by the Australian Bureau of Statistics, or state and federal grants commissions typically group development contributions with other revenue such as statutory fees, other contributions (from higher levels of government) and donations.

⁵ This estimate is based on accounting *Note 17 — Statement of Contribution Plans* reported in local governments' general purpose financial reports in 2005-06. However, the treatment of 'in-kind' contributions (contributed assets) varies among local governments' financial statements. An additional \$113 million of 'in-kind' contributions can be identified under the 'non-cash financing and investment activities' entry of accounting *Note 11 — Note to the Statement of Cash flows*. Local governments in New South Wales also receive contributions in relation to their water and sewerage business activities. These amounts are not included in accounting note 17 or the above estimates.

development contributions is mainly concentrated in the high-growth regions, with the ten largest recipients accounting for 69.6 per cent (\$316 million) of contributions received by all 80 local governments in that year. However, these data are less reliable than for New South Wales and should be interpreted with care (see table 7.1, note d).

Table 7.1 Development contributions received by NSW and Victorian local governments, 2005-06 (\$million)

Local governments	Total revenue ^a	Open bal. ^b	Contributions received			Interest earned	Spent during year	Close bal. ^b
			Cash	In-kind	Total			
New South Wales' 10 largest recipients ^c								
Liverpool	136.0	61.2	21.5	–	21.5	4.8	20.0	67.5
Blacktown	212.2	49.2	10.1	1.3	11.4	3.0	10.6	51.7
Lake Macquarie	151.2	20.7	6.2	5.0	11.3	1.2	7.1	21.1
Wyong	172.6	68.2	9.3	–	9.3	3.8	27.3	54.0
Ku-ring-gai	82.9	11.2	9.1	–	9.1	1.0	0.1	21.2
Sydney	394.6	28.0	8.9	–	8.9	1.8	12.2	26.5
Baulkham Hills	99.4	47.6	8.0	–	8.0	2.3	19.2	38.7
Randwick	93.6	9.7	1.0	5.1	6.1	0.6	5.6	5.8
Shoalhaven	160.9	16.6	6.0	–	6.0	1.1	4.6	19.1
Coffs Harbour	105.8	15.9	5.5	–	5.5	0.9	4.3	18.0
<i>Total 10 largest</i>	<i>1 609.2</i>	<i>328.5</i>	<i>85.7</i>	<i>11.3</i>	<i>97.0</i>	<i>20.5</i>	<i>110.9</i>	<i>323.8</i>
Other	5 663.3	813.7	125.3	10.1	135.5	45.7	182.9	801.8
All	7 272.4	1 142.2	211.0	21.5	232.5	66.2	293.8	1 125.6
Victoria's 10 largest recipients ^d								
Whittlesea	164.1	na	na	na	73.4	na	na	na
Casey	177.6	na	6.5	42.3	48.8	na	na	na
Wyndham	136.2	na	8.9	36.3	45.2	na	na	na
Hume	152.2	na	0.8	30.4	31.2	na	na	na
Brimbank	131.0	na	1.1	24.8	25.9	na	na	na
Melton	82.9	na	2.1	21.3	23.5	na	na	na
Monash	118.1	na	2.9	15.0	17.9	na	na	na
Cardinia	61.1	na	2.5	14.8	17.3	na	na	na
Frankston	997.0	na	1.5	15.1	16.6	na	na	na
Bendigo	105.5	na	2.7	13.8	16.5	na	na	na
<i>Total 10 largest</i>	<i>1 228.4</i>	<i>na</i>	<i>29.1</i>	<i>287.2</i>	<i>316.3</i>	<i>na</i>	<i>na</i>	<i>na</i>
Other	3 880.2	na	34.7	77.3	138.2	na	na	na
All	5 108.7	na	63.8	364.5	454.4	na	na	na

^a Revenue from continuing operations. ^b 'Open' and 'close' balances relate to unspent contributions held as restricted assets. ^c Based on accounting Note 17 — *Statement of Contributions Plans*. Excludes contributions made to water and sewerage services operated by local governments. Also excludes \$113 million of 'in-kind' contributions recorded under accounting Note 11 — *Note to the Statement of Cash flows* but not recorded under note 17. ^d Based on published financial reports. Victorian local governments are not required to provide an equivalent of the NSW Note 17 disclosure in their financial reports. Consequently, estimates of contributions based on published reports require a greater level of subjective judgement, or they could include non-development contributions. – Zero or rounded to zero. **na** Not available.

Source: Local Government 2005-06 *General Purpose Financial Statements* (various).

Development contributions

In Australian States and Territories, developers contribute to the provision of basic infrastructure as a condition of receiving a planning approval (box 7.2). At a minimum, developers are required to contribute to the basic ‘private’ infrastructure that connects individual development lots to road (including footpaths and nature strips), communication, energy and hydraulic services.

Box 7.2 What are development contributions?

Development contributions are legally enforceable up-front contributions towards the cost of new or upgraded infrastructure required as a direct result of a new development. They usually take three forms:

- *transfer of land* — land ceded or ‘gifted’ to the government by the developer for roads, public open space, primary school sites, drainage and other reserves.
- *work-in-kind* — infrastructure works and facilities constructed by developers and subsequently transferred to public authorities on completion.
- *monetary charges* — monetary contributions towards the cost of acquiring land for public use, or providing infrastructure by public authorities or others.

Legislative authority

The power to mandate contributions varies considerably, reflecting differences in the enabling legislation. The legislative frameworks that bestow these powers generally embody the principles and objectives of the systems, the types of contributions that can be required and the scope of infrastructure for which contributions can be levied. For example:

- *New South Wales* — Sections 94 to s.94EC of the *Environmental Planning and Assessment Act 1979* and s.64 of the *Local Government Act 1993* bestow authority on local councils to mandate local infrastructure contributions.⁶ Following a review in 1993, local councils are required to have a development contribution plan in place as a prerequisite for levying development charges.

On 12 October 2007, the NSW Premier announced further reforms aimed at making development contributions more consistent, certain and transparent. A key change is that contributions are explicitly restricted to infrastructure and

⁶ Sections 94ED to s.94EH of the *Environmental Planning and Assessment Act 1979* also enable the Minister for Infrastructure Planning and Natural Resources to declare ‘growth centres’ as ‘special contributions areas’, and impose ‘special development contributions’ as a condition of development consent.

land requirements to support land developments (rather than infrastructure requirements driven by population growth). Other changes, including the framework for setting contributions and administering funds, are detailed in NSW Department of Planning circular PS 07-018 (NSWDP 2007).

- *Victoria* — Part 3B of the *Planning and Environment Act 1987*, as amended by the *Planning and Environment (Development Contributions) Act 1995* and the *Planning and Environment (Development Contributions) Act 2004*, provides local councils with the authority to specify contributions on the basis of development contribution plans, conditions on planning permits, or voluntary agreements between councils and developers.
- *Queensland* — The *Integrated Planning Act 1997*, as amended by the *Integrated Planning and Other Legislation Amendment Act 2003*, enables local councils to require development contributions for ‘development’ infrastructure.⁷ The basis for charges is a priority infrastructure plan which identifies an infrastructure charges schedule for eligible development contributions. This plan also outlines the anticipated infrastructure needs for the community as a whole.
- *Western Australia* — The *Town Planning and Development Act 1928* allows government to require contributions for on-site physical infrastructure and the ceding of land for primary schools and open space. The scope of contributions is guided by Western Australian Planning Commission policies.
- *South Australia* — Development contributions in South Australia are dictated by the *Development Act 1993* and the *Local Government Act 1999*. The *Development Act 1993* allows councils to require basic subdivision infrastructure (access roads, hydraulic connections) and the dedication of open space (s.50A). Section 146 of the *Local Government Act 1999* allows the levying of separate rates, service rates and service charges which can be used as indirect development charges.
- *Tasmania* — Part 5 of the *Land Use and Approvals Act 1993* allows planning authorities (the local council) to ‘negotiate’ agreements with developers that specify development contributions for infrastructure as a condition of a permit, a planning scheme provision or a special planning order (s.73A). Section 70 of the Act defines infrastructure as the ‘... services, facilities, works and other uses and developments which provide the basis for meeting economic, social and environmental needs’.
- *Australian Capital Territory* — Although there is no statutory power to specify development contributions, s.184A of the *Land (Planning and Environment) Act*

⁷ The Act defines development infrastructure as the land or work-in-kind, or both land and work-in-kind, that provide hydraulic (including water supply, sewerage, drainage, water quality), transport and local community services, predominantly in the local area (DLGPSR 2004).

1991 provides for the levying of a ‘change of use charge’ (CUC) for any variation of a Crown Lease that increases the value of the lease.⁸ Developers can also be asked to provide infrastructure as a condition of the initial release of land under a Crown Lease with the cost of that infrastructure being offset against the amount paid to government for the lease (ACT Government 2007).

- *Northern Territory* — Part 6 of the *Planning Act* allows a local service authority (a local council) to make a contribution plan which mandates contributions towards infrastructure external to the development as a condition of a development permit.⁹ As at September 2007, car parking, roads and drainage were the only infrastructure for which authorities could demand contributions.

Principles underlying development contributions

The NSW, Victorian and Queensland systems are similar to those in the United States (box 7.3) and the United Kingdom (box 7.4) in that development contributions must satisfy explicit criteria.¹⁰ Although the language varies in the legislation, each system requires formal development plans that meet standards of *reasonableness* and *accountability*.¹¹

Reasonableness

Reasonableness encompasses the broad concepts of fairness, equity, sound judgement and moderation.¹² Two of the key principles underlying reasonableness

⁸ The CUC, which is effectively a ‘betterment tax’, is generally assessed at 75 per cent of the increase in value from a variation of a lease and aims to ‘... give back to the community some or all of the added value of your lease that results from the change to your lease’ (ACT-PLA 2007, p. 1). Monies collected through the CUC go into consolidated revenue rather than a separate infrastructure fund (ACT Government 2007).

⁹ Part 6 of the *Planning Act* also allows NT PowerWater to make a contribution plan that requires land owners to make a contribution for connections to hydraulic and energy services.

¹⁰ The Western Australia Planning Commission Planning Bulletin No. 18 — which provides guidance on the application of development contributions in Western Australia — contains similar principles (WAPC 1997).

¹¹ In both New South Wales and Victoria, a development contributions plan must be in place before contributions can be levied (DIPNR 2005; DSE 2003). In Queensland, a priority infrastructure plan with an infrastructure charges schedule must be in place before contributions can be levied (DLGPSR 2004).

¹² The Western Australian Planning Commission cautioned that in the NSW context, it is the local council which ultimately determines whether the contribution plan is reasonable (WAPAC 2004).

Box 7.3 Impact fees in the United States

Until 1987, impact fees (as development contributions are known in the United States) were based on local governments' 'police power' functions, with the courts playing an important role in determining guidelines for constitutionally valid impact fees. In 1987, Texas enacted the first impact-fee-specific enabling legislation. By 2007, 27 states had enabling legislation for impact fees. These Acts have tended to embody the standards and guidelines developed through case law (Mullen 2007b).

Dual rationale nexus established in case law

The guiding principles underpinning impact fees in the United States have been heavily influenced by legal challenges based on the 5th Amendment prohibition against 'taxation without just compensation'. Principles established in case law — and mirrored in state legislation — require that a 'dual rational nexus' be established between charges (or exactions) and the development. In particular, it must be shown that both:

- the new development will cause an impact on the community
- the impact fees must be used to mitigate that impact, and no more.

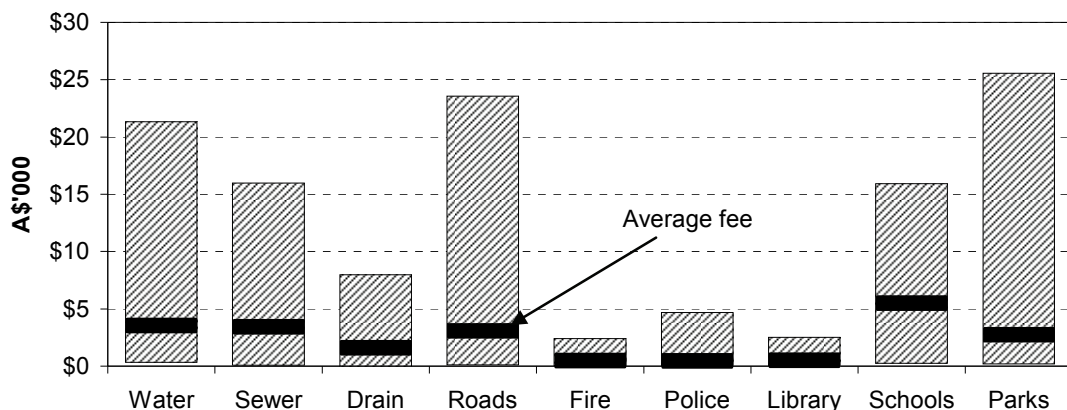
The second point is generally interpreted as also meaning that new developments should not be charged twice for the same infrastructure. Twenty-four state Acts provide for construction credits as in-kind contributions, and 16 state Acts provide for revenue credits to offset future property taxes that will be paid by the development. Six state Acts allow revenue credits for past property taxes (Mullen 2007a).

Eligible facilities and indicative fee level

Although most enabling Acts restrict the types of infrastructure for which fees can be imposed, the range of eligible facilities and services is typically much wider than in Australia. They include for example, fire, police and school services.

Total impact fees for a A\$265 000 20-square house in the surveyed jurisdictions ranged between A\$700 and A\$90 000 in 2006 (Mullen 2007b). The figure below also illustrates the considerable variation in impact fees for different infrastructure classes.

Range of US impact fees by type of infrastructure for a 20-square house, 2006



US dollars converted based on a 12-month average of the daily A\$/US\$ exchange rate.

Sources: Galardi (2003); Mullen (2007a, 2007b); RBA (2007a).

Box 7.4 Planning obligations in the United Kingdom

Planning obligations (as development contributions are known in the United Kingdom) are conditions of planning agreements negotiated as part of a developer's application for planning permission under section 106 of the *Town and Country Planning Act 1990* as amended by the *Planning and Compensation Act 1991*.

Capturing planning gain for the community

The UK system has many similarities with those in Australia and the United States in terms of the need to demonstrate *reasonableness* and *accountability* links between the obligations and documented planning objectives. However, the objectives of the planning system are much broader than in Australia. Circular 05/05 guidelines define the principal objectives of the planning system as being to:

... deliver sustainable development, through which key government social, environmental and economic objectives are achieved. (ODPM 2005, p. 9)

This provides local planning authorities with significant discretion with regard to the obligations that can be included in s.106 agreements. Recent trends suggest that the UK system places a greater emphasis on capturing 'planning gain'^a for public objectives, than on pursuing beneficiary-pays objectives.

Since the 1990s, the use of planning obligations has shifted away from financing narrowly defined off-site infrastructure (such as access roads), toward financing infrastructure and services that provide broader community benefits — the most notable being 'affordable housing'. A survey of s.106 agreements in 2003-04 found that affordable housing accounted for 63 per cent (£1.2 billion) of the £1.9 billion planning obligations contained in agreements (DCLG 2006b).

Negotiation and uncertainty

Although supported by government guidelines, planning obligation agreements in the United Kingdom are fully negotiated. One of the key advantages is that it provides a significant amount of flexibility to tailor obligations to different development situations. However, negotiated agreements are resource intensive, often lack transparency, require expertise, and can influence accountability, cost and the ultimate incidence of planning obligation contributions.

For example, Circular 05/05 guidelines explicitly state that '... planning permission may not be bought or sold ... [and that] ... planning obligations should never be ... a means for securing a betterment levy' (ODPM 2005, p. 10). However, anecdotal evidence suggests that the negotiation basis of the system might lead to divergence between intent and practice. Similarly, negotiated outcomes can introduce uncertainty and significant delays for developers.^b This influences development costs and the incidence of planning obligation contributions.^c

^a Planning gain is the increase in land value attributable to the granting of planning permission. ^b Around 45 per cent of planning permission applications took longer than six months to complete in 2004 (Barker 2006). ^c Systems designed to capture planning gain should shift planning obligation costs to the original owner of the land (Grant 1999).

Sources: Barker (2006); DCLG (2006a, 2006b); Grant (1999); ODPM (2005).

are nexus and apportionment:

- *Nexus* — formal development plans must demonstrate a linkage between the development and a need for increased infrastructure for which contributions are required. Nexus can be viewed from three perspectives:¹³
 - *causal nexus* — the development actually creates a need for, or increases demand for public infrastructure
 - *spatial nexus* — the public infrastructure funded by the contributions is likely to serve the needs of the development making the contributions
 - *temporal nexus* — the public infrastructure is provided within a timeframe that will benefit those who contributed towards its cost.
- *Apportionment* — apportionment encapsulates the principle that the share of new infrastructure costs recovered through contributions should be proportional to the impact on infrastructure from the new development. For example, where infrastructure (such as community centres and open spaces) provides benefits to the wider community, the new development ought not to be expected to meet the full cost of infrastructure provision. Rather, the contribution liability should be proportionate to the share of the total benefit from financed infrastructure that is received by the development. Apportionment should also take into consideration previous payments by the developer (including land, work-in-kind and funds) to the government.

Reasonableness criteria are linked with the economic concept of user charges where the contribution corresponds to the private benefit that the owners of individual developments receive from the infrastructure provided. However, contributions are redistributive and similar to a tax when contributions fund public benefits (Cox 1991; IC 1993; Neutze 1997).

Accountability

Public and financial accountability principles are designed to ensure that contributions are used for the purpose for which they were earmarked (according to work schedules in formal development plans). The process of formalising

¹³ The NSW Department of Infrastructure Planning and Natural Resources notes that the interpretation of causal, spatial and temporal nexus varies between developments and types of infrastructure (DIPNR 2005). Some infrastructure (such as parks) must be closely located geographically to provide service, while others (for example, an aquatic centre) can be located further away. Similarly, although a five-year threshold has previously been a benchmark for temporal nexus, some infrastructure might require a certain demand threshold for viability (such as a new bridge). In this context, the capacity of existing infrastructure to accommodate increased demand will influence the assessment of causal and temporal nexus.

development plans also provides for public accountability, with the public and other stakeholders able to comment and make submissions about proposed development contributions.

When governments fail to adhere consistently to these principles, uncertainty (or risk) is introduced into the financing decisions that developers make. Further, the level of infrastructure benefits capitalised into the land value will be uncertain if there is a possibility that contributions will be levied but not spent. This could reduce the willingness of developers to undertake projects and consequently limit the amount of funding that can be raised through contributions.¹⁴

Court appeals

A common characteristic of development contribution systems in Australia and overseas is the ubiquity of legal challenge. Section 97 of the NSW legislation allows developers who are dissatisfied with a contribution determination to appeal to the Land and Environment Court.

Appeals can result in significant adjustments to contribution liabilities.¹⁵ However, adherence by local governments to formal development plans results in many appeals being dismissed.¹⁶ Nevertheless, disputation contributes to higher costs and delays to development regardless of which party is successful.

Types of infrastructure eligible for contributions

In Australia, New South Wales and Victoria have the most liberal legislation, allowing contributions to be levied for a wide range of capital works associated with economic and social infrastructure (table 7.2).¹⁷ Yet these are modest when

¹⁴ The Allen Consulting Group argued that in New South Wales ‘... significant amounts of s.94 monies remain unspent or are spent on projects other than those against which they were raised’ (ACG 2003, p. 62). The Property Council of Australia estimated that in 2006 unspent development levies in Sydney amounted to \$603 million (PCA 2006, p. 1).

¹⁵ For example, in *Bennett R J and Anor v Bega Valley Shire Council [2007] NSWLEC 667*, the Court upheld the plaintiff’s argument that a cash contribution for provision of car parking was excessive (failing the ‘reasonableness’ test). As a result of the determination, the cash contribution was reduced from \$80 820 to \$24 000.

¹⁶ In *John Mariano v Mosman Council [2006] NSWLEC 271*, for example, Commissioner Watts found that contributions were consistent with the methodology in the Mosman Council’s Development Plan and dismissed the appeal.

¹⁷ Section 47L of the Victorian *Planning and Environment Act 1987* places a cap of \$900 per dwelling (or 25 per cent of the cost of non-dwelling construction) on the contributions that can be levied for ‘community’ infrastructure. Prior to 2004, this cap was \$450.

compared with some jurisdictions in Canada and the United States, and particularly with the United Kingdom where the content of negotiated planning obligations is virtually unbounded (box 7.4).¹⁸

Table 7.2 Public infrastructure eligible for mandatory contributions (excluding basic infrastructure)

	NSW ^a	Vic	Qld	WA	SA	Tas	ACT ^b	NT	US ^c	UK ^d	Can ^e
Parks	✓ ^f	✓	✓ ^f	✓ ^f	✓ ^f	✓	✓	✗	23	✓	5
Education	✓ ^e	✗	✗	✓ ^f	✗	✗	✓	✗	8	✓	1
Trunk roads	✓ ^g	✓ ^g	✓ ^g	✓ ^g	✓ ^g	✓	✓	✓	27	✓	8 ^h
Public transport	✓ ^f	✓	✗	✗	✗	✗	✓	✗	✗	✓	2
Child care centres	✓ ⁱ	✓ ^j	✗	✗	✗	✗	✓	✗	✗	✓	2
Libraries	✓ ⁱ	✓ ^j	✗	✗	✗	✗	✓	✗	12	✓	1
Community centres	✓ ⁱ	✓ ^j	✗	✗	✗	✗	✓	✗	✗	✓	na
Recreation facilities	✓ ⁱ	✓ ^j	✗	✗	✗	✗	✓	✗	✗	✓	3
Sports grounds	✓ ⁱ	✓ ^j	✗	✗	✗	✗	✓	✗	✗	✓	na
Protection	✗	✗	✗	✗	✗	✗	✓	✗	20	✗	1
Housing	✓	✗	✗	✗	✗	✗	✓	✗	✗	✓	2

^a Relates to infrastructure eligible for local infrastructure contributions mandated under s.94 to s.94EH of the *NSW Environmental Planning and Assessment Act 1979* and includes proposed changes announced by the NSW Premier on 12 October 2007. Under these reforms, mandatory contributions will be limited to the infrastructure and land directly required to support land developments (NSWDP 2007). ^b Contributions generated by the ACT change of use charge flow into consolidated revenue and can be used to finance any government objective. ^c Based on a survey of 27 states in the United States (excluding data for counties in Arizona). An entry of 23 should be interpreted as the legislation for 23 of the 27 states allowed development contributions for this type of infrastructure (Mullen 2007, table 3). ^d The UK planning obligations systems are not prescriptive with regards to the types of infrastructure against which contributions can be levied. However, these must satisfy nexus guidelines and are subject to appeal. ^e Based on a survey of nine Canadian cities (Toronto, Vancouver, Surrey, Saskatoon, Calgary, Edmonton, Halifax, Winnipeg and Montreal) in 2006. An entry of five should be interpreted as five of the nine cities allowed development contributions for this type of infrastructure. It should be noted that Montreal does not allow contributions for any of the listed infrastructure types, and Toronto allows contributions for all (Binning 2006). ^f Dedication of land only. ^g Within the sub-division. ^h Eight of the surveyed Canadian cities allowed contributions for local roads and seven allowed contributions for major roads. ⁱ Restricted to infrastructure that services the development site or precinct. ^j In Victoria, contributions for community infrastructure are capped at \$900 (*Planning and Environment (Development Contributions) Act 2004*). **na** Not available.

Sources: Binning (2006); Mullen (2007b); NSWDP (2007); WAPAC (2004).

Negotiated agreements

Negotiated contributions — such as those in New South Wales (box 7.5) — allow planning authorities to extend the range of infrastructure for which contributions can be levied. The Ellenbrook development in the WA Shire of Swan is an example

¹⁸ In practice, judicial appeal has constrained obligations to those that reasonably relate to the development (Cox 1991).

of such an agreement. This agreement provided for contributions by the developer towards:

... the advancement of key infrastructure and sharing of costs for community facilities and public transport. (WAPC 1997, p. 5)

The Western Australia Planning Commission observes that:

... developers may be willing to enter into arrangements with local governments to provide facilities and services in excess of the normal requirements in order to promote the marketing of the development. (WAPC 1997, p. 5)

Box 7.5 Section 93F planning agreements in New South Wales

Section 93F of the *Environmental Planning and Assessment Act 1979* allows one or more planning authorities to negotiate a voluntary agreement with a developer who has submitted a development or rezoning application. Under the conditions of the agreement, developers can be required to make a contribution of land, money or works towards a public purpose which can include (but is not limited to) the:

- provision of (or cost of providing) public amenities or public services, affordable housing, and transport or other infrastructure relating to land
- funding of recurrent expenditure relating to the provision of public amenities or public services, affordable housing or transport or other infrastructure
- monitoring of the planning impacts of development
- conservation or enhancement of the natural environment.

There is no limit to the value of contributions that can be negotiated under a s.93F agreement, and these can be additional or instead of the s.94 contributions or s.94A levies. Unlike s.94 contributions, there is no requirement to establish a nexus between the contribution and the development (s.93F(4)), and there is no right of appeal (s.93J).

Reforms to development contribution legislation in NSW announced on 12 October 2007 include a proposal to limit the scope of infrastructure eligible for contributions under voluntary planning agreements. For example, s.919 of the exposure draft states that a voluntary agreement will only be able to include contributions for:

- a) key community infrastructure — infrastructure prescribed by the regulations as key community infrastructure or
- b) additional community infrastructure — other community infrastructure that the Minister has approved for voluntary contributions.

Source: Environmental Planning and Assessment Act 1979; Environmental Planning and Assessment Amendment Bill 2008 (exposure draft, 2 April 2008).

Negotiated agreements have a number of strengths and weaknesses (box 7.6). Some of the weaknesses are illustrated by an analysis of development contribution practice in South Australia by Kellogg Brown and Root Pty Ltd which found that it:

... is a common practice for a local authority to negotiate with the developer the possible inclusion of contributions to cover perceived external cost. It is apparent that the success of these negotiations to provide the necessary infrastructure is dependent on the negotiating skills of all parties. There is anecdotal information that indicates that elements of bluff, the use of process and legislative ‘blockers’ and the costs of delay are factors that are sometimes brought to bear on the negotiation process. This is not fulfilling the objectives of transparency and equity. (KBR 2006, p. 4-10)

Box 7.6 Advantages and disadvantages of negotiated contributions

A key distinction among development contributions systems is the degree to which contributions are prescribed or open to negotiation. Negotiated contributions have a number of advantages:

- *flexibility* — negotiated contributions are flexible and can be adapted to the circumstances of the particular development
- *voluntary* — negotiated contributions are legally enforceable agreements which are entered into ‘voluntarily’, removing them from the risk of political or legal challenge
- *certainty* — agreements can be made enforceable against local government by state statute, exempting the development from future claims for contributions.

Negotiated contributions can also have disadvantages:

- *increased cost uncertainty* — negotiation can lead to uncertainty regarding the cost (contributions) for developers and local government because the outcome depends on the relative skills and bargaining positions of the participants
- *reduced transparency and accountability* — negotiations can exclude stakeholders with a legitimate interest in the development
- *does not ensure a nexus* — the willingness of developers to enter into voluntary agreements is likely to be more closely related to their ability to shift the costs (or their willingness to accept lower profits), than to any linkage between the developments and the infrastructure financed by the contributions
- *increased transaction costs* — costs to the developer and local planning authority can be high in terms of effort and delays. There can also be costs to society if local planning authorities misuse planning permission as a bargaining, rather than compliance, tool.

Sources: Cox (1991); KBR (2006); ODPM (2005).

Anecdotal evidence suggests that some councils use negotiated contributions — or a negotiated exemption from contributions — to promote development by shifting the costs of development onto existing rate payers.

7.2 Policy issues

Although contributions have been in use in developed countries for many decades, there are a number of policy issues that attract debate as contribution systems continue to evolve. The most common of these is the impact of contributions on housing affordability, particularly for low income and first home buyers. The second ‘group’ of issues is associated with the complexities of implementing these systems.

Who bears the cost and how does this affect housing affordability?

The debate surrounding development contributions and housing affordability relates to who bears the burden of contributions (landowners, developers or consumers), and how this affects housing affordability.

What drives house prices?

An understanding of the drivers of house prices is an important prerequisite to assessing the incidence of development charges (box 7.7) and their impact on housing affordability.

- *Development charges are a material proportion of the cost of bringing a new house to the market* — the Productivity Commission noted that infrastructure charges were one of several key factors contributing to the development cost of new residential constructions in Australia (PC 2004c). In a case study of new house cost components for Penrith (Sydney) and Wyndham (Melbourne), economic and social infrastructure charges accounted for up to 15 per cent of the cost of bringing a new house to market (PC 2004c, p. 160).¹⁹
- *Markets determine prices* — market forces of supply and demand determine selling prices. Ultimately the relative elasticities of demand and supply for

¹⁹ Not all of these charges would be captured by development contributions. For example, the Penrith estimate included costs associated with electricity and telecommunications connections as well as the proportion of s.94 contributions applying to economic and social infrastructure for Penrith.

Box 7.7 The incidence of development contributions

The impact of a development contribution on supply and demand is similar to that of an excise tax except that the infrastructure financed by contributions provides benefits to homeowners.^a As Ihlanfeldt and Shaughnessy (2002) note, the effect on house and undeveloped land prices, and the incidence of the contributions will depend on the relationship between the contribution rate and capitalised benefit:

- *Contribution equals benefit* — neither the developer nor the homebuyer bears any net burden. The contribution is fully passed on to the homebuyer in the form of a higher housing price. Although the incidence falls on homebuyers, this does not represent an additional burden. This is the theoretical objective of the nexus criteria.
- *Contribution is greater than benefit* — homebuyers will not be willing to accept the full pass forward of contributions in the form of higher prices. Developers have to ‘pass-back’ the gap between the contribution and benefit to the owners of undeveloped land in the form of lower land prices in order to achieve normal profits.
- *Contribution is less than benefit* — homebuyers are willing to pay more than the full contribution in the form of higher prices. Under this case, there is scope for the price of undeveloped land to increase by the gap between the contribution and benefit.

Analysis of the incidence of development contributions is further complicated by the effect of higher house and land prices on transaction costs (stamp duties) and value based property taxes and rates. Changes in policy which replace infrastructure subsidies (which are implicit when financing infrastructure from broad-based taxes) with contributions can also complicate the analysis (PC 2004c).

The empirical literature on the incidence of development contributions is inconclusive. Two recent surveys of the empirical literature in the United States, for example, did not reveal a consensus on the incidence of contributions (Been 2005; Ihlanfeldt and Shaughnessy 2002). The lack of consensus was attributed to problems with identifying variables that describe quality and other market differences, as well as technical and theoretical approaches.

^a The benefits financed by an excise tax — unless specifically hypothecated — are more likely to be spread broadly across the community.

Sources: Been (2005); Ihlanfeldt and Shaughnessy (2002); PC (2004c)

undeveloped land and for housing — that is, the sensitivity of buyers and sellers to price — will determine house prices.²⁰

- *Infrastructure adds value to land* — the value of serviced land will increase where the infrastructure financed by development contributions provides

²⁰ Predictability of development charges is critical in determining the degree to which contributions can be passed back to the owners of undeveloped land. While the formal development contribution plans in New South Wales, Victoria and Queensland facilitate pass-back, this is more difficult in the other jurisdictions which rely heavily on negotiation for contributions for other than basic infrastructure.

benefits to the land in question. If the ‘apportionment’ principle is applied such that contributions are equal to the benefit derived, the increase in land value should approximate the amount of the contribution.²¹

However, as Been (2005) pointed out, when development contributions:

... don’t provide infrastructure or financing advantages worth their costs, or when competition from other jurisdictions allows consumers to obtain the same value for less money, impact fees can be analogized to a one-time excise tax that produces no benefits to the taxpayer. In that case, the fee will increase the price of housing either directly or indirectly, depending upon whether the consumer, the developer, or the developer’s factors of production, such as the landowner, bears the cost of the impact fee. (p. 14)

- Where development contributions are not able to be passed forward, they cease to be a user pays or a beneficiary pays charge. Under this scenario, legislative criteria such as apportionment and nexus become irrelevant. In such cases, the developer will usually shift the charge back to the owners of undeveloped land. Where they add to the cost base for the developer, the contributions will form part of a price floor below which it is uneconomic for the developer to produce newly serviced residential and commercial lots.

There is no empirical evidence of a strong linkage between development contributions and housing prices when alternative options for funding the same level of infrastructure are considered. For example, Been (2005), commenting on the US literature, noted that:

... the existing literature does not yet establish that impact fees raise the net price of housing — the price after off-setting benefits such as amenities or savings on alternative financing mechanisms are accounted for. ... Impact fees can [also] be used to correct the myriad of market failures that have allowed inefficient development to harm the natural and built environments of our communities, often at taxpayer expense. (p. 35)

What does this mean for affordability?

Higher house prices affect affordability in two ways, *ceteris paribus*.

- *The ‘principal gap’* — Prospective home buyers must save, or otherwise acquire the initial capital that is necessary to cover transactions costs (such as stamp duties), and to meet the minimum equity levels required by lending institutions. The amount of initial capital required is larger for higher priced houses.

²¹ Development contributions shift the burden of financing new infrastructure from the community at large to the owners of developable land, developers, or buyers of new homes — the beneficiaries. (Dollery 2005).

Affordability decreases as the gap between required capital and available capital widens.

More recently, financial institutions have relaxed equity level criteria. This has allowed some homebuyers to fully leverage a property, and in some circumstances the associated transaction costs. However, such approaches result in larger mortgages (and period repayments) and typically require mortgage insurance that is added to the total mortgage debt.

- *The ‘repayment gap’* — Individuals and households must meet mortgage and all other payments from the households’ disposable income or other available wealth. The literature suggests that a repayment level of between 25 and 30 per cent of total income is a sustainable benchmark for expenditure on housing costs (Burke 2003, NHS 1991). Affordability decreases as the gap between mortgage repayments and the proxy benchmark for disposable income widens.

Higher house prices that result in larger mortgages will widen the repayment gap (or lengthen the term of the loan). However, this gap can also increase for a number other factors that either increase other demands on disposable income, or reduce the level of disposable income. For example, higher interest rates, price rises in other necessities (such as petrol or food), or changing work circumstances of homebuyers (withdrawal of one or more partner(s) from the workforce).²²

Development contributions might increase up-front housing costs (widening the principal gap), but they also can lower future user charges — reducing the call upon disposable income. How this affects individual home buyers’ access to finance depends on the borrowing criteria applied by lending institutions (PC 2004c). Ultimately, there will always be some prospective home buyers without access to sufficient financial resources to enter the market.

The Productivity Commission concluded in its *First Home Ownership* report that the greater use of up-front development contributions is:

... unlikely to have any substantial effect on housing affordability, irrespective of whether infrastructure was previously subsidised. (PC 2004c, p. 165)

Development contributions also have the effect of removing cross-subsidisation that exists where infrastructure costs are spread across the community (through rates), thus lowering the cost of home ownership for existing home owners and purchasers.

²² It should be acknowledged that not all households committing a large proportion of their income to repayments are necessarily experiencing ‘mortgage stress’. Some homebuyers — especially those on higher incomes — may voluntarily commit a large proportion of income to repayments.

Similarly, Been (2005) cautions that development contributions:

... can be abused, either to exclude low- and moderate-income residents or people of colour from communities, or to exploit new homebuyers, who have no vote in the community. They also can be unfair to those caught in the transition from other forms of infrastructure finance. (p. 35)

Development contributions can also affect housing affordability for renters. In the United Kingdom, for example, the impact of new development on the price of the existing housing stock, and consequently on affordability of rental properties to low-income groups, has been used as justification for the extensive use of planning obligations to contribute to ‘affordable housing’ (box 7.4).

Implementation issues

Dollery (2005) noted that, under ideal circumstances, development charges should possess seven attributes:

Involve full net cost recovery from the beneficiary; reflect variations in the cost of servicing different development areas; result in new developments meeting the cost, but no more, of the services provided through developer charges; cover infrastructure expenditures which can be clearly linked to the development and be reliably forecast; include ancillary costs; be applied to existing and fringe areas alike; and be calculated in a transparent manner so that developers can understand and assess the calculated charges. (p. 3)

In practice, the implementation of development contributions systems raises a number of policy concerns.²³ Dollery (2005) provides a useful overview of the more common implementation issues, which include the:

- trade-off between transparency and sophistication of contributions systems
- avoidance of double-dipping or overcharging
- resolution of competing interests concerning infrastructure quality.

Trade-off between transparency and sophistication

The theoretically ideal development contribution requires a detailed calculation of benefits and costs on a development-by-development basis (McNeill and Dollery 2003). This reduces transparency and increases administrative costs and

²³ For empirical studies on the particular policy challenges facing development contribution systems for water and sewerage, and road provision in New South Wales see McNeill and Dollery (2000a) and McNeill and Dollery (2000b) respectively.

uncertainty because of the complexity involved.²⁴ For example, Dollery (2005) noted that developers have argued that:

... the s.94 levy system in New South Wales has ‘major weaknesses’; ‘it is potentially open-ended and it lacks sufficient checks and balances’ and thus is ‘liable to abuse’, but that ‘these are not irresolvable problems in themselves’. (p. 6)

The ‘off-the-shelf’ development contributions plans recently introduced in Victoria (DSE 2003), and the ‘fixed development consent levies’ introduced by the NSW *Environmental Planning and Assessment Amendment (Development Contributions) Act 2005* are examples of reforms aimed to make the contribution systems simpler and more transparent.

‘Double-dipping’ or overcharging

A key objective of the apportionment principle as applied in the United States, and mirrored to a large extent in Australia, is that beneficiaries of infrastructure should not be required to pay more than once. In practice, this means that the owners of land for which a contribution was levied should not then be asked to meet the capital cost from local government rates, levies and other charges.

Although some systems explicitly take future revenue impacts into account, it can be difficult to have regard for all the possible impacts of new developments on government revenue. As the Allen Consulting Group noted, urban development generates a range of revenues for governments, including:

... taxes and other charges into general public revenue, at all levels of government: Federal (GST, general taxes on employment, income and economic activity), State (land tax, stamp duty, other fees, GST at some stage in the future), and Local (higher rate revenue). (ACG 2003, p. 66)

Divergent incentives on infrastructure quality (the ‘gold plating’ incentive)

In general, development contributions in Australia cannot be levied for maintenance or operating costs.²⁵ Developers have an incentive to provide infrastructure that is either highly marketable and easily recovered from home buyers, or low in initial up-front cost if the charges cannot be passed on. In either case, ongoing maintenance or operating costs could be higher than optimal.

²⁴ In this context, transparency refers to the ease with which the operation of system and methodology for calculating contributions can accessed and understood.

²⁵ The exception in Australia is the s.94 road maintenance contribution. In the United Kingdom, planning obligations can be required for a wider range of ongoing maintenance contributions.

Local planning authorities, on the other hand, have incentives to minimise future maintenance and replacement costs, and to make up for inadequate past investment. This can have two consequences. First, they could seek to over-design (‘gold plate’) infrastructure requirements. Second, they could resist infrastructure investments that impose future costs. For example, ‘no-frills’ parks have lower ongoing costs than a park with play equipment or skateboard facilities. Local authorities could prefer the ‘no-frills’ facility even where contributions finance the initial investment.

7.3 Strengths and weaknesses

Development contributions have a long history of use in Australia and overseas, and are generally more politically acceptable than higher rates or taxes as a way of financing new, mainly urban, infrastructure. Opp (2007), commenting on impact fees in the United States, observed that:

The most obvious benefit of impact fees is the revenue-raising capability. Rather than relying heavily on property taxes, which may already be high and/or capped by the state government, a local government is able to diversify its revenue stream through this alternative source. Often these impact fees are more popular with elected officials who find the general population discontent with the perceived inequity associated with paying the costs for new development. Furthermore, impact fees are imposed upon future voters — not current ones — something of interest to many policymakers looking at re-election prospects. (p. 3)

Although development contributions are primarily a funding vehicle, they have broader impacts on economic efficiency — particularly in terms of development — and have implications for social objectives such as equity.

Development contributions as a source of funds

Whether development contributions fully cover the cost of public infrastructure projects is a funding issue. Gaps between the cost of the infrastructure required and the development contributions must be funded by government. The size of the gaps depends largely on the character of the infrastructure concerned and the flexibility of the individual contribution system.

Types of infrastructure that can be funded

In most Australian jurisdictions, the range of infrastructure subject to mandated contributions is limited to basic development infrastructure that provides services to individual developments and home sites. These are the types of infrastructure for which beneficiary charging is well suited (Neutze 1997).

Although all jurisdictions have the scope for planning authorities to enter negotiated agreements for contributions for a broader range of infrastructure, transaction costs can be high and outcomes uncertain. At the extreme, it is possible for local planning authorities to ‘sterilise’ local development land (make it uneconomic to develop) by shifting too much of the cost to the new development.

Contributions cannot be used to finance all types of infrastructure that urban communities demand. Bankstown City Council, commenting on the application of NSW development contributions in low-growth regions, noted that:

Although development and limited population growth creates some need for additional infrastructure in the City, the overwhelming challenge facing Bankstown is the need to fund the maintenance and/or replacement of ageing infrastructure. Most of this existing infrastructure was developed prior to the advent of developer contributions. Current Section 94 Contribution arrangements do not adequately assist Bankstown in meeting the financial challenge of maintaining appropriate infrastructure for residents. (BCC 2007, p. 10)

Funding for infrastructure that does not fall within the mandate of development contribution systems must be provided from other sources.

Level of funding

Where costs of infrastructure are fully apportioned to the development in question, development contributions fund the full cost of the infrastructure. This is generally easier to justify where specific beneficiaries can be identified and capital costs are easily measured (such as site reticulation or sewage services). This is more difficult to justify on nexus grounds for infrastructure that provides benefits outside the development (such as community or headworks infrastructure).

In practice, costs might not be fully covered by development contributions when the infrastructure is constructed for a number of reasons:

- *Social and headworks infrastructure costs are shared* — where the nexus tests are applied to contributions for community (such as libraries) or major headworks infrastructure (such as dams or pumping stations), financing will be less than 100 per cent.
- *Contributions are discounted to reflect future revenues* — in order to avoid double charging, contributions are sometimes discounted for the future revenues that would accrue to the council because of the development. Where this occurs, the up-front contributions will be less than the full infrastructure cost.
- *Out-of-sequence developments change the timing of infrastructure* — shared infrastructure (such as access roads, main sewer or water trunk lines) must be

installed for all developments. When land releases are developed out-of-sequence, this infrastructure will not be fully utilised — and the costs are not fully recovered from contributions — until infill has been completed. However, charges to offset the financial costs associated with out-of-sequence development have been used in some jurisdictions.²⁶

- *Governments have competing objectives* — local or higher levels of government can have objectives that might make local authorities reluctant to take advantage of development contributions, even when statutory power exists. In its submission to the Productivity Commission study on local government revenue-raising capacity, for example, the NSW branch of Local Government Managers Australia noted that:

State pressure is placed on councils to limit the amount of these charges due to housing affordability, inter-generational equity etc. (LGMA-NSW 2007, p. 4)

Similarly, the Tasmania branch of the Local Government Association suggested that for some councils, particularly in low-growth regions, competition for development projects could make local authorities reluctant to use development contributions even where the mandate exists (LGAT 2007).

Where development contributions do not cover the full cost of the infrastructure, the ‘gap’ has to be funded from other sources.

Timing

Most development-specific infrastructure is required at the time of development. However, shared infrastructure might be necessary before or after the individual development is completed.

Development-specific infrastructure

Contributions typically coincide with planning permissions and site construction and thus provide a source of finance when infrastructure investment is required. As the Allen Consulting Group observed:

A convenient aspect of producer levies is that they can be applied when the infrastructure is needed — ie, when development is afoot. As such, they represent a source of finance that is generally likely to move in concert with the demand for added infrastructure. (ACG 2003, p. 68)

²⁶ In Victoria, for example, guidelines made under the *Water Industry Act 1994* allow water authorities to recoup the cost of shared infrastructure provided for out-of-sequence developments (ESC 2006).

This might be an advantage where alternate sources of cash are limited (for example, constraints on rates and borrowing, or community resistance to user charges), and might make development otherwise impossible to finance by local government (Opp 2007).

A further advantage is that regardless of whether the incidence falls on the owner of undeveloped land, the developer or the home buyer, it is generally timed to occur when the equity in the land is released for transfer of ownership.

Shared infrastructure

The timing of investment in shared infrastructure is influenced by the cost of providing infrastructure in established urban areas and the lumpiness in headwork infrastructure investment.

Providing infrastructure is more costly in established areas

It is generally more efficient to provide spare capacity to shared infrastructure during initial development than to augment capacity in established areas because of:

- *Installation scale economies* — for example, it is generally cheaper to provide one pipe of 2 GL per hour capacity during initial development than two pipes of capacity 1 GL per hour capacity (regardless of when they are installed).
- *Property values in established areas* — land values in established areas will be higher than in undeveloped subdivisions. If land must be acquired, the cost of additional infrastructure will be higher.
- *Higher post-development installation costs* — disruption to existing infrastructure (such as roads, pipes and wires) can increase the cost of augmenting existing infrastructure.
- *Infrastructure construction causes disruption* — augmenting existing infrastructure, such as road widening for example, disrupts the use of existing services in established areas.

Although nexus principles generally allow government or local authorities to recover the apportioned share of this capacity from future developments, this finance will not be available at the time the investment is made.

Headwork capacity is lumpy

For major headwork infrastructure (such as dams and major trunk roads) it is necessary, or more efficient, to add to capacity in relatively large lumps than small

increments. The need for, and timing of, these expansions to capacity can be conditioned on demand reaching a trigger point some time after development. In some circumstances, shared infrastructure can be necessary before development can commence — for example, access roads.

Many systems, including the NSW s.94 contributions, allow governments to levy charges for shared infrastructure and carry those funds until investment is needed.²⁷ However, forecasts of future needs contain an inherent element of uncertainty. Changing needs and cost structures could mean that insufficient contributions are available when investment is required.

Even when costs and needs are forecast accurately, the application of apportionment principles could mean that funding from contributions would need to be supplemented from other sources.

Administrative costs

From a government perspective, the level of administrative costs will depend on the characteristics of the contribution system. Costs to government can be lower where they have substantial flexibility to mandate contributions. However, the more formal systems in Australia and overseas are typically based on some version of the nexus principles discussed earlier. Implementing these principles increases administrative costs, particularly where contributions systems are characterised by:

- *complexity* — requires complex system of standard setting and compliance evaluation
- *negotiation* — negotiation can be difficult and lengthy where the linkage between contributions and the benefit is ill-defined
- *disputation* — both in Australia and overseas, development contributions systems have been characterised by disputation and protracted legal processes.

Uncertainty, complexity and disputation also impose transaction costs on developers.

Other considerations

Development contributions systems are aimed at far more than raising funds and supplying finance when it is needed. One objective is to achieve an efficient

²⁷ Some jurisdictions in the United States allow the cost of previous infrastructure investments to be recovered through impact fees. However, the initial investment would need to have been financed from another source.

allocation of public and private resources to development that provides the greatest benefit. A second objective can be to improve the equity of the distribution of costs.

Economic efficiency

Contributions potentially provide important price signals about the costs of development. This is particularly important where failure to recognise geographic and development sequencing variations in infrastructure costs can lead to inefficient development decisions (Neutze 1997). The Allen Consulting Group provided three examples of how contribution price signals can lead to more efficient development decisions:

- Charges increase the investment that developers make when providing lots into the market. The response has been to increase the scale of developments. They also encourage developers not to hold on to land (ie. speculate).
- Developers install infrastructure services in advance of building, which costs less than subsequent installation.
- Charges discourage development in locations where service provision would be expensive by making the developers responsible for those costs. Developers have a strong incentive to focus upon lower cost areas. (ACG 2003, p. 63)

The economic efficiency benefits of price signals break down when contributions are not based on actual costs. Contributions set at a price higher than the underlying cost potentially deter development. Alternatively, if the contributions are too low, the developer will not take into account the full cost of infrastructure when making development decisions. Any shortfall in cost recovery will have to be met from other sources. Neutze (1997) cited the use of fixed-rate levies for headworks as one example where contributions would not reflect the cost differences between providing infrastructure to easy and more difficult to service areas *within* a catchment.²⁸

As discussed above, there is also divergence in the incentive between developers and planning authorities. Developers have an incentive to provide assets with minimal acceptable durability, while planning authorities have an incentive to ‘gold plate’ — that is, require infrastructure with higher engineering standards than necessary.

A further source of distortion can be introduced by constraints on the application of contributions to developments that only occur in new subdivisions. The result could

²⁸ It should be noted, however, that serious cost differences could be readily addressed by zoning. Furthermore, provided aggregate headworks charges are accurately calculated, they can convey cost signals *between* catchments.

be a preference among planning authorities for greenfield developments over urban consolidation and infill.

Equity — benefit verses ability to pay

The reasonableness and apportionment nexus principles are consistent with the ‘benefit principle’ — those who benefit from a public project should bear the cost in direct proportion to the benefit received (Kitchen and Slack 2003). The converse to this is the ‘culpability principle’ — those responsible for negative externalities (adverse impacts on the community at large) should bear the costs of mitigating the impact (Cox 1991).²⁹ Impacts fees in the United States explicitly address the negative externalities of development (Mullen 2007b).

The main criticisms of the equity of development contributions usually relate to the ‘ability to pay’ principle of public finance. Some commentators have argued that development contributions are inherently regressive because they do not take into account the financial position of individuals. For example, fixed rate contributions are applied in Victoria regardless of whether a \$100 000 or \$1 million house is built on the site. A common view is that the purchaser of the \$1 million house has a greater ability to pay. However, this argument fails to recognise that the purchaser of the more expensive home does not necessarily receive a greater service or benefit.

Key characteristics of development contributions as a source of finance

This chapter has focused on the adequacy of development contributions as a source of funding for public infrastructure. However, funding is not the same as financing.

Where the contributions are provided in-kind, the developer finances the infrastructure projects rather than the government. Like all the other costs to the developer, these costs of financing will be included in the development costs and reflected in the price of the developed land. Where in-kind contributions require further infrastructure before they can provide services (for example, where land for public parks is provided), the government faces the task of financing the required infrastructure investments. Where contributions are provided as cash, the financing task depends on the timing of these cash contributions (and any funding gap). In these situations governments have the option of financing through existing reserves or borrowing as discussed in chapters 2 and 4.

²⁹ There is also a link between benefit and culpability principle characteristics of development contributions and economic efficiency in so much as this reflects the cost of development.

The three assessment categories are still relevant in considering development contributions as a source of funding as well as finance.

Risk management — There is limited scope for using development contributions to improve the management of project risk. As discussed, developers are not responsible for the operation and hence do not have an incentive to take this into account either in the level of funding, or if they undertake construction, in this latter phase of the project's life.

Transaction costs — Negotiating development contributions can be costly as discussed above. On the positive side for governments, the availability of cash reduces the need to organise financing with consequent lower transactions costs. For the developer, the financing of the development contribution component is likely to be a small share of the total financing requirement with little if any additional transaction costs associated with financing.

Market and other disciplines — Perhaps the main advantage of development contributions is the inclusion of the infrastructure costs into the price of land, whether passed backward to the seller or forward to the buyer. This price signal improves allocative efficiency, all else equal, encouraging the development of land that is relatively lower cost to develop.

8 Public–private partnerships

Key points

- Under a public–private partnership (PPP) arrangement the private sector is typically contracted to design, build, operate, manage and finance new infrastructure and meet government obligations for a set period of time.
- In Australia and the United Kingdom, PPPs account for around 5 and 16 per cent respectively of public investment in infrastructure.
- Advocates claim that PPPs bring forward the delivery of infrastructure projects, draw on private sector expertise and offer an alternative financing vehicle to traditional government procurement.
 - The bundling of PPP services for major infrastructure projects is claimed to provide whole-of-life cost savings, and increased efficiency by delivering services of a higher-quality or at a lower cost.
- Opponents claim that PPP contracts involve high transaction costs and efficiency is undermined by limited competition in the bidding process. They also claim:
 - that PPPs do not offer value for money because the premium required by the private partner is in excess of the risk they assume
 - the benefits of bundling design, construction and operation can be obtained by governments without entering into PPPs
 - inadequate risk transfer has occurred in some projects and government, and ultimately the taxpayer, has had to bear the financial consequences.
- While PPPs are used for economic infrastructure projects that generate revenues from user charges, public funding may be committed to meet expected revenue shortfalls. They are also being used extensively for social infrastructure, where governments commit to payment for services delivered. Both require explicit costing of government funding commitments, but whether this imposes discipline on the investment decision depends on the transparency of these funding commitments.
- Most economic infrastructure PPP projects are not recorded on government balance sheets, bypassing expenditure controls and reducing parliamentary and public scrutiny of projects.
 - Off balance sheet accounting can obscure the level of government liabilities or fiscal costs required to meet future PPP contractual service payments and guarantees.
 - However, it is possible that more PPP projects could be reclassified and recorded on government balance sheets under new international accounting rules.

There are many definitions of public–private partnerships (PPPs) (box 8.1). PPPs typically involve a partnership between the public and private sector where the private sector is contracted to design, build, operate and manage and, most importantly, finance new infrastructure or services and meet government obligations for a set period of time (typically 20 to 30 years).

Included in the contract is the right to receive payments from the government and/or charge users of the facility a fee (a toll in the case of roads) in order to recover the costs of construction, operation and maintenance. The contract is generally subject to performance indicators and quality standards, with penalties imposed for any failure to maintain service standards on a continuing basis.

PPPs generally fill a gap between traditionally procured government projects and full privatisation (Grimsey and Lewis 2005). They cover a range of contractual forms (table 8.1).

This chapter is focused on the financing of PPP projects by the private sector under a build, own, operate and transfer (BOOT) type arrangement — where ownership of the asset is transferred to the government or a government authority at the end of the contract period.

PPPs have been used for economic infrastructure such as roads, railways, water filtration plants and waste water services, electricity supply systems and ports.

Box 8.1 PPP definitions

- Government has a business relationship with the private sector. It is long-term, with risks and returns being shared, and with the private sector involved in financing, designing, constructing, owning or operating public facilities or services (Hodge 2005).
- Depending on the country concerned, PPPs can cover a variety of transactions where the private sector is given the right to operate for an extended period a service that is traditionally the responsibility of the public sector (Grimsey and Lewis 2005).
- PPPs are medium- to long-term ventures in which there are key contractual or legal relationships between the public and the participating private sector. PPPs refer to projects in which there is cooperation between the public and private sectors in one or more of the development, construction, operation, ownership or financing of infrastructure assets, or in the provision of services (Brusewitz 2005).
- PPPs refer to a variety of arrangements in which the private sector is involved in the provision of government infrastructure services (Parliament of NSW 2006a).

Table 8.1 Types of PPPs

<i>Contract type</i>	<i>Characteristics</i>
Design Build (D&B)	The government specifies the asset it requires in terms of its functions and desired outcomes. The private sector is responsible for designing and building the asset and managing any related risks. The asset is transferred to the government to operate.
Operate Maintain (O&M)	An existing government-owned asset is managed by the private sector for a specified period. The private sector will be responsible for providing the services to the customer (retail or wholesale), maintaining the asset to a specified condition and ensuring that management practices are efficient.
Design Build Operate (DBO)	Effectively, this is a D&B and O&M contract rolled in together. The private sector is usually responsible for financing the project during the construction period. The government purchases the asset from the private sector for a pre-agreed price prior to (or immediately after) commissioning the asset and takes all ownership risks from that time on. The private sector retains the management function and related risks.
Build Own Operate Transfer (BOOT)	The private sector is responsible for design and construction, finance, operations, maintenance and all commercial risks associated with the project. It owns the project through the concession period and the asset is then transferred back to the government at the end of the term, often at no cost.
Build Own Operate (BOO)	Similar to BOOT projects, but the private sector retains ownership of the asset in perpetuity. The government also agrees to purchase the services produced by the asset for a fixed length of time.
Lease Own Operate (LOO)	Similar to BOO projects, but an existing asset is leased from the government for a specified period. The asset may require refurbishment or expansion but no 'new build' assets are necessary.
Alliance	An agreement between the private sector and the government to share the benefits or the costs associated with project risks. The parties agree to a benchmark price, time and service level. Any benefits (or costs) achieved are shared between the parties according to a pre-agreed formula.

Source: Adapted from AusCID (2005).

They have also been used for social infrastructure such as schools, hospitals, housing, and law and order facilities.

PPP projects typically have several characteristics in common. Their initial capital costs are high, the infrastructure takes time to build, and the assets generally have long lives and exist to support complementary economic and social activities (chapter 2).

The sponsors typically face construction cost and revenue risks (for example, traffic volume risk). Revenue risks are the main influence on financial outcomes.

Revenues from economic infrastructure projects are predominately derived from third parties (for example, toll-road users).

Social infrastructure projects, on the other hand, are usually paid for out of public money. Typically, there is no market risk to the private-sector provider of social infrastructure because payment streams are generally subject to long-term contracts with government. Construction cost risks are the main influence on financial outcomes (Parliament of NSW 2006a). Operational risks can exist in a limited number of applications, such as hospitals and prisons.

8.1 Applications and trends

Typically, private-sector sponsors create a special purpose vehicle (SPV) or stand-alone business to finance and deliver a PPP project. The SPV is a common legal technique used in private financing to quarantine and administer risks. It is an entity with legal status that allows for favourable treatment of accounting, fiscal, regulatory and financial issues. In most cases, the use of an SPV is a requirement imposed on the private-sector sponsors by the public sector, the financiers, the guarantors or the contractors of the project (Trujillo et al. 1997).

Applications

Project finance is commonly used to raise long-term debt capital for PPP projects.¹ A feature of project finance is its non-recourse nature. Essentially, the lender looks at the cash flows and earnings of the project as the source of funds from which they will be repaid, and the assets of the project as collateral for the loan.

Under limited or non-recourse financing, private-sector sponsors have no obligation to make payments on the project loan if revenues generated by the project are insufficient to cover the principal and interest payments.²

Financing of a project's capital typically involves a range of sources of equity and debt — these determine the SPV capital structure. Traditionally, equity for infrastructure projects has been provided by parties involved in some aspect of the project such as construction contractors. However, institutional investors (such as

¹ Long-term financing of PPP projects is necessary if the assets require high up-front capital expenditure, which cannot be viably recovered over the short term without increasing the project and service costs (Yescombe 2007).

² With limited or non-recourse financing the lender's security is confined to the project assets. The personal liability of the private-sector sponsors is either excluded entirely or confined to the amount actually recovered from the project assets and cash flows.

superannuation funds) are increasingly investing directly in infrastructure projects. Further, several specialist infrastructure investment funds have been established (for example, by Macquarie Bank) (BDW 2002).

The capital structure of the SPV – its debt to equity ratio – depends mainly on the security of the expected cash flow and the tax arrangements, but also on the reputation of the private sector sponsor. Typically, debt constitutes a relatively high proportion of the financing of the infrastructure project. PPPs that involve a government guaranteed stream of payments for services are more suited to servicing debt and tend to have higher leverage ratios than projects relying more on user charges.³ Nevertheless, lenders recognise the risk of an SPV defaulting and expect the private-sector sponsors to place some of their capital at risk as an incentive to perform. Another reason the private-sector sponsor will hold a small share of the SPV's equity is to ensure that it cannot be construed as a subsidiary for legal and accounting purposes (National Treasury (South Africa) 2001).

In some cases, there has been an initial 100 per cent debt financing because equity investors have incentives for tax reasons to defer equity contributions until construction is completed in order to minimise the holding cost of non income-producing assets. This development represents a shift in capital management from 'asset sweating' — improving the physical utilisation of existing capital — to 'asset leveraging' — improving the financial valuation of existing equity through asset ownership.

The tax deductibility of interest payments also affects the optimal level of debt in the capital structure. However, offsetting this bias toward debt is the requirement to pay resident shareholders franked dividends. Lowering the tax payments to government through higher levels of debt reduces the company's ability to pay shareholders dividends with imputation tax credits attached. This will be relevant in countries, such as Australia, which have a dividend imputation tax system (Brown, C., University of Melbourne, pers. comm., 19 November 2007).

Innovations

Private sector businesses use a number of innovative financing techniques to spread risk and lower their total cost of finance. These include securitisation of PPP loans, the credit guarantee finance scheme, tax-exempt private activity bonds, refinancing of debt and equity sales in specialised secondary markets.

3 For example, Infrastructure Partnerships Australia (IPA) noted that in their experience most social infrastructure projects have a debt-to-equity ratio of 90:10, while economic infrastructure projects have a debt-to-equity ratio of 60:40 (IPA, pers. comm., 30 January 2008).

The main benefit of these innovative financing techniques is to improve the liquidity of PPP assets, and the release of capital reserves for other investment opportunities. Where innovative products can increase portfolio diversity the benefits may include a reduction in the cost of borrowing. It may also be possible to access tax-exempt borrowing, lowering the direct cost of capital, although this comes at a cost to tax revenues. These techniques potentially have a flow-on effect to the public sector and users through project cost savings, lower user charges and lower contract payments. However, as the recent financial crisis has demonstrated, the potential for lowering financing costs should not be overemphasised.

Securitisation

Securitisation converts illiquid financial assets (such as mortgages and loans) with a predictable cash flow into a tradable commodity. Financial assets are transferred from the originating organisation (typically banks) to a SPV (usually a company or trust). The SPV finances the purchase of these assets by issuing a conventional bond or note to institutional investors in domestic or international capital markets.

Securitisation has a number of advantages for the originating organisation:

- removing the applicable financial assets and related liabilities (financing costs) from their balance sheet. This outcome can improve financial ratios such as debt to equity and return on capital
- isolating the assets from potential bankruptcy risk of the originator
- improving liquidity (including access to a diversified source of funds)
- matching the maturity of assets and liabilities.

‘Synthetic’ securitisation (a form of securitisation) is a recent innovation applied to PPP loans in the United Kingdom.⁴ It involves a transfer of the credit risk inherent in the loans, rather than the underlying assets themselves, from the originating organisation to a SPV.⁵ The ‘synthetic’ securitisation of PPP loans is often faster, less complex and cheaper to create and transfer (box 8.2).

4 The volume of PPP primary debt in Australia is insufficient to support any Australian-based synthetic securitisation of PPP loans. However, some Australian debt could have ended up as part of global collateralised loan obligations — but not to a significant extent (ABN-AMRO, pers. comm., 16 January 2008).

5 Credit risk is the risk of financial loss arising from the failure of a customer to repay principal and interest.

Box 8.2 **‘Synthetic’ securitisation**

The SPV enters into a credit default swap (CDS) with the originator. Under the CDS, the originator pays the SPV part of the interest which the originator receives on loans to its borrowers. In return, the SPV must pay the originator’s losses on those loans in the case of adverse credit events. In effect, the originator is paying a fee to the SPV in return for a guarantee or insurance equivalent (Wood 2007).

In order for the SPV to make these loss payments, if necessary, it issues notes (debt securities) to investors on terms that the principal amount payable to the note holders is reduced if the SPV has to pay the originator. The issued notes are divided into tranches which differ in seniority and risk exposure — with losses first affecting the junior tranche (unrated), next the mezzanine (rated AA to BB) and finally the senior tranche (rated AAA).

Each tranche pays a periodic payment (the swap premium), with the junior tranche offering yields commensurate with the greater risk. The junior tranche can equate to 3 per cent of the whole pool (Wood 2007).

The SPV need not sell tranches for the full amount of the underlying credit exposure. Since there has been no outright purchase of assets, funds only have to be raised to meet the provisions of the notional exposure agreed to in the CDS contracts (RBA 2005).

The main objective of ‘synthetic’ securitisation for the originating organisation is to achieve compliance with capital adequacy requirements. The Basel Capital Accord of 2004-05 (Basel II) established a framework for measuring the capital adequacy and minimum capital requirements. As such, banks must hold capital reserves appropriate to the risk the bank exposes itself to through its lending and investment practices.

Generally speaking, these rules mean that the greater the risk to which the bank is exposed, the greater the amount of capital the bank has to hold to safeguard its solvency and overall economic stability. For example, capital reserve requirements can be very high for loans that are rated below investment grade (that is, a ‘BBB’ rating).

The transfer of credit risk under a ‘synthetic’ securitisation reduces the amount of capital reserve required by the originating organisation to support loans under the Basel II regulatory arrangements. ‘Synthetic’ securitisation consequently assists banks to comply with the Basel framework and releases capital for other investment opportunities. This can generate economic gains if external borrowing sources are constrained, or if there are differences between internal and external financing costs.

It is accepted by HM Treasury that such securitisations are external to PFI contracts. Consequently, they should not be included in gain-sharing arrangements with the government, as occurs when PPP projects are refinanced (NAO 2006).

Securitisation does not remove risk, it simply transfers the risk to another entity, which takes on the risk for a fee. This works well for instruments with idiosyncratic risks with low covariance with other instruments in the portfolio, but becomes problematic when there is systemic risk. Failure to accurately assess the total risk of such instruments, or to price that risk appropriately is at the heart of the sub-prime crisis. This was compounded by the moral hazard introduced as banks, feeling that they had off loaded the default risk, felt no incentive to manage these risks more actively. The Basel framework has been found wanting as it did not encourage banks or regulators to recognise the true exposure to systemic risks of specific asset classes (Tarullo 2008).

The Credit Guarantee Finance scheme

The Credit Guarantee Finance (CGF) scheme being piloted by the UK Government is aimed at:

- reducing the premium paid in the cost of borrowing by the private sector, and generating cost savings for the government through lower service fees
- reducing to a minimum any transaction costs associated with the CGF, preventing any delays to the procurement of the project as a result of the application of CGF, and avoiding the need for any extra due diligence over and above that required by private sector risk takers to the scheme
- requiring private financiers to guarantee the debt, thus assuring that the benefits to the public sector of private sector risk taking will be realised.

Under this scheme, the government raises debt at gilt market rates, which it then on-lends to the private sector at the market rate (as a CGF loan). This loan is strictly for the main construction-phase facility and a standby facility. Working capital requirements are not provided through the scheme.

Under the scheme, the government obtains an unconditional repayment guarantee from a credit-rated private-sector guarantor (a bank or monoline insurer). In doing so, the government avoids providing any guarantee for the funding raised (BDW 2006). The government's main risk in lending is therefore the creditworthiness of the guarantor, rather than the risk of default of the PFI project or the insolvency of the PFI contractor (HM Treasury 2006a).

It was noted by Yescombe (2007) that the absolute benefit of CGF could be limited because:

Commercial banks will charge the same guarantee fee as the credit margin they would have charged had they lent direct, and the monoline guarantors also charge the same guarantee fee as they would have charged for a bond issue. The benefits are therefore limited to the difference between the base cost of funds for the public sector and that for the lenders, that is, in the case of a bank loan the interest-rate swap market and credit premiums — perhaps around 0.7 per cent in total — plus the unmeasurable benefit of a competitive rate for the underlying funding. However, there is also a political benefit as it takes the sting out of the argument that public-sector funding is cheaper. (p. 314)

Further, the HM Treasury has identified certain limitations to the application of the CGF scheme, depending on the type of project.

- The cost savings only arise where the public sector covers a majority of the project costs, including debt service costs.
- Where there is a need for multiple sources of finance and CGF would be one of these sources of funding, the Government would be reluctant to be involved in inter-creditor arrangements, although it would be willing to fund a project with more than one guarantor.
- The CFG may not be appropriate where the risk profile of the project is untested in the financial markets. It would be best applied to PFI programs that are well established with well recognised commercial and financial arrangements (HM Treasury 2004).

The UK Treasury found that despite the potential limitations of CGF, two pilot projects undertaken to test the practicality of using CGF reported cost savings in the order of 8 to 16 per cent of the financing costs could be achieved (HM Treasury 2006a).

Tax-exempt private activity bonds

In the United States, the federal government tax-exempts private-activity bonds (PABs) issued by the private sector for investment in public infrastructure as part of a PPP arrangement. Tax-exemption places the private sector on an equal footing with the public sector (which also issue tax-exempt bonds), thereby fostering competition.⁶

6 Investors who purchase debt instruments, such as tax-exempt bonds, do not pay federal income tax (and often state income tax) on the interest paid to them by the issuer. Issuing tax-exempt debt is less costly to the issuer, because investors are willing to accept a lower interest rate in exchange for the resulting interest income being tax-free. However, as shown in chapter 5, the

Private-activity bonds have been used for a long time in the United States (chapter 5). However, their misuse led to various restrictions on their applications (Zimmerman 1991). Currently their use is restricted to the financing of water, power, waste disposal, education, healthcare and low-income housing PPP projects, and, more recently, transportation infrastructure PPP projects.

In 2005, legislation was enacted which allowed US States to issue and transfer to private companies up to US\$15 billion in tax-exempt PABs for toll roads and truck–rail intermodal facilities. The projects that qualify for such funding include any:

- surface transportation project receiving federal assistance under Title 23 of the US Highway Code
- projects for an international bridge or tunnel for which an international entity authorised under federal or state law is responsible and which receives federal assistance under Title 23 of the US Highway Code
- facility for the transfer of freight from truck to rail or rail to truck (cranes, loading docks and computer controlled equipment) which receives federal assistance under Title 23 of the US Highway Code or Title 49 of the US Transportation Code.

In 2006, Texas became the first state to receive federal approval to raise around US\$1.8 billion in private-activity bonds for the development of State Highway 121. The Texas Department of Transport was allowed to issue these bonds on the condition that the private company awarded the contract would become the ultimate borrower and arrange to repay the PABs with toll revenues (TxDOT 2006).

The use of PABs potentially results in substantial cost savings for the private sector. For example, the US Department of Transport estimated that tax-exempt PABs can reduce interest rates by as much as two percentage points below rates on comparable taxable bonds. For example, on a US\$100 million bond, this differential would amount to a debt service cost savings of US\$2 million per year (USDOT 2004).

Tax-exemption does come at a cost to the federal government. For example, the US Department of the Treasury estimated a revenue loss of US\$7.2 billion for the fiscal year 2007 (Belmonte 2006).⁷

discount on interest costs is less than the estimated loss in tax revenue, suggesting that total costs might be higher.

⁷ This estimate was based on all interest bearing tax-exempt bonds in the 2007 fiscal year, regardless of when the bonds were originally issued (Belmonte 2006).

Refinancing

Refinancing is the process by which the terms of the finance put in place at the outset of a PPP contract are later changed through negotiation. It usually occurs when construction is complete and the risk profile of a project is much lower. Refinancing can include a refinancing of the debt, or change in the debt to equity ratio, with an issue or buy-back of shares or just the sale of shares.

The aims of refinancing are to improve the cost of borrowing for the private-sector sponsor and to improve the liquidity of PPP assets.

Debt

Debt refinancing can be an effective and flexible risk management tool for projects with a risk-profile that changes significantly over the life of the asset. In such circumstances, debt refinancing may result in an optimal outcome if the terms of the borrowings are adjusted commensurately with the risk at a particular point in time.

Reduced interest cost, however, is not the only rationale for soliciting debt refinancing. Indeed, some argue that debt refinancing is more about increasing the debt amount by lowering the coverage ratio — the ratio of the cash flows from the project against debt service — and lengthening the term of the debt (Yescombe 2007).

Other covenants might warrant change in the life of long-lived assets or loans because debt refinancing can introduce a series of new risks into a PPP arrangement. It is essential to maintain a reasonable balance between the benefits of debt refinancing against perceived project-wide or sector-wide implications, including transaction costs.

Risks associated with debt refinancing, such as increases in termination liabilities or an extension of the contract period, have to be balanced against the potential benefits. Debt refinancing also introduces other ‘not so clear’ risks that need as much consideration. For example, increasing the overall level of debt can exacerbate the probability of default, which, in turn, potentially destabilises the company’s ability to deliver quality services.

Debt refinancing can also lead to problems arising from asymmetry of information (chapter 2). For example, the private sector could increase the amount of debt to accelerate the benefit to its shareholders by way of early payout of inflated dividends. The implication of this is that the public sector would be left with increased termination liabilities.

In response, policy makers in some countries have developed guidelines to prevent refinancing that generates large returns to the private sector and at the same time increases the risk to the public sector without due regard to value for money.

In the United Kingdom, the refinancing of all PFI projects is subject to a requirement for gain sharing. Since 2002, it is mandatory for any refinancing gains to be shared equally between the public and private sectors. A voluntary code applies to pre-July 2002 PFI projects for which the government would generally expect to receive 30 per cent of the gains from debt refinancing. To February 2006, the Government has received £137 million from these arrangements (NAO 2006). In response to the substantial fall in interest rates as a result of the financial crisis, new rules were introduced in November 2008 to split any gains from refinancing on a 70 per cent public and 30 per cent private basis (Jameson 2008).

In Australia, the Victorian and NSW Government policy is that they are entitled to a 50 per cent share of any refinancing gain provided that the projected equity return at the time of refinancing (taking into account any refinancing) exceeds the original estimate (DTF 2005; NSW Treasury 2007b). In both the NSW New Schools and Lane Cove Tunnel projects, for example, the concession arrangements include the right for the Government to share 50 per cent of any gain derived by the private sector from refinancing these projects (NSWDET 2006; RTA 2004).

Sale of equity interest

In the United Kingdom, the sale of equity interests in PFI projects is an emerging innovation. It involves transferring the ownership of assets from the original PFI equity-owners to investors in specialised secondary capital markets.⁸ This typically takes place as projects move into the post-construction operational phase of their life cycle.

The original equity holders (usually project sponsors) tend to be the ones with the financial expertise and, as such, their presence during the construction phase — usually the most risky phase — is critical for risk management. Indeed, in the United Kingdom, most PFI arrangements specify that the sponsors must retain their equity until the project has made the transition into the operational phase (Semple Fraser 2006; Yescombe 2007).

Once projects have reached the operational phase, the original project sponsors are usually in a position to dispose of their shares ‘at a reasonable price’ if they choose.

⁸ Secondary Market Funds include Henderson Global Investors, Infrastructure Investors, Innisfree and Secondary Market Infrastructure Fund (NAO 2006).

Indeed, in the United Kingdom, a survey of PFI projects indicates that share sales had occurred in 32 out of 80 projects (around 40 per cent) (NAO 2006).

For project sponsors, the ability to sell their equity holdings in the secondary market, frees up capital that they can re-invest back into the primary market. An increased supply of capital in the primary market lowers the cost of capital, mainly because of reduced liquidity premium. The project sponsors would require a reward commensurate with the level of risk they bear (such as construction risk). Subsequently, the risk premia for equity holders during the operational phase — where most PFI projects generate stable and regular incomes is less. Consequently, there is typically an adjustment to reflect this change in risk.

Such allocation of risk-return dynamics affects the risk-adjusted return for all investors over the life of the asset. This translates into the efficient pricing of PPP projects that potentially benefit users by way of reduced user charges and/or lower funding requirements for government for the provision of public goods and services.

Trends

Among the studied countries, PPPs are at different stages of development and use:

- Australia, the United Kingdom and France have had extensive experience with PPPs (OECD 2007; Yescombe 2007).
- In the United States, more than half the states have PPP-enabling legislation, and some states including California, Texas, Virginia and Florida have been actively using PPPs for the provision of transport infrastructure (Deloitte Research 2007).
- In Canada, PPP activity is conducted on a one-off basis rather than through a comprehensive government program, in contrast to the United Kingdom and Australia.
- In New Zealand there are very few PPPs.

Australia

In Australia, PPPs have been used to deliver both economic and social infrastructure projects. At the national level, 39 projects totalling almost A\$17 billion were contracted with private parties between 2000 and 2006 (table 8.2).

Table 8.2 PPP investment in infrastructure projects, 2000 to 2006

<i>Government</i>	<i>PPP projects</i>	<i>Value of PPP projects</i>
	no.	A\$m
Australian Government	2	706
New South Wales	15	8 000
Victoria	16	4 500
Queensland	2	2 500
Western Australia	1	200
South Australia	1	40
Tasmania	1	90
ACT	0	0
Northern Territory	1	600
All	39	16 636

Sources: COAG (2007b); DOD (2006); NSW Treasury (2006a); Parliament of Australia (2006).

In 2006-07, PPPs in Australia accounted for around 5 per cent of public investment in infrastructure (chapter 2). New South Wales and Victoria have made the greatest use of private provision of capital for public infrastructure.

In New South Wales, PPPs have averaged around 11 per cent of government capital works since 1993-94, and are expected to make up between 10 to 15 per cent of public investment in the future (Parliament of NSW 2006b). Of the 15 PPP projects completed between 2000 and 2006, just under 50 per cent are classified as social infrastructure projects. They included the building of new schools, a public housing project, a community health centre and a hospital.

In Victoria, PPPs accounted for around 10 per cent of public investment between 2000 and 2006 (Parliament of Victoria 2006). Of the 16 PPP projects completed between 2000 and 2006, 50 per cent were social infrastructure projects. They included the building of a county court, a hospital, correctional facilities, and the mobile data network designed to upgrade Victoria's capacity to deal with large scale emergencies.

Canada

Historically, Canadian PPP projects were related to the delivery of transport infrastructure. Since 2002, however, they have been more widely used in areas such as healthcare and accommodation, notably in Ontario and British Columbia (Middleton 2002).

Since 2002, around 100 PPP projects have been initiated, of which 80 per cent are either operational or at the procurement stage. Collectively, the total capital cost of these projects is around C\$15 billion. Over one-third of the projects currently being considered are in the healthcare sector (Akkawi 2006).

European countries

France has a long history of PPPs dating from the 16th century. Their PPP contracts are performed under *Délégation de gestion du service public* contracts and include:

- *Concession* contracts which are similar to BOT (build, operate and transfer) or DBOT (design, build, operate and transfer) contracts. For example, the contractor chosen at the end of the tender process finances, builds and delivers the project for a specified period and at the end of the contract transfers the asset to the public sector.
- *Affermage* (franchise) contracts cover the operation of infrastructure but not the provision or upgrade of infrastructure or project financing. The water sector uses *affermage* contracts extensively (chapter 9).

In 2006, more than 20 000 PPP contracts were in force with private operators. These contracts have been used to develop a range of infrastructure facilities from railway, electricity and water provision networks, to motorways, waste management, district heating, stadiums, museums, hospitals, prisons and courts (Bergère 2006).

For key infrastructure sectors (water, urban waste, district heating, urban transport, toll motorways and car parking), PPP contracts were valued at around €21 billion — which represents 63 per cent of public investment in 2006. By value, the water sector had the largest private sector involvement with over €8 billion, comprising 71 per cent of total investment. Toll motorways are 100 per cent privately financed and total around €6 billion (Bergère 2006).

In contrast to France, the Netherlands and Germany are relative recent users of PPPs:

- The Federal Government in Germany declared in 1999 that it would implement PPPs as a new form of cooperation between the state and the private sector. Between 2000 and 2005 more than 300 PPP projects were planned, and in some cases completed, in several sectors (DIFU 2005).
- In 1999, the Netherlands Government established the PPP Knowledge Centre to initiate and stimulate the use of PPPs. Since then, five PPP projects have reached financial closure, comprising two road projects, a school, a rail service and a wastewater treatment plant. A number of accommodation PPP projects are

currently being considered (OECD 2006b). Overall, PPP projects account for a very small share (less than 1 per cent) of public investment in infrastructure.

Advocates of PPPs argue that their use in the Netherlands point to the efficiency benefits of PPP. As the Netherlands public-sector finances are in a healthier state than those in other European countries, this suggests that their use of PPPs was not motivated by wanting to avoid public-sector financing and disclosure of expenditure on infrastructure (OECD 2006b).

New Zealand

The NZ Government has not been involved in any PPP arrangements (NZ Treasury, pers. comm., 30 August 2007) — possibly because of the extent of privatisation. However, there are a limited number of partnering arrangements with local authorities — including a BOOT project (Auckland Indoor Arena), a DBMO project (the Wellington sewerage treatment plant), a joint venture (the Canterbury regional landfill facility), an alliance (Auckland's Grafton Gully road construction), and a franchise agreement (to operate Papakura water and wastewater services) (Controller and Auditor-General 2006).

While there are few restrictions on the use of PPPs in New Zealand, the few are notable, namely:

- the *Corrections Act 2004* — which prohibits the Crown from entering into any contract for the management of any prison
- section 136 of the *Local Government Act 2002* — which restricts any water service contract with the private sector to a maximum of 15 years and requires a local authority to retain control over pricing, management, and policy development relating to the delivery of water services
- the *Land Transport Management Act 2003* — which provides a disincentive to private-sector involvement in road projects (Katz 2006).

These restrictions arose out of a government coalition agreement with minor parties (NZ Treasury, pers. comm., 30 August 2007).

United Kingdom

In the United Kingdom, the Private Finance Initiative (PFI) has generated a large number of PPPs. Under the PFI:

- The private sector constructs the capital asset and is responsible for its continuing operation and maintenance. The public sector pays the private sector

a stream of committed revenue payments for use of the facilities over the contract period, which is generally between 15 and 30 years.

- Contracts typically specify broader output requirements. For example, the specifications for a hospital are expressed in terms of the medical services required rather than a building design. It would be up to the private sector bidder to come up with a design that meets the public sector client requirements.
- An appropriate amount of risk, as comprehensively defined by HM Treasury, is transferred to the private sector — otherwise the project has to be classified as a public-sector project and remain on the government balance sheet and contribute to measures of government borrowing (HM Treasury 2003a).

PFI's were initiated in the United Kingdom in 1992. In 2005-06, their use accounted for around 10 to 15 per cent of public-sector investment with almost 600 projects completed, valued at £53 billion. These included 185 new or refurbished health facilities, 230 new or refurbished schools and 43 new transport projects (HM Treasury 2006a; 2007). In 2006-07, PFI's accounted for 16 per cent of public investment in infrastructure (chapter 2).

United States

PPPs in the United States have been used to deliver both economic and social infrastructure projects since the mid-1990s.

At the state and local level, the dominant area of investment, both in number of projects and total dollar value, is water and wastewater facilities. Around 4000 drinking water systems (7.5 per cent) are operated and maintained through a PPP (NCPPP, pers. comm., 28 July 2007). In comparison, less than 2 per cent of wastewater treatment plants are managed under a PPP arrangement (USEPA 2002).

PPPs in the transportation sector (roads, airports, rail terminals, bridges and tunnels) have been increasingly used to supplement a strong tradition of public provision. Between 1993 and 2005, the US Government invested around US\$750 billion in highway improvements. Of this, around 3 per cent (US\$21 billion) was invested in 43 major highway facilities using various PPP financing models. California, Florida, Texas and Virginia accounted for 50 per cent (or US\$10.6 billion) with 18 major highway PPP projects (Grote 2006).

The US Department of Transport has attributed the increased use of PPPs in the transportation sector to a widening gap between infrastructure needs and the current rate of government investment (box 8.3)

Box 8.3 **Transportation infrastructure funding shortfalls**

The US Department of Transport claims that the:

- average annual cost to maintain highways and bridges is projected to be US\$78.8 billion from 2005 to 2024 — with a 12.2 per cent (US\$8.5 billion) shortfall compared with 2004 capital expenditures
- estimated cost to improve (as well as maintain) the infrastructure is US\$131.7 billion — with an 87.4 per cent (US\$61.4 billion) shortfall.

The funding shortfall is attributed to the inability of federal grants and gasoline tax revenues to keep pace with increased demand for upgraded and new highways. In addition, the shortfall is exacerbated by federal law that encourage financially constrained planning because projects cannot be pursued unless and until federal funding is available. States are constrained by a pay-as-you-go (PAYGO) financing which restricts their ability to undertake effective long-term planning for new projects.

The alternative to PAYGO financing — issuing bonds — has been a minor source of borrowing. In many states, voter approval is legally or constitutionally required to authorise the issue of general obligation bonds. Further, rating agencies could downgrade their credit rating if a state already has a large debt burden, which can result in higher interest charges on all their debt. The federal government has encouraged state governments to borrow against future grant revenues using Grant Anticipation Revenue Vehicles (GARVEE) bonds. However, federal grants have grown slowly because of political constraints on increasing taxes.

Sources: FHWA (2007b); Samuel and Poole (2007).

The federal government has also entered into a number of PPP arrangements to upgrade housing for military personnel under the Military Housing Privatisation Initiative established in 1996. As at February 2007, the Department of Defence had awarded 71 projects to the private sector — upgrading over 147 000 military family housing units at a total cost of around US\$20 billion (USDOD 2007).

8.2 **Policy issues**

The key policy issues relating to PPPs are fiscal constraints on government borrowing, the accounting treatment of PPPs, risk allocation between the contracting parties, the public justification for PPPs, the tendering process, taxation and the sustainability of highly leveraged financing.

Fiscal constraints

There is evidence to suggest that a number of Australian states used PPPs because they were reluctant to borrow for large capital projects that would compromise their credit rating.

Preserving credit ratings remains a high priority. For example, the WA Government adheres strongly to a policy of retaining a AAA credit rating. To retain this rating, it has committed to the following fiscal rules:

- maintain a net debt-to-revenue ratio for the total non-financial public sector at or below 47 per cent
- ensure that real per capita own-purpose expenses for the general government sector do not increase.

The first rule places a constraint on the amount of money that the WA public sector can borrow to finance capital spending, potentially limiting the size of the government's capital works program. The second rule limits the ability of the government to incur future operating maintenance and depreciation expenses flowing from capital spending in the general government sector (COAG 2007b).

The Victorian Government is committed to maintaining a AAA credit rating and the current low level of state net debt (DTF 2007a; 2007b). Similarly, the SA Government is committed to 'prudently managing State finances to maintain a triple-A credit rating' (Government of South Australia 2007, p. 2).

In New South Wales, fiscal rules are enshrined in legislation. The *Fiscal Responsibility Act 2005* sets fiscal targets that rely on maintaining the level of government debt 'as a proportion of gross state product at or below its level as at 30 June 2005'.

Fiscal rules also apply in the other studied countries (Canada, the European Union member states including the United Kingdom, New Zealand and the United States). These, along with those applying in Australia, are discussed in chapter 4.

Transparency of financial commitments

A policy concern is that PPP projects generally establish a long-term funding commitment by the public sector but most economic infrastructure projects are recorded 'off balance sheet'. Consequently, the debt associated with PPP projects is not recorded on the government's accounts in the year in which it was incurred by the private sector, but rather as a series of smaller annual recurrent payments (as forgone toll revenues, rental streams or debt servicing expenditures) over the life of

the project. The level and cost of underlying public debt is not transparent to the public and the balance sheet reflects a stronger financial position than it would otherwise.

Accounting treatment of PPPs in Australia

PPPs are sometimes known as service concession arrangements. There is no Australian or international accounting standard or definitive guidance material on accounting by a grantor of a service concession (Parliament of Victoria 2006). There is, however, Australian Interpretation 12, *Service Concession Arrangements* (which is equivalent to the International Accounting Standards Board's IFRIC Interpretation 12, *Service Concession Arrangements*), which applies to service concession operators.

The Australian Accounting Standards Board has established an Advisory Panel to make recommendations on whether, and how, Australian Interpretation 12 might apply to grantors. The International Public Sector Accounting Standards Board also has its own project to examine service concession arrangements, which is in its early stages.

Most PPP arrangements have the characteristics of a lease agreement — the notable exception is user-pay agreements (Parliament of Victoria 2006). Consequently, reliance has been placed on the Accounting Standard AASB 117 *Leases* and on guidance material issued by the Heads of Treasury Accounting and Reporting Advisory Committee in the absence of authoritative guidance.⁹

In Australia, lease arrangements are classified as either an operating or finance lease.

- An operating lease is similar to a rental arrangement in that a payment is made by the lessee (the government in the case of PPPs) to use an asset. Under an operating lease, the lessor (the private provider) retains exposure to the risks and benefits incidental to the ownership of the asset.
- A finance lease is a form of borrowing by the lessee (the government) to obtain an asset. It is usually long-term and covers the majority of the economic life of the asset. The lessor's role is primarily to provide finance. At termination, the asset is usually transferred to the lessee for a specified sum, typically by

⁹ The guidance material reflects the principles detailed in the UK Reporting Standard FRS 5, Reporting the Substance of Transactions: Private Finance Initiatives and Similar Contracts. In accordance with this standard, the NSW Treasury noted that social and economic infrastructure is accounted for in a different manner due to their unique risk profiles (NSW Treasury, pers. comm., 16 January 2008).

incorporating a guaranteed residual value in the contract. The government effectively assumes all the risks and benefits of ownership, including maintenance, repairs, insurance and obsolescence.

Implications

The distinction between operating and finance leases has important implications for the management of government financial reporting. Under Accounting Standard AASB 117, the lessee (the government) treats operating lease payments as an expense. In contrast, a finance lease agreement represents a form of financing from the lessor (private provider) to the lessee (the government) that ultimately leads to the purchase of the asset. An asset and a liability are recorded on the lessee's (the government's) balance sheet where the lease asset is depreciated and the lease liability is reduced by repayments over the lease term.

In Australia, most economic infrastructure PPP projects have traditionally been treated by the government as operating lease agreements. Consequently, the debt (total value of payments payable by the government to the private-sector provider) has not been recorded as a liability in the government's financial reports. In effect, all the risks and benefits incidental to ownership are treated as though they have been retained by the private-sector provider.

Following the introduction of the new Australian-equivalent International Financial Reporting Standards (AIFRS) in 2004-05, several PPP arrangements have been or will be reclassified as finance lease agreements.¹⁰ This development increased Victorian Government leased infrastructure assets by A\$605 million and their finance lease liabilities by around A\$1 billion (VAGO 2006).

In contrast, the accounting treatment for social infrastructure projects is to record them as finance lease agreements, irrespective of whether they are privately financed or financed using government debt. For example, repayment of the capital cost for the privately financed New Schools project in New South Wales is deemed to be a finance lease. The Government is deemed to be the owner of the schools because it primarily retains demand and residual value risk. A liability offset by an asset of equivalent value is recorded on the Government's balance sheet, once the facilities are operational. The fees for maintenance and other services are expensed (NSW Auditor-General 2006).

10 For a project to be classified as a finance lease, the Victorian Government has to finance 90 per cent or more of the asset costs. Moreover, the service contract must cover 75 per cent or more of the useful life of the asset and the contract must include 'a bargain basement provision' — whereby the Government can purchase the asset at the end of the contract term for substantially less than its realised value.

Accounting treatment elsewhere

As noted by Grimsey and Lewis (2002), most service contracts with the private sector under PPP arrangements fall somewhere between the strict definitions of an operating and finance lease.

Although there is no applicable accounting standard for grantors in PPPs, the Australian Accounting Standards Board's accounting framework requires reporting of all arrangements based on their economic substance rather than their legal form (Parliament of Victoria 2006). For example, in the case of a toll-road concession arrangement, legal ownership of the land rests with the government. However, the PPP asset is currently recorded in the operator's financial statements because it receives the economic benefits (user charges in the form of tolls) and accepts the majority of the risks associated with the project.

In the United Kingdom, the Financial Reporting Advisory Board has been concerned by the lack of consistency in accounting for PFI assets. All that has been agreed thus far is that the asset should appear on one party's balance sheet, not on both, nor on neither (FRAB 2007). As at July 2007, around 45 per cent of PFI projects by total capital value were included on the government's balance sheet (HM Treasury 2007).

In the 2007 Budget Statement, the UK Government announced that it will prepare financial statements based on the International Financial Reporting Standards (IFRS) from 2008-09. As happens in Australia, this will have implications for the accounting treatment of PFIs.

There is also evidence to suggest that most PPP projects in the United States remain off balance sheet (Deane et al. 2005). At the federal level, PPPs used by agencies to finance the acquisition of capital assets are treated in the budget in a manner that is inconsistent with two fundamental principles of federal budgeting, namely:

- financial commitments should be recognised upfront in the budget, at the time those commitments are made
- the budget should be comprehensive in capturing all financial activities of the government (CBO 2003b).

There remain significant differences about the appropriate budgetary treatment of PPPs between the Congressional Budget Office and the Office of Management and Budget. This has resulted in a piecemeal approach to the recording of federal commitments (CBO 2003b).

Risk allocation between the contracting parties

Under a PPP arrangement there is a reallocation of some of the risk to the private sector, which is intended to reduce the level of risk to the government and ultimately taxpayers. Depending on the form of the contractual arrangement, the risk reallocation can cover construction, financing, performance, demand and residual value risk (chapter 2).

Governments have established guidelines that make it explicit that their aim is to ensure an optimal allocation of risk. For example, the Victorian Government's PPP guidelines state that:

The principal governing risk transfer is that the risk will be allocated to whoever is best able to manage it at least cost, taking into account public interest considerations. This does not mean that all risk is transferred. If risk is transferred inappropriately, the Government will pay a premium. The ability to secure risk transfer on worthwhile terms requires the scope of the project to be drawn sufficiently widely. (DTF 2000, p. 10)

Similarly, the stated aim of the NSW *Working with Government Guidelines* is 'to optimise risk allocation so that value for money is maximised in each project on a whole-of-life basis' (NSW Treasury 2006b, p. 44). The aim is not to maximise risk transfer from the government to the private sector. For example, inflation and interest rate risks associated with the Bonnyrigg 'Living Communities' PPP project are shared between the NSW Department of Housing and the private contractor (NSWDH 2007).

Material adverse effects in toll-road projects

One example of the inappropriate allocation of risk can be found in toll-road projects. The greatest risk to the viability of a toll-road project is revenue risk associated with traffic volumes. This risk has been addressed with the inclusion of 'material adverse effect' (MAE) clauses in the Concession or Project Deed.¹¹

The MAE clauses typically allow the private sector to seek redress against the government should it implement policy changes or approve projects that cause detriment to the PPP project revenue during the concession period (Hepburn et al. 1997). Compensation can be in the form of an increased concession term, or a right to increase the toll or user charges, or in monetary form, or a combination of those forms (Chew et al. 2004).

11 In New South Wales the MAE acronym stands for 'materially adverse event'.

In the past, MAE clauses were used to reduce risk to the private sector by the granting of options over the project's cash flows. This option effectively increases the cash flows available for, and lowers the risk of returns to, equity investors. For example:

- in the case of the M2 Motorway in Sydney, a real after-tax internal rate of return (IRR) of 12.2 per cent for a hypothetical initial equity investor is to be achieved before the Hills Motorway Group is obliged to pay the government the concession fees in cash
- the private companies that operate CityLink in Melbourne and the Eastern Distributor in Sydney can defer payment of concession fees in cash if a real after-tax IRR of 10 per cent for a hypothetical initial equity investor is not achieved (Brown 2005).

Until the IRR is reached, the companies can reportedly elect to issue promissory notes in lieu of payment. Under the terms of the agreement, the government cannot present any of the promissory notes for payment until the earlier of either the end of the period of the contract or the achievement of the required IRR (Brown 2005).

If the IRR hurdle has been set on the basis of overestimated traffic volume forecasts (there is evidence to suggest this has been the case), then clearly the public sector bears some portion of the revenue risk. Consequently, by deferring the concession fee payment, the government may not be fully compensated for the granting of options over the project's cash flows (Brown 2005).

Consequences

One of the problems with MAE clauses is that they have the potential to transfer some of the cost of risk to the public in the form of a loss of flexibility or loss of 'option value'. This loss of option value occurs because MAE clauses commit governments to particular courses of action over the life of a PPP contract (around 30 years). Such long-term commitments can be detrimental to the public interest if necessary infrastructure provision is prevented (Hepburn et al. 1997).

Since 2005, there is evidence to suggest that there are fewer, less restrictive MAE clauses in toll-road contracts. As a result, the private sector is effectively assuming more of the downside traffic risk with governments sharing in excess toll revenue (Brown 2005).

Indeed, as confirmed in the second report on *The Cross City Tunnel and Public Private Partnerships*, the transfer of patronage and therefore revenue risk to the private sector was clearly demonstrated when the major equity investor devalued their holding in the Cross City Tunnel project by A\$102 million, in view of lower

than projected toll revenue (Parliament of NSW 2006b). The net devaluation on the subsequent sale of the Cross City Tunnel was considerably more than A\$102 million and was borne by the private sector with no loss to the taxpayer.

Justification for PPPs

The decision to use PPPs is based on the principle that they provide greater ‘value for money’, or improved services for the same amount of money, as the public sector would spend to deliver a similar project (Grimsey and Lewis 2005).¹²

There are six key drivers that affect whether PPP projects represent value for money. These are risk transfer (the allocation of risk), the long-term nature of projects (including whole-of-life costing), the project specification, competition in bidding, performance measurement and incentives, and private sector management skills (Arthur Andersen and Enterprise LSE 2000; Grimsey and Lewis 2005).

In Australia, the Netherlands and the United Kingdom, an assessment is made by comparing outputs and costs of PPP proposals against the public sector comparator (PSC) in determining whether a PPP project offers value for money.¹³

The PSC estimates the hypothetical risk-adjusted cost if a project were to be financed, owned and implemented by government. In Australia and the United Kingdom, four core cost elements are considered in comparing the PSC and the PPP project in determining value for money. These are the project costs (capital and operating), value of risk to be transferred to the private sector, value of risk retained by the public sector, and competitive neutrality adjustments (removal of any net advantages or disadvantages that accrue to a government business by virtue of government ownership).

The PSC is calculated as the net present value of an estimated net cash flow based on a specified government discount rate over the required life of the project. The discount rate chosen is contentious because it depends on an analysis of the risks without any certainty of their likelihood and it can greatly affect the relative value of the PSC. For example, using a higher discount rate will favour the PPP project because PPP costs to the public partner are spread out over more time.

12 Value for money equates to the best available outcome after taking account of all the benefits, costs and risks over the whole life of the procurement.

13 Canada, France, Germany, New Zealand and the United States do not have established procedures such as the PSC approach when assessing value for money (Grimsey and Lewis 2005).

There is no clear consensus among economists, policymakers and practitioners about what the discount rate should be and whether it should be the same for each PPP project. Consequently, different methodologies have been used for valuing risk allocation and for discounting cash flows in Australia and the United Kingdom. For example, in the United Kingdom, the government has taken the approach that one discount rate should be used for all projects across the public sector. In contrast, some jurisdictions in Australia, notably New South Wales and Victoria, have advocated that a specific discount rate should be determined for each project (NSW Government 2007).¹⁴

Despite criticisms of the PSC approach, the value for money tests based on PPP–PSC comparisons have provided some information on the expected overall gains from PPPs.

- It has been reported that privately-financed projects in the United Kingdom delivered savings on average of around 17 per cent over traditional forms of service delivery. Projected savings are, however, sensitive to risk transfer valuations that accounted for 60 per cent of forecast cost savings (Arthur Andersen and Enterprise LSE 2000).
- For a selection of PPP projects in Victoria, the estimated savings using a 8.65 per cent nominal pre-tax discount rate have ranged from 28 per cent for a wastewater facility at Echuca–Rochester, to 5 per cent for the Spencer Street Station Redevelopment (Fitzgerald 2004).
- In New South Wales, the first contract under the New Schools project is estimated to save 7 per cent or A\$10 million, compared to the traditional method of procurement, with the second contract estimated to save 23 per cent or A\$45 million. The savings predominately come from the estimated cost of risk transferred to the private sector (NSW Auditor-General 2006).

However, these benefits might be over- or under-estimated. As noted by Grimsey and Lewis (2005):

The PSC approach is itself not a ‘first best’ approach but a cost-effective compromise between a full cost–benefit analysis of all project options (as in Germany) and simply selecting the ‘best’ private bid (as in France) which at the same time ensures that all projects are treated in a like for like way and are subject to a broadly similar and systematic test for [value for money]. (p. 365)

The extent to which PPPs provide value for money is inconclusive as the actual outcomes under alternative arrangements is always unknown. Further, as noted by the Parliament of Victoria (2006):

14 A traditional discounted cash flow analysis might not be an adequate valuation method if there are embedded options in the contract (chapter 2).

Judging whether value for money is being achieved through private financing of public infrastructure is difficult due to the lack of independent evaluation work undertaken to date in both the United Kingdom and Australia. The Committee concurs with the view of Fitzgerald and other commentators that this needs to be addressed. (p. 136)

Management of the tendering process

It is essential that there is sufficient competition in the tendering process to ensure that the private sector provides the highest valuation for the contract (and is willing to accept the lowest price).

If there are a limited number of bidders, the competitive pressure will be weak. This can potentially undermine the principle that PPPs provide value for money, or improved services for the same amount of money, compared to the traditional procurement approach. However, the benefits of competition have to be weighed against the cost incurred by bidders in participating in the tendering process.

It was noted by the Parliament of Victoria (2006) that there is a lack of depth in the Australian construction market. There are a small number of large contractors with the financial and technical capability to undertake large and complex projects. The lack of depth was highlighted when two competing consortia for the EastLink project involved related companies which were competing against each other.

Only three consortia were short-listed for the development of the new A\$850 million Royal Children's Hospital in Melbourne. However, PFI contracts in the United Kingdom averaged four bidders each. This was considered to be an optimal number to provide strong competition because it would be unlikely that the costs of encouraging and managing additional 'serious' bids would outweigh any benefits of additional competition (HM Treasury 2003a).

Taxation and PPPs

Until recently, the potential issues concerning taxation and PPPs in Australia related principally to Section 51AD and Division 16D (the so-called leasing provisions) of the *Income Tax Assessment Act 1936* (Cwlth).¹⁵ The aim of these provisions was to prevent tax-exempt entities (typically governments) from transferring tax benefits related to depreciation and other costs to private sector financiers.

15 In 1999, the Ralph Report (Review of Business Taxation) recommended that Section 51AD and 16D be abolished, as part of a package of reforms relating to tax-exempt leasing.

It has been claimed that these provisions were unique to Australia and acted as an impediment to private-sector investment in public infrastructure (BDW 2003). In effect, these provisions acted to deny taxation deductions where it was deemed that government had control of the assets or where the contractor was deemed to have assumed insufficient risk (box 8.4).

Box 8.4 Taxation provisions and their impact on investment in PPP projects

Section 51AD and Division 16D were specific ‘anti-avoidance’ provisions designed to protect the Australian Government’s income tax revenue from certain arrangements involving the use of property by parties whose income is tax-exempt.

- Section 51AD applied to property acquired or constructed by a taxpayer, which was predominately financed by non-recourse debt. It denied taxpayer deductions for interest on borrowings, depreciation and investment allowances, with all income remaining taxable.
- Division 16D applied to non-leveraged arrangements and treated certain non-leveraged finance leases and similar arrangements with tax-exempt entities which do not predominantly involve non-recourse finance, as the provision of a loan. As such, depreciation and associated benefits of ownership of property were denied tax deductions.

In August 2007, the Australian Government introduced amendments to the *Income Tax Assessment Act 1936* (Cwlth) which modified the treatment of leasing and similar arrangements between taxpayers and tax-exempt entities (including foreign residents) for the financing and provision of infrastructure and other assets. Transactions entered into on or after 1 July 2007 are not subject to Section 51AD and Division 16D.

The amendments contained in Division 250 of the *Income Tax Assessment Act 1936* (Cwlth) will apply (broadly) to a taxpayer if tax preferred end users — such as tax-exempt entities (government and charities) and non-residents — directly or indirectly use, or effectively control the use of an asset. In addition, the taxpayer must not have the predominant economic interest.

This is the case if the following conditions are satisfied:

- more than 80 per cent (55 per cent for non-resident end users) of the cost of acquiring or constructing the asset is financed by limited recourse debt
- at the end of the arrangement, the asset may be transferred to a tax preferred end user at less than the market value of the asset

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- the arrangement is effectively non-cancellable and the period of the arrangement is greater than 30 years or 75 per cent of the asset's remaining effective life (whichever is less) and either
 - the asset has a guaranteed residual value
 - the arrangement is a debt interest or
 - the value of the financial benefits provided in relation to the tax-preferred use of the asset exceeds 70 per cent of the adjustable value of the asset.

If Division 250 applies to an arrangement, private-sector investors in PPPs are not entitled to capital allowance deductions. However, the arrangement is treated as a deemed loan, with tax payable on a notional return calculated on a compounding accruals basis. Unlike section 51AD, Division 250 does not result in the taxpayer being assessed on the full amount of the financial benefits received. Further, the taxpayer is entitled to deduct interest payments (and other similar holding costs).

Prior to these amendments, the private sector faced expensive contractual structures to circumvent the restrictions of section 51AD. For example, non-recourse or limited recourse funds had to be replaced with sufficient equity, floating charge debt, or some form of purchased guarantee, to reduce the portion of non-recourse funding to less than 50 per cent of the financial backing of the project (Grimsey and Lewis 2002).¹⁶

Further, there is now less need for the private sector to approach the Australian Taxation Office (ATO) for a private binding ruling before building infrastructure. Advice will have to be sought just for situations where financing or pricing has to be confirmed or amended to ensure that no party generates a 'windfall gain' from the transaction (BDW, pers. comm., 18 January 2008).

Sustainability of highly leveraged financing

From the beginning of 2000 until the global financial crisis in mid 2008, there were two prominent market conditions enabling increased leverage in project-financed investments. These were the soaring valuation of infrastructure assets and the availability of cheap credit.

The credit quality is perceived to deteriorate as the equity component of the capital structure diminishes with an uplift in project leverage. For some recent

¹⁶ The use of non-recourse debt restricts the default exposure of the acquiring owner or lessor to the income stream generated by the property or the value of the property in question. In contrast, all the assets and income of a borrower are at risk if floating charge debt is used.

infrastructure deals, the debt-to-EBITDA (earnings before interest, taxes, depreciation and amortisation) ratios reached a multiple of between 12 and 30 at transaction inception. As some industry participants noted, such gearing levels are far in excess of the norm for this type of investment (Bysouth 2005; Wilkins 2006).

The highly priced and leveraged deals in this period raised concerns about the possibility of an asset price bubble forming in the burgeoning field of infrastructure investment (Bysouth 2005; Clowes 2007). These concerns are related to a deterioration of the credit quality of infrastructure funds:

... the infrastructure sector is in danger of suffering from the dual curse of overvaluation and excessive leverage — the classic symptoms of an asset bubble similar to the dotcom era of the last decade. (Wilkins 2006, p. 1)

... it appears there might be a pricing bubble forming within the infrastructure asset class, with investors seeking stable returns by investing in infrastructure funds. Those investors, however, could end up being exposed to overpriced and overleveraged assets, with valuations and debt driven upward by the fierce competition among infrastructure funds. (Wilkins 2006, p.6)

Adding to these concerns was the subprime mortgage financial crisis which began in the United States in 2007, and spread to global financial markets coming to a head in mid-2008. The view expressed by Parbrook (2007) of possible repercussions of this development including a tightening of market liquidity and a reassessment of risk appetite among investors has come to pass, but whether this will result in a new trend of ‘deleveraging’ in capital markets remains to be seen.

In addition, the prospective implementation of the revised Basel Capital Accord (Basel II), and any revisions stemming from the response to the financial crisis, could increase the cost of funds to banks that lend to project-financed investments because of the more stringent minimum capital requirements for project loans. This change in global banking regulation potentially restricts project financing activity because bank loans have accounted for up to 80 per cent of the debt finance for such investments (Esty and Sesia 2004).

8.3 Strengths and weaknesses

Public–private partnerships can support increased infrastructure investment without adding to government borrowing and debt.¹⁷ They can, however, generate future liabilities in the form of expenditure commitments and contingent liabilities that should be recognised in government accounts. Less controversially, they bring

¹⁷ They can even be a source of government revenue when private operators sell services directly to the public, and pay the government a concession fee and/or share of the profits.

forward the delivery of infrastructure projects when governments face fiscal constraints that prevent the use of traditional government procurement methods.

It is also claimed that the bundling of PPP functions for major infrastructure projects can provide whole-of-life cost savings, and increase efficiency by delivering services of a higher quality or at a lower cost (Grimsey and Lewis 2007; IMF 2004b). The main efficiency gains arise where the contract arrangements allocate risk to where it is best managed (chapter 10).

A number of studies have found that PPPs are more likely to deliver projects on time and within the contract price compared to traditionally procured projects. It has also been claimed that the use of project finance creates an incentive to ensure PPP projects are delivered on time when cash flow generated by a project is the main source for repaying debt (Grimsey and Lewis 2005).

In a recent study undertaken for Infrastructure Partnerships Australia, it was estimated that PPP projects would generate around A\$6 billion in potential savings over the next decade compared to traditionally procured projects. Underlying this estimate is the assumption that PPPs account for a 10 to 15 per cent market share of public investment in infrastructure (ACG 2007).

Cost effectiveness

One of the key strengths of a PPP arrangement is that functions including design, construction, financing, operating and maintenance of the asset in question are usually bundled together. This provides opportunities to align incentives for low cost construction with minimising life-time costs of operation, thereby reducing whole-of-life costs.

It is claimed that the bundling of these activities provides value for money that cannot be obtained by contracting services individually under a traditional procurement approach. In contrast, capital-constrained governments can lower construction costs of a publicly financed project at the expense of much higher long-term costs of maintenance and operation (Webb and Pulle 2002).

From a review of eight PPP projects in Victoria, Fitzgerald (2004) concluded that there was credible evidence of the benefits that flow from PPPs including innovation of design, timeliness of delivery, certainty of price and a whole-of-life approach to maintenance.

Optimism bias

Both public- and private-sector projects have the potential to suffer from optimism bias. That is, project appraisers have a tendency to underestimate project costs and duration or overestimate project benefits. The private sector has arguably a stronger incentive than a government agency to correctly identify the whole-of-life costs of construction and operation, and the likely revenue stream, if project risk is transferred to the private sector.

In July 2002, the *Review of Large Public Procurement in the UK* was undertaken for HM Treasury (MacDonald 2002). The study identified high levels of optimism as one of the principle causes of poor performance of the UK public-sector construction projects.¹⁸

It was concluded that the performance of projects procured using PPPs was much better, due in part to the more rigorous approach to risk analysis and the establishment of a robust and realistic business case. Generally, the PPP projects were completed ahead of schedule (whereas 17 per cent of traditionally procured projects were delayed). Moreover, these PPP projects experienced 1 per cent cost overrun on average (relative to an average cost overrun of 47 per cent for traditionally procured projects).

The findings from a study undertaken by the UK National Audit Office of PFI construction performance provide further evidence that PPP projects can be a more cost-effective option:

- 73 per cent of government projects were not delivered within the contract price compared to just 22 per cent for PPP projects
- 70 per cent of government projects were delivered behind schedule compared to just 24 per cent for PPP projects (NAO 2003).

In Australia, the Allen Consulting Group and researchers at the University of Melbourne recently completed a study comparing the performance of PPPs and traditionally procured projects at the behest of Infrastructure Partnerships Australia (ACG 2007).

Based on a sample of 21 PPPs and 33 traditionally procured projects, they found that traditional projects were subject to significant optimism bias in cost and time overruns:

¹⁸ Optimism bias is defined as a measure of the extent to which actual project costs (capital and operating) and duration (time from business case to benefit delivery (project duration) and time from contract award to benefit delivery (works duration)) exceed those estimated.

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- cost overruns measured from contractual commitment to project completion, were 1.2 per cent for PPPs compared with 14.8 per cent for traditionally procured projects
 - on a value-weighted basis, measured from contractual commitment to project completion, PPPs were found to be completed 3.4 per cent ahead of time on average, while traditionally procured projects were completed 23.5 per cent behind time on average.

The Cross City Tunnel PPP project is one example of optimism bias in the private sector. Traffic patronage was overestimated by the winning tenderer and revenue was subsequently lower than anticipated. As a consequence, the private operator became insolvent as it was unable to meet its interest repayments. The Cross City Tunnel was acquired in September 2007 by ABN-AMRO and Leighton Contractors Consortium who will assume day-to-day management and maintenance responsibility under a PPP arrangement with the NSW Government.

The problem with optimism bias is that it can lead to inefficient investment decisions – that investments go ahead which do not meet the required performance benchmarks. While the data also suggest that PPP projects are more efficient during the construction phase than traditional procurement, care is needed in applying this interpretation as a like with like comparison is not possible. It could be that the private partner is simply more realistic in the costing and timing estimates than the public sponsor.

Capital market disciplines

Project financing imposes financial and managerial disciplines on the private sector. It is claimed that the private sector has a stronger incentive to make the right commercial design, construction and maintenance decisions when they are required to finance a PPP project and their capital is deployed at risk.

In non-recourse or limited recourse project finance, the risks for the lender are higher — the loan can only be repaid when the project is operational. If a major part of the project fails, the lenders are likely to lose a substantial amount of money. Consequently, lenders have an incentive to minimise the risks associated with the project and usually seek indirect credit supports in the form of guarantees, warranties and other covenants from the private-sector sponsors, their affiliates and other third parties involved with the project.

The lender and also equity providers have incentives to make sure that PPP projects are supplied on time and to the required standard when the generated revenue stream is the main source for repaying debt. In effect, having privately provided

finance at risk acts as a catalyst for superior management to that under government financed projects (Grimsey and Lewis 2005).

As noted by the Victorian Government (DTF 2007c):

The importance of the finance element of privately provided infrastructure lies in the incentive it can provide for the performance of that infrastructure, and the disciplines external financiers can provide on the delivery of projects to time and budget. While the key objective of government is to achieve a more comprehensive upfront consideration of risks in conventionally financed projects, it is difficult to replicate the strength of private financing incentives within a conventional financing process where all risks of delivery reside with Government. (p. 3)

Contractual complexity

Project financing is extremely complex. It can take a much longer period of time to structure, negotiate and document project financing than traditional financing, and the legal fees and related costs associated with project finance can be high. The risks assumed by lenders can be greater in non-recourse project financing than in more traditional financing. Consequently, the cost of capital can be higher than traditional financing.

Structuring PPPs is also complex and involves high upfront costs because there is a need to reconcile the aims of a large number of parties involved. On the public-sector side there are public authorities creating and implementing PPP policies, as well as those procuring the PPP. On the private-sector side, there are investors, lenders and companies providing construction and operational services. Most of these parties require an understanding of policy and finance issues and how their part of the project is linked to and affected by the roles played by other parties (Yescombe 2007).

Information asymmetry

The long-term nature of PPP contracts can exacerbate the principal–agent problem commonly referred to as information asymmetry (chapter 2). This problem occurs where the agent who controls a business has access to more information than the principal who owns it. This asymmetry of information can be used to give the agent an unreasonably large share of the benefits of a business (Yescombe 2007).

The agent, in this case the private-sector sponsor, can have more information about project costs, risks and legal solutions than the public sector agency awarding the contract. Consequently, the private-sector sponsor has the scope to inflate the investment costs when competition is limited. This can lead to higher tariffs to

users, higher operating subsidies if required, and a higher potential exposure of the public sector to contingent or direct liabilities.

A PPP contract, however, has the potential to overcome or militate against the increased costs derived from asymmetric information between the contractual parties, provided that:

- at the contract invitation and bidding stages, the private-sector sponsors are required to reveal such characteristics as their management experience as well as alternative approaches to implement a project including the costs and effects associated with each approach (Kee and Forrer 2002)
- the risk transferred to the private-sector sponsors triggers incentives for efficient financing and operation of the PPP project (Kee and Forrer 2002)
- the contract sets out performance measures that can be used to reward or penalise the private-sector sponsor
- the public sector establishes an enforcement structure that ensures contract compliance by the private-sector sponsors (Nordtveit 2005).

In addition, governments should put in place measures to address the consequences of asymmetric information. These include comprehensive auditing of the financial model used to derive projections of the operator's costs and rate of return, in-depth review of the operator's funding arrangements, and regular reporting of ongoing and future payments by government under the contract.

Transaction costs

Transaction costs include contracting and negotiating costs, the cost of arranging finance, as well as (after the formal contract agreement) monitoring, renegotiating and termination costs. These costs can be borne by the government or the private sector, or both and raise the cost of this financing vehicle. These costs are eventually borne either by taxpayers or reflected in user charges.

The downside of PPPs from the government's perspective is that they involve high transaction costs associated with:

- contractual development (legal and financial)
- longer contract development time (which can be up to two years or even longer)
- tendering (which requires extra legal and commercial scrutiny to be applied in the bidding stages, particularly in relation to the need to consider potential issues over the long term).

Notional thresholds

In order to justify the high transaction costs, some States in Australia only consider infrastructure projects of a certain minimum value as likely candidates for PPPs.

- The Australian Government's notional threshold is A\$100 million (Department of Finance and Deregulation, pers. comm., 31 January 2008).
- The NSW Government's notional threshold is A\$50 million, which could apply to the bundling of a small number of similar projects, or a regional infrastructure management package.
- The Victorian Government's notional capital cost threshold is between A\$50 and A\$100 million. However, the Government would consider smaller projects for PPP procurement if deemed suitable (Department of Treasury and Finance, pers. comm., 1 February 2008).
- Queensland's notional threshold is A\$100 million.

In the United Kingdom similar experience has shown that the PFI procurement route is inappropriate for individually procured projects with capital expenditure under £20 million because of the relatively high procurement costs (HM Treasury 2006b).

Importantly, the PFI is regarded as unsuitable for those projects where there are rapid technological or other changes which make it difficult for both procuring authorities and bidders to confidently predict the service delivery requirements and to include sufficient contractual flexibility at a reasonable price (HM Treasury 2006b).

Size of transaction costs

For all PFI projects that had a capital value over £20 million and closed between 2004 and 2006, the contract development time lasted 34 months on average. The average time for schools, hospitals and other projects was 25, 38 and 47 months respectively. The shortest overall tendering period was 16 months and the longest 73 months (NAO 2007).

Significant amounts of money are expended in developing project proposals, tendering for projects, and negotiating complex legal and financial structures. For example, it is claimed that the successful sponsors for the Melbourne CityLink project (a A\$1.8 billion contract) spent A\$28 million, or around 1.6 per cent of the contract price, tendering for the project prior to the financial close. Similarly, tendering for the Eastlink project (a A\$2.5 billion contract) is claimed to have cost A\$30 million or 1.2 per cent of the contract price (Parliament of Victoria 2006).

A report by Butler and Stewart (1996) also found the total cost of tendering for a PFI project to all potential contractors to be just under 3 per cent of expected total costs. In comparison, the total tendering costs accounted for just under 1 per cent of expected total costs under traditional procurement.

The UK Audit Commission estimated that the bidding costs associated with PFI education projects for both the public and private sectors accounted for between 5 and 15 per cent of the capital cost of the projects — with an average at around 7 per cent (Ball and King 2006).

The government also incurs substantial costs in determining a project's feasibility as a PPP, managing the tendering process, and negotiating the legal and financial structures that govern the PPP. Further, the government has significant ongoing monitoring and contract management costs.

These significant costs ultimately mean that PPPs will rarely be appropriate for small-scale projects. In Australia, these costs have been reduced in recent times with the development of more streamlined contract documentation and tender processes.

Higher direct cost of financing

One concern about PPP projects is that they might not provide value for money because government-issued debt is cheaper than that raised by the private sector, making private financing and development more expensive for taxpayers (Pollock, Shaoul and Vickers 2002; Walker and Walker 2000). This claim is based on the government's higher credit rating, which in turn is based, in large part, on its power to tax, which reduces the likelihood that it will default on its debt.

However, apart from this private finance risk premium, there are other factors affecting the total cost of financing using PPPs that must be considered when choosing the appropriate financing vehicle.

Pierce and Little (2002) claim that:

... when it comes to raising finance for a project, it is the risk of the individual project that determines the real cost of finance. The difference between the private and the public sectors is that private-sector capital markets explicitly price in the risks of a project into the sources of finances. In the public sector, taxpayers implicitly subsidise the cost of the project by bearing the risk of cost overruns, time delays or performance failures, which are not priced into the government's borrowing rate. (p. 1)

Moreover, it is claimed that as the private infrastructure market has grown, and financing vehicles have become more sophisticated, the difference in the cost of

financing between the public and private sector has narrowed (Deloitte Research 2007). For example, with the maturing of the private finance market in the United Kingdom, the financing cost difference between the private and public sectors is now in the range of 2 to 3 percentage points (Yescombe 2007). Consequently, the key issue is whether PPP projects result in efficiency gains that more than offset the higher rate of return required in private-sector financing.

For a PPP project, the direct cost of finance is the combined cost of its debt and its equity, taking account of the debt-to-equity ratio. The direct cost of PPP finance, the weighted cost of equity and debt finance, can be reduced by increasing debt leverage, given the relatively lower cost (and risk) of debt to that of equity to the lender.

As noted in a Credit Suisse (2006) report on PPP valuation, some investors have employed aggressive financial leverage techniques to maximise their returns on equity. These techniques are typically aimed at reducing and deferring equity injections by increasing and prolonging debt leverage. To defer equity injections, debt maturities have been extended so that private-sector sponsors can ‘deleverage’ at a later time over the term of the concession. As a consequence, increased leverage has come at a price of lower credit quality in private-sector debt financing.

A review of prevailing capital market conditions at that time was instructive in illustrating why the deterioration in credit quality of securities has not led to substantive increases in the cost of debt as would have been expected:

In the past few years, the investment grade market has witnessed an extraordinary compression between higher rated and lower rated assets as cash-rich investors have searched for higher absolute yields. Lower interest rates and an extremely tight and stable spread environment have combined to lower borrowing costs, leaving many investors with no choice but to take on additional risk through investing in lower credit quality assets. (Credit Suisse 2006, p. 46)

The experiences of the 2008 financial crisis have demonstrated that such misalignment of pricing and credit quality is not sustainable, and adjustment will occur eventually.

The *actual* cost of finance is usually unknown for ongoing projects. The actual rate of return on equity cannot be ascertained without data on realised profits or losses. Where the bond rate or loan rate is tied to a variable interest rate such as a LIBOR (London Interbank Offered Rate), the cost of debt fluctuates from time to time and relative to the rate of government borrowing.

The higher cost of financing for PPPs relative to government-issued debt has prompted suggestions for alternative financing arrangements:

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- Leigland and Thomas (1999) considered municipal bonds a more efficient financing option than PPPs for countries with a low level of public debt, access to well-developed capital markets, and a public sector endowed with project management skills.
 - Trujillo et al. (1997) noted that additional efficiency gains can be derived from standard PPP arrangements by unbundling financing from other project responsibilities such as construction, management and operations. The proposed financing scheme involved setting up a SPV sponsored by government on behalf of infrastructure users or taxpayers to hold equity and debt contributions from the government, and borrow from the capital market. Under this approach, the government can retain the project via its direct involvement in financing.

Reduced public accountability

Most economic infrastructure PPPs are not recorded on the government's balance sheet. In effect, these off balance sheet arrangements could result in the failure to provide key financial information to capital markets or anyone concerned with monitoring the financial performance of governments, including taxpayers. In such cases, accountability to the Parliament and the public is reduced.¹⁹

Government contracts with the private sector are subject to a number of policies and statutory Acts that specify conditions for release of information. Contract summaries are the principal vehicle for the public to receive information relating to PPPs.

However, specific types of information are excluded, such as:

- commercial-in-confidence material, including the private entity's cost structure or profit margins
- matters relating to intellectual property and trade secrets
- matters that could potentially place the private-sector sponsor at a commercial disadvantage with competitors in bidding for future projects.

As noted by the Parliament of Victoria (2006):

The use of commercial in confidence reasons by government to limit public and parliamentary access to key information on major PPP contracts has diminished the accountability of government to the Parliament for substantial state expenditure.

¹⁹ The Australian Loan Council requires all States and Territories to disclose their full contingent exposure to privately financed projects. Exposure is to be measured by the government's termination liabilities in a case of private-sector default and disclosed as a footnote to, rather than a component of Loan Council Allocations in the Budget Papers.

Public confidence in PPPs depends on a strong transparency and accountability framework. The Committee considers that the Auditor-General has a major and ongoing role in informing Parliament and the community on the effectiveness of PPPs in Victoria. (p. 16)

An inquiry into PPPs by the Public Accounts Committee of the NSW Parliament recommended that, in addition to contract summaries, all contracts relating to PPPs be available in their entirety to the public in due course. Further, details of significant variations by either side to the contracts should also be made available (Parliament of NSW 2006a).

In response to criticisms that commercial-in-confidence exemptions have been used to limit public disclosure of PPP contracts, the NSW Government enacted the *Freedom of Information Amendment (Open Government – Disclosure of Contracts) Act 2006*. This Act establishes mandatory public disclosure requirements for major contracts with the private sector and is intended to improve public accountability.

The Act includes a new commercial-in-confidence definition that limits the scope for exemptions and clarifies the obligations of government agencies. Accordingly, items not to be disclosed in contract summaries include:

- the contractor's financing arrangements
- the contractor's cost structure or profit margins
- the contractor's full base-case financial model
- any intellectual property in which the contractor has an interest
- any matter the disclosure of which would place the contractor at a substantial commercial disadvantage in relation to other contractors or potential contractors, whether at present or in the future.

Further, the Act requires any material variation to a contract that affects disclosure requirements to be published within 60 days after the variation becomes effective. It formalises disclosure requirements set out in Ministerial Memorandum M2007-01, *Public Disclosure of Information arising from NSW Government Tenders and Contracts*, and the *Working with Government: Guidelines for Privately Financed Projects* (December 2006).

In the United Kingdom, the Government has introduced a number of reforms to improve the transparency and accountability of PFIs, including published estimates of future payments for each PFI, and the capital value of contracts signed to date and in the process of being procured (HM Treasury 2007).

Overall assessment

PPPs are increasingly being used as a financing vehicle for both economic and social infrastructure. They work best where government has considerable skill in contract negotiation and management, and where there is sufficient competition for the projects.

Risk management — The potential to lower total costs through alignment of incentives to manage project risks with capacity to do so is considerable. The bundling of design, construction and operation combined with financial penalties for poor risk management through lower user charges and fixed payments for services create the right incentives for productive efficiency. However, the incentive effect depends on the government not assuming contingent liabilities associated with risks better managed by the private partner.

Transaction costs — The costs of tendering and negotiating contracts can be considerable – with tendering costs alone estimated at up to 3 per cent of the project cost. The often long tendering and contract negotiation period can also delay projects imposing costs.

Market and other disciplines — Private partners have an incentive to develop a realistic financial model that takes into account all costs and revenue flows. The quality of this information is likely to be superior to that of the public sector agency, where the private partner has experience in the area. This should result in greater allocative efficiency as the design should be targeted to meet needs at lowest cost. However, where the government underwrites the revenue for user charges, or is the funder through payments for services, such disciplines may be eroded. Hence while PPPs may assist in improving investment efficiency they are no guarantee that the investments are optimal. Indeed, the potential for PPPs to be seen as not adding to government debt (or future funding obligations) may reduce the scrutiny applied to the investment.

9 Asset management under government franchising

Key points

- In the past decade or so, the use of government franchises has increased around the world, mainly for water and transport services.
- Typically under franchise arrangements, the government owns the infrastructure assets and is responsible for funding and arranging finance for new investment — that is, franchisees make no equity contribution to the investment.
- The private sector is involved to introduce expertise and incentives to promote efficiency and innovation in the management of infrastructure assets.
- A sound, strict and contractually binding asset management regime is required under government franchising arrangements in order to preserve and protect publicly-owned infrastructure facilities operated by franchisees.
- Despite the potential to create competition, government franchises typically include prescriptive contract specifications that enable governments to regulate tariffs, service levels, performance standards, and maintenance and investment requirements.
- Incentive problems can arise with government franchises that preclude fully competitive and efficient outcomes. Periodic tendering is one way of addressing these limitations.
- Despite the potential advantages in terms of incentives for improved production efficiency and asset management, the experience considered in this report has generally been disappointing.

Government franchising involves a government or public-sector agency (the franchisor) granting an exclusive right to a private or other independent entity (the franchisee) to occupy, operate and maintain publicly owned infrastructure facilities to deliver services over a predetermined period of time. This approach differs from licensing arrangements whereby businesses are granted permission to supply infrastructure services with their own assets.

Poorly maintained infrastructure, existing high operating and maintenance costs, and the inability of incumbent public-sector operators to resolve maintenance

problems are among the most common reasons cited by governments for granting franchises to the private sector.

The use of government franchises can contribute to the same broad goal of ensuring capital adequacy as the other financing vehicles examined in this study. Private-sector involvement through a competitive selection process can bring enhanced incentives to promote efficiency and innovation in asset management. It can lead to a longer service life and improved condition and utilisation of existing assets, thus reducing the funding burden of new or replacement investment.

Franchise contracts typically include incentive mechanisms superimposed over conventional operating contracts to induce better asset management outcomes. Moreover, franchise payments can depend on agreed indicators of asset maintenance performance.

Government franchises are a variant of public–private partnerships (PPPs) in which the franchisees typically make no equity contribution to the infrastructure but could possibly raise finance for capital maintenance and extensions. Depending on the contractual terms, such arrangements provide a means of transferring certain performance and demand risks associated with existing infrastructure from the public to the private sector.

Case studies of government franchising in Australia and selected overseas countries are described in section 9.1, highlighting contractual arrangements for asset management, investment planning and financing. Drawing on these applications, general policy issues relating to government franchise arrangements are discussed in section 9.2. This is followed by a summary of their strengths and weaknesses in section 9.3.

9.1 Applications and trends

In Australia, government franchising has been used in the provision of various services. Some examples, which are examined in more detail below, are:

- scheduled bus services in Adelaide and Perth
- rail passenger services in Melbourne
- water supply and sewerage services in Adelaide.

Government franchising arrangements are well established in most other OECD countries, mainly in the provision of water and transport services.

Bus services in Adelaide and Perth

Since the late 1990s, public bus services in Adelaide have been operated by franchisees using government-owned infrastructure facilities (box 9.1). For the financial year 2005-06, bus service payments made to franchisees totalled \$122 million. This excluded nominal charges and expenses made by the SA Government for supplying buses and depots to the franchisees (DTEI 2006).

Leasing government-owned buses and depots to the franchisees was seen as way of reducing barriers to entry and increasing tender competition (Wallis and Bray 2001). From a competition policy perspective, this could be important, particularly given the relatively small bus-leasing market in Australia.

Box 9.1 Reforms of the passenger transport system in Adelaide

Between the mid-1970s and the mid-1990s, all public transport services in Adelaide were provided by the State Transport Authority (STA). Major reforms in passenger transport were introduced in 1995 through the *Passenger Transport Act 1994*. This legislation was aimed at separating the policy, regulatory and operational functions of the STA by:

- creating the Passenger Transport Board (PTB) to fund, plan, commission and regulate passenger transport
- converting the STA into a new statutory operating body, TransAdelaide
- requiring all scheduled land passenger services in the State to be operated under franchises with the PTB.

After the STA was abolished, all its assets — including the O-Bahn busway, buses and depots — were transferred to Transport SA, the department charged with the management of the State's transport system.

Since then, all the bus services have been franchised out in two stages of competitive tendering. The first stage was held between 1995 and 1997 for about half of the bus services. TransAdelaide was contracted for the remaining services. The second stage was held in 1999 and 2000 for all the services, including retendering of those previously tendered in the first stage. In 2004, a franchisee decided not to renew its then existing contracts and those franchised services were subsequently retendered.

Between the two stages of tendering, contract terms and conditions were modified in light of a 1998 review of franchise arrangements. The changes led to fewer but larger sized contracts being offered, longer contract durations and increased flexibility for contract renewal. The review also led to better structured payment incentives to align franchisee interests with government goals in relation to budgetary certainty, service quality and patronage level.

Source: Wallis and Bray (2001).

Other options considered were selling the assets to successful tenderers and requiring them to supply their own fleet. Both were regarded as impractical. For the first, if the franchisees chose not to purchase the government buses, the Government would be left with substantial unusable assets which would have to be written down. For the second, given a relatively short contract duration, the franchisees might be unwilling to invest in a sizeable stock of assets that could not be written off over the contract period.

With the Government supplying the buses and depot facilities, however, there are potential limits on the scope for service innovation and resource deployment. In a review undertaken by the Government in 1998, industry participants commented that depot sharing was undesirable and that the government depots tended to be over capitalised and too large for those operating a small or medium fleet. Moreover, with lease charges being separate from franchise payments, increased total bus requirements places no additional cost on franchisee. As a consequence, there could be an incentive to increase total bus requirements and schedule services to minimise driver costs rather than driver and bus costs combined (table 9.1).

Table 9.1 Key features of the franchised bus services in Adelaide

<i>Aspect</i>	<i>Franchises in 1995 to 1997</i>	<i>Franchises in 1999 and 2000</i>
Contract number and geographic coverage	<ul style="list-style-type: none"> • 10 area or 'lines of route' contracts • 4 single-route contracts 	<ul style="list-style-type: none"> • 6 area or 'lines of route' contracts • 1 single-route contract (City Free)
Contract size	<ul style="list-style-type: none"> • Area contract: 11 to 94 buses • Route contract: 10 to 24 buses 	<ul style="list-style-type: none"> • Area contract: 30 to 200 buses • Route contract: 10 buses
Contract duration	<ul style="list-style-type: none"> • 2 and a half to 4 and a half years initially • Renewal by negotiation for up to 5 years 	<ul style="list-style-type: none"> • 5 years initially • Renewal for a further 5 years
Franchisee and market share	<ul style="list-style-type: none"> • Serco: 19 per cent • Hills Transit: 3 per cent • TransAdelaide: 24 per cent by tendering and 54 per cent by negotiation with PTB 	<ul style="list-style-type: none"> • Serco: 53 per cent^a • Torrens Transit: 36 per cent • Australian Transit Enterprises: 8 per cent • Transitplus: 3 per cent^b
Ticketing	<ul style="list-style-type: none"> • All franchisees using a common fare and ticketing system specified by PTB • Ticketing equipment provided by PTB • Franchisees responsible for fare collection, ticketing operations and fare evasion management • All fare revenue returned to PTB 	<ul style="list-style-type: none"> • As for the previous round of tendering
Service specification and development	<ul style="list-style-type: none"> • Minimum service standards set by PTB • Additional 'points' given in tender evaluation for service enhancements • Proposals for service changes subject to approval by PTB 	<ul style="list-style-type: none"> • Minimum service standards set by PTB, permitting minor timetable changes • Franchisees responsible for annual service review

Continued next page

Table 9.1 (Continued)

Aspect	Franchises in 1995 to 1997	Franchises in 1999 and 2000
Payment formula	<ul style="list-style-type: none"> • Franchisees responsible for funding service innovations • Total payment (T) = Fixed sum (F) + Patronage payment (P) • F is linked to base-year patronage • P relates to changes in patronage from base-year level, averaging between \$1.00 and \$1.80 per incremental passenger • For payment purposes, allowable annual rate of patronage increase in any month is capped at 10 per cent • P is between 40 per cent and 67 per cent of F for different contracts 	<ul style="list-style-type: none"> • Stronger emphasis on 'partnership' relationship between franchisees and PTB and less involvement of PTB in detailing service standards • Total payment (T) = Fixed sum (F) + Patronage payment (P) + Service payment (S) • F is linked to base-year patronage and service levels • P is linked to uncapped changes in patronage from base-year level, averaging between \$0.60 and \$1.00 per incremental passenger • S is linked to agreed service changes from base-year levels • On average, P is about 25 per cent of F and S is significantly greater than P
Provision of buses and depots	<ul style="list-style-type: none"> • Most franchisees required to lease the government bus fleet and depots • All used government buses and depots and some introduced their own sub-depots 	<ul style="list-style-type: none"> • Franchisees required to lease the government bus fleet, with an option of supplying own buses • Leasing government depots is optional • All used government buses and depots and some introduced their own sub-depots
Asset lease	<ul style="list-style-type: none"> • Lease charges paid via franchisees 	<ul style="list-style-type: none"> • Lease charges deducted from franchise payments^c

^a Services taken over by Torrens Transit and Australian Transit Enterprises since April 2005. ^b A joint venture between TransAdelaide and Australian Transit Enterprises. ^c This change was made primarily to minimise transactions and the associated administrative and financial costs under the goods and services tax regime.

Sources: SA Auditor-General Department (2005); Wallis and Bray (2001).

In Western Australia, Perth public bus services are operated by private companies using government-owned facilities. This has been the case since the WA Government implemented a bus reform program in 1996.

The WA Office of the Auditor General (2000) noted that, by retaining ownership of the buses and supporting infrastructure, the Government could reduce exposure to service disruption in the event of contract default.

In 2005-06, three franchisees were responsible for operating scheduled bus services and maintaining the bus fleet in Perth under 11 area-based contracts (PTA 2006). The total operating cost, exclusive of capital charges, was about \$200 million. For individual contracts, the payment made to the franchisee was comprised of a fixed management fee (roughly 15 per cent of total), a patronage-dependent component (20 per cent) and a price-indexed component for variable costs such as fuel and labour (65 per cent).

Rail passenger services in Melbourne

In Melbourne, the train and tram networks have been operated by private companies since 1999 (box 9.2). The rail infrastructure — including tracks, depots, stations, signalling and traction power equipment — is owned by the Victorian Government entity VicTrack. These facilities were leased to franchisees at nominal charge rates. On the other hand, the rolling stock was transferred to franchisees through sale or lease arrangements (DOI 2005).

The contract renegotiation in the early 2000s resulted in changes to the provisions governing franchisees' roles and responsibilities in maintaining the rail infrastructure and the rolling stock. Consequently, the franchise arrangements

Box 9.2 Reforms of the passenger transport system in Melbourne

The Victorian Government decided to franchise all passenger rail operations within the metropolitan area under its policy of extending private-sector involvement in public infrastructure services in 1997. It subsequently transformed the train and tram services into separate business units, and tendered out contracts for the operation and maintenance of individual businesses.

In June–July 1999, the Government awarded five franchise contracts to three private companies for operating trams and trains in Melbourne (see table below). These contracts, which started in August 1999, had a duration of between 10 and 15 years.

Franchisees operating passenger rail services in Melbourne

<i>Original service</i>	<i>Operator as at August 1999</i>	<i>Operator as at April 2004</i>
Yarra Trams	MetroLink	Yarra Tram ^a
Swanston Trams	National Express	Yarra Tram ^a
Bayside Trains	National Express	Connex ^b
Hillside Trains	Melbourne Transport Enterprises	Connex ^b
V/Line Passenger	National Express	V/Line (government-operated)

^a Rebranded from MetroLink. ^b Rebranded from Melbourne Transport Enterprises.

In December 2002, one franchisee (National Express) withdrew from its three contracts because of financial difficulties. After making some interim operating arrangements to maintain services, the Government restructured all the contracts into one train and one tram franchise. These were awarded after bilateral negotiations to the two remaining operators. The current contracts commenced in April 2004 and were scheduled to end in November 2008, with an option for extension up to May 2010.

On the other hand, the V/Line operation was transferred back to the public sector starting from October 2003.

Source: VAGO (2005).

shifted away from incentive-based contracts towards fee-for-service contracts (Stanley and Hensher 2003).

Infrastructure maintenance

Under the 1999 franchise arrangements for the provision of rail services in Melbourne, the franchisees were required to produce annual asset management plans coupled with three-yearly asset condition surveys. The asset management plans were indicative only, documenting *intended* capital works programs. Through the asset condition surveys, the condition of infrastructure was assessed by class and type of asset according to agreed methodologies for deriving an overall condition index.

Part of the payments for the franchisees' maintenance and renewal works was kept in an escrow account which could be drawn down only for maintenance expenses. If survey results showed a deterioration of infrastructure condition, the franchisee is able to increase maintenance and renewal expenditures. Conversely, if the franchisee was found to be ahead of its condition requirements, it would be allowed to keep any surplus funds.

The original infrastructure maintenance regime was outcome-oriented, providing the franchisees with considerable flexibility in planning and undertaking maintenance and renewal works. However, in an evaluation associated with the 2004 refranchising process, the survey approach to assessing infrastructure condition was considered flawed due to its practical complexity and lack of clear performance targets to guide maintenance spending.

Subsequently, an input-based infrastructure maintenance regime was introduced for the franchise renegotiation. Accordingly, each franchisee is required, as part of its tender offer, to provide an asset management plan setting out details of its *committed* maintenance and renewal program over the franchise period — including physical scope of works, activity levels, performance standards, inspection frequency, quality assurance strategies and resourcing arrangements.

In addition, the franchisees have to produce annual work plans detailing specific works to be undertaken within particular years. For contract enforcement, the department can audit the maintenance and renewal activities and withhold franchise payments if works are not delivered to the required standards.

The franchisees can make claims on the escrow account at the end of each month for works set out in their work plans. These claims are for the direct costs of works only — excluding corporate overheads — and are subject to a monthly maximum. Any cost overruns must be met by the franchisees. Five per cent of the value of all

monthly invoices presented by each franchisee is retained and, subject to satisfactory audit results, released on a quarterly basis to the franchisee. Any surplus funds in the escrow account at the end of the franchise period are returned to the Government.

Rolling stock acquisition and maintenance

The 1999 franchise agreements required the franchisees to ‘buy’ all the existing rolling stock and make arrangements for its sale or lease-back (Greig 2002).¹ However, rolling stock with total worth of \$448 million was ‘returned’ to the Government when National Express prematurely surrendered its franchises in 2002 (VAGO 2005).

Under the 2004 renegotiated franchise arrangements, the ownership for most of the old rolling stock was transferred to a public corporation (Rolling Stock Holdings Victoria, a wholly-owned subsidiary of VicTrack). These assets are leased back to the franchisees for a nominal consideration.²

Under the 1999 franchise arrangements, the original franchisees were required to replace the oldest 40 per cent of the train and tram fleets (except for the historic Z-class trams) and refurbish the rest. New rolling stock was acquired through leasing companies (Commonwealth Bank and Allco) that contracted with manufacturers to build new trains and trams and then leased them to the franchisees over a period of 15 years.

In effect, the leasing companies have financed the purchase of new rolling stock, with lease charges (as well as refurbishment costs) to be paid by the Government as part of the franchise payments. As a result of the 2004 renegotiation, the Government funds virtually all of the rolling stock’s value through designated payments for rolling stock investment (VAGO 2005). In addition, the Government pays insurance on the new rolling stock and guarantees lease payments in the event of default by the franchisees.

¹ According to VAGO (2005), the existing rolling stock was ‘provided’ to the franchisees for nominal consideration. This seems to imply that the rolling stock was transferred to the franchisees without its sale.

² There are exceptions to this leasing arrangement. First, Connex continues to own outright the Hitachi trains which it purchased under its previous franchise, and is responsible for disposing them once they are withdrawn from service. Second, Yarra Trams continues to own the vehicles it purchased under its previous franchise, and is required to hand them back to the Government for a nominal sum at the end of its current franchise.

When the lease for the new rolling stock expires, the Government has the option of purchasing the vehicles for a predetermined residual value, negotiating for an extension of the lease term, or procuring replacement vehicles (for example, if it is dissatisfied with the performance of the leased vehicles). Moreover, as the lease period is longer than the franchise period, the Government is obliged to take over the leases at the expiry or early termination of the franchises.³

New rolling stock was purchased by means of ‘dry’ leases — with franchisees being responsible for any maintenance work. Although the control of rolling stock rests with the franchisees, the Government has contractual powers to ensure proper maintenance of the rail fleets.

The current franchise agreement includes detailed specification of the engineering standards to be applied in deriving a ‘condition index’ for each type of vehicle. The franchisees are required to ensure that none of these performance indicators deteriorates throughout the franchise period.

To this end, the franchisees are each required to prepare a rolling stock management plan and annual rolling stock maintenance plans. These plans set out their maintenance and renewal strategy, as well as capital work programs for vehicle refurbishment, modification and upgrading.

The department can audit each franchisee’s rolling stock maintenance and renewal works. Where such audits identify a failure to meet the required standards, the franchisee must undertake remedial action.

At the end of the franchise period, the department will undertake a comprehensive fleet inspection to ensure that each rolling stock item is in serviceable condition (subject to normal wear and tear) and without unrepaired vandalism, accident damage or graffiti. The department has the right to require the franchisees to carry out any necessary remedial work and meet the costs of undertaking such work.

Remuneration of franchisees

The franchisees receive operational income from two main sources. First, fare-box revenue is allocated by the proportions of 40:40:20 for train, tram and bus operations.⁴ Second, payments are made by the Government to the franchisees to

³ Given the Government’s significant stake in the ‘privately-owned and leased’ rolling stock, it is treated as a contingent liability in the department’s financial statements (DOI 2006).

⁴ Under the 1999 franchise agreements, the allocation of fare-box revenues was based on passenger numbers and passenger kilometres as measured by surveys. This was noted to be contentious because the surveys were considered unreliable (ACIL Tasman 2006).

cover the operating subsidy, including the leasing costs and the compensation for community service obligations.

The franchise payments comprise a fixed and a variable component:

- The fixed component covers: (i) operating subsidies for the provision of specified levels of services; (ii) payments for leasing new rolling stock; and (iii) capital grants for infrastructure construction and other capital projects.
- The variable component includes various adjustments for inflation, concession fare top-up, patronage growth, service alterations, and various operational performance and eligibility criteria.

The Government's franchise payments totalled \$301 million in (part of) 1999-2000 and \$349 million in 2000-01. According to projections prepared for the 1999 franchise arrangements, performance-based payments were expected to grow from 12 per cent of total payments in 1999-2000 to about half the total payments by 2009.

Operating subsidies were originally expected to be no longer necessary after 2009, with ongoing payments being linked to only operating performance and capital investment. However, given the financial difficulties encountered by the original franchisees after only a few years into the franchise process, it became apparent that the projection of self-sustaining franchised services would not be realised.

Following the renegotiation in 2004, government payments to the franchisees increased significantly to \$560 million in 2004-05 (VAGO 2005). About 85 per cent of the payments were for operating subsidies and leasing costs of new rolling stock. Some payment increases (around 5 per cent) were related to new service requirements in the current franchises.

Water supply and sewerage services in Adelaide

In 1995, the SA Government undertook reform initiatives to, first, corporatise its water utilities and then franchise the management, operation and maintenance of its water systems (treatment plants and pipe networks) servicing Adelaide.

Subsequently, the Government awarded a fifteen-and-a-half-year contract to the private United Water for providing water services in Adelaide from January 1996. The contract specifies detailed performance targets for treated water quality, water pressure and emergency response time that the franchisee must achieve throughout the contract duration. Penalties are applicable in the event of failure to meet the specified standards.

The Government retains ownership of all water resources and infrastructure assets and, through its corporatised agency, SA Water, bears the overall responsibility for public water supply. SA Water sets service standards, implements the Government's water pricing policy, operates billing and revenue collection services, and makes investment decisions.

The franchisee is required to support asset management by conducting regular asset audits and preparing short- and long-term plans for infrastructure rehabilitation, renewal and augmentation. According to Laval (2003), a major emphasis of the asset planning process is to balance capital expenditure and maintenance. Capital project proposals are subject to 'whole-of-life' costing of both capital expenditure and maintenance.

All decisions and approvals regarding the priority and allocation of capital funds for water infrastructure remain with SA Water. On the other hand, the franchisee acts in the capacity of a project manager for approved capital programs.

Birnbaumer (2003) reported that the Adelaide water service contract was worth \$1.5 billion. However, the information on actual contract payments remains commercial-in-confidence.

According to Laval (2003), annual contract payments made to the franchisee comprise:

- a fixed sum to cover general management and defined operating functions, some maintenance costs and corporate overheads
- reimbursement for costs payable by SA Water — mainly maintenance-related costs and consumables
- charges for design and project management services as well as construction of minor extensions and connections to the water networks.

The contract has provisions for the renegotiation of charges and fees every five years to take into account changes in operating conditions. Moreover, annual targets are set for the amount of reimbursable costs, which are based on the moving average cost in the previous three years. Any savings or overruns of these costs are shared between the franchisee and SA Water.

European examples

In many European countries, public transport services are being reformed with part or all of the publicly-owned networks and facilities transferred to independent

operators through competitive tendering or negotiation (Hirsch 2005; van de Velde 2001):

- France has a long history, starting in 1972, of franchising urban transport services in areas outside Paris (Laconte 1995)
- Germany, public transport authorities have recently begun trialling franchised operations
- Sweden, franchise arrangements were introduced in 1992 for unprofitable regional passenger services on the national railway network
- Stockholm Local Transport started franchising the operation and maintenance of its urban transit system in the mid-1990s (box 9.3).

In France, municipal water utilities are prohibited by law from selling their infrastructure assets (Bakker 2003). Government franchising is the most common method used for the provision of water services. This includes awarding

Box 9.3 **Stockholm Local Transport**

Stockholm Local Transport (SL), as an agency of the Stockholm County Council, is responsible for coordinating and procuring public transport services in the metropolitan area of Stockholm. There, all the bus and rail services are franchised to various companies that operate under a 'one-network, one-fare' system.

Over time, SL has shifted from contracts for individual service routes to ones covering service areas or systems. At present, Connex has contracts for the metro system, the light rail system and regional railway services. Roslagståg AB, a joint venture between Danish State Railways and Swedish operator Tågkompaniet, runs the Roslag network.

Stockholmståg, which is jointly owned by the private Tågkompaniet and the state-owned SJ AB (the former national railway company), recently won the contract for regional commuter train services starting from June 2006. This contract was previously held by Citypendeln of the French Keolis group, which was troubled by driver and vehicle shortages that led to early contract termination.

SL franchises are normally awarded for a five-year term, renewable for up to five more years. SL specifies train capacity and headway but not the operating timetable, requiring the franchisees to meet a range of performance targets. Bonus or penalty payments in the order of 1 to 2 per cent of contract value are included to provide incentives for improving service quality in particular areas.

The franchisees cannot reduce staff pay or change the terms of employment. However, they have increased flexibility to deploy staff resources. This has led to some innovations in labour use. For example, depot staff are trained to drive as necessary in peak periods and maintenance work is scheduled for off-peak hours.

Sources: Briginshaw (2005); OECD (2005c).

procurement contracts for operation and maintenance only, as well as lease contracts that require the franchisees to invest only in maintaining the network (Chong et al. 2006; Haarmeyer 1992).

Elsewhere in Europe, local public authorities mostly operate their own water supply systems (table 9.2).

Table 9.2 Share of population serviced by ownership and management structure of water utilities (per cent)

	<i>Public ownership and management</i>	<i>Public ownership with franchise management</i>	<i>Private ownership and management</i>
Ontario, Canada ^a	94	6	0
France	25	75	0
Germany	85	15	0
United Kingdom	12	0	88
United States	86	1	13

^a Estimates for Ontario were derived using data from Ontario SuperBuild Corporation (2002) and adjusted for the reversion of franchised water services in Hamilton back to the public sector in 2004.

Sources: Bakker (2003); Hudson Institute (1999); Productivity Commission estimates.

Canadian examples

In Canada, an overwhelming majority of community-based water supply systems are owned, operated and maintained within the public sector. Several municipal governments have contracted private operators of water services for between five and 10 years (Bakker 2003).

Of the various publicly-owned commuter rail lines in Toronto, one is operated by a franchisee. Other Canadian infrastructure facilities under franchised management include Hamilton International Airport, Goderich Port, the Saint Lawrence Seaway and Bruce Nuclear Power Plant (CCPPP 2000, 2006).

Examples in the United States

In the United States, applications of government franchising public infrastructure services are numerous but they remain minor relative to the predominance of public-sector control and management (Due 2003). These include the following:

- Out of the 21 commuter rail systems operating in various metropolitan areas — which are all publicly owned — 14 are franchised for external management. The franchised systems tend to have a smaller scale than those managed within the

public sector, accounting for only 15 per cent of the total service output measured in train revenue miles (NTD 2005).

- Franchised public bus services account for 12 per cent of the total service output measured in passenger miles for this transport mode (NTD 2005). In most of these cases, the owner agency or department provides operating facilities and leases buses to the franchisee. For the Denver Regional Transportation District franchise over the period 1994 to 1999, the franchisee was required to provide new buses with an option for the agency to purchase them at the end of the contract term (Cox and Duthion 2001).
- In 2005, the City of Sandy Springs, Georgia, entered into a franchise agreement with a private corporation for all municipal services except police, fire and emergency call services. This contract has an initial one-year term, with provision for annual renewal for up to five more years (NCPPP 2006).
- Existing toll roads have been franchised in four states, with the franchisees paying upfront US\$6.4 billion in total to the owner governments. Two substantial arrangements were made for the Chicago Skyway and the Indiana Toll Road in the mid-2000s, prescribing franchise periods of 99 and 75 years respectively (Reason Foundation 2006).
- Airport operations were first franchised in late 2000 when a private company was awarded a 99-year contract for running the Stewart International Airport in Newburgh, New York. This franchise was terminated and reverted to public-sector management in January 2007. To date, Indianapolis International Airport is the only commercial airport in the country that is operated wholly under a franchise. A dozen others are partially franchised to private terminal operators.
- Over 80 per cent of the publicly-owned seaport terminals in the United States are franchised for operations by private companies, often the shipping lines using the terminals (Reason Foundation 2006).
- A small proportion of municipal governments have contracted out the operation and maintenance of their water supply systems (table 9.2 and box 9.4).

New Zealand examples

In New Zealand, the privately-owned United Water operates the water and wastewater services in Papakura under a franchise contract awarded by the council in 1997 for an initial term of 30 years with the provision for renewal for a further 20 years. The franchisee paid the council a once-off fee of NZ\$13 million (or

Box 9.4 **Franchised water services in the United States**

According to a series of case studies by the US Conference of Mayors' Urban Water Council (1997) and the US National Council for Public–Private Partnerships, government franchising is the predominant form of PPP for water services. These franchises typically have an initial term of three to five years. A longer franchise term is uncommon because of legislative restrictions on long-term contracting by local governments and public authorities.

Haarmeyer (1992) noted that, historically, the use of PPPs other than franchising was driven by difficulties in issuing municipal bonds to raise capital or by a need to quickly meet environmental regulations following the 1986 amendments to the *Safe Drinking Water Act of 1974*. As no federal funds, grants or low-interest loans were available to assist communities in compliance, some municipal governments sought private finance for the construction of new facilities.

The *1986 Tax Reform Act* led to tax code changes that restricted a municipality's capacity to issue tax-exempt bonds for PPP projects. This tended to diminish the tax advantages and, hence, increase the costs of financing through PPPs. Consequently, franchising remained a more cost-effective option than other forms of PPPs.

NZ\$34 per capita) in return for the right to all tariff revenues over the franchise period (Controller and Auditor-General 2006).⁵

9.2 Policy issues

The franchised operations examined typically are characterised by the:

- government owning the infrastructure assets and being responsible for funding and arranging finance for new investments
- franchisee being granted free or low-cost access to infrastructure assets and having low capital requirements except for investments in asset maintenance
- franchised service being a network and having monopolistic production
- contract having detailed specification of maintenance criteria and service standards that the franchisee has to meet
- payment scheme which can include an incentive-based component for promoting efficiency initiatives but the franchisee being required to take on virtually no investment risk and limited operational risk (box 9.5)

⁵ Subsequent to this franchise contract being awarded, legislation was passed in 2002 prohibiting local governments from entering into a franchise for water services that has a duration longer than 25 years, or that involves transferring pricing, policy development, or infrastructure ownership responsibilities to a private entity.

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- franchise having a relatively short duration (generally less than ten years) subject to renewal or reletting.

These contractual features reflect a procurement relationship between the private- and public-sector parties to achieve the policy goal of providing public infrastructure services and maintaining publicly owned assets as efficiently as possible. Such joint ventures can generate benefits for both parties involved.

Box 9.5 Allocation of operational risk in government franchises

In government franchising, the operational risk of a franchised service is split between the government and the franchisee according to the remuneration arrangement. Common franchise remuneration schemes can be classified as follows:

- *Cost-plus* — The franchisee keeps none of the service revenue and its operating expenses are reimbursed by the government, which also pays a management fee as bid by the franchisee. In effect, the franchisee does not carry a revenue risk and its cost risk is limited to the terms of the contract.
- *Gross cost* — The franchisee keeps none of the service revenue and is paid (as it bid) by the government for providing services as contractually specified. Penalties typically apply for failure to meet the required service standards. Accordingly, the franchisee carries cost risk but not revenue risk.
- *Gross cost with incentives* — As a variant of ‘gross cost’ remuneration, the franchisee is paid at a contracted rate (as it bid) per unit of service output provided. It therefore carries not only full cost risk but also partial risk relating to the demand for the service.
- *Net cost* — The franchisee keeps the revenue and, in addition, receives certain payment (as it bid) from the government. Such arrangements enable a transfer of revenue and cost risk from the government to the franchisee, possibly with a capping of the risk to be borne by the franchisee.
- *Commercialised service* — The franchisee pays a lump-sum fee to the government for the right to collect and retain service revenue. The tendering is based on bids on the payment to the government, or the rate of service price charged on customers, or a combination of both. Such an arrangement relinquishes the government’s ongoing budgetary burden of funding the service, and results in a transfer of revenue and cost risk to the franchisee.

The franchised bus service in Adelaide, for example, is operated under a ‘gross cost with incentives’ contract. By contrast, many US government franchises are structured on the basis of ‘gross cost’ remuneration, which is also exemplified by the Adelaide water franchise.

Sources: Shaw (1996); Wallis and Bray (2001).

For the private sector, government franchises create opportunities to exploit the commercial potential of existing infrastructure capacity and underlying demand for particular essential services. The availability of government-owned assets means only a modest requirement for equity investment by the private sector, removing a significant capital barrier to market entry. It also enables the private sector to strengthen its managerial and operational skill base and to take advantage of scale economies that enhance the viability of related businesses.

For the public sector, government franchises create opportunities to tap into the private sector for efficiency and expertise. Franchise arrangements are unlikely to ameliorate market failures that underpin any need for government intervention (chapter 2). Consequently, governments have to continue their role in market regulation when franchising public services.

Public ownership of infrastructure assets facilitates ‘regulation by contract’ — that is, using a franchise contract to set service standards and prices rather than formally regulating a market supplied by only one private business.

A number of important policy issues arise from the use of government franchises in relation to managing publicly owned infrastructure assets, including:

- design and implementation of a market mechanism to create competition
- scope for taking advantage of private-sector efficiency
- transfer of the right to use publicly owned assets to the private sector
- contractual specification of asset maintenance requirements.

Creating competition

According to Dnes (1995) and OECD (1998, 2005c), government franchises contribute to higher operational efficiencies and lower maintenance costs by creating competition in two forms — ‘competition for the market’ and ‘yardstick competition’.

Competitive tendering for a franchise to operate the whole of an infrastructure system or network can instil ‘competition *for* the market’ — as opposed to ‘competition *in* the market’, which is often infeasible for infrastructure services characterised by significant economies of scale, scope and network integration. Market competition is initiated through franchise bidding and extends over the franchise period as the incumbent franchisee faces incentives to be efficient in order to receive favourable consideration upon franchise renewal or retendering.

Box 9.6 Regulation of the service price in a government franchise

The franchise contract between the Papakura District Council in New Zealand and the private United Water incorporates a ‘user pays’ system for water use. For the first two years of the franchise period, service charges were contractually fixed. For the subsequent years, the franchisee could increase service charges — from a relatively low base — up to the Auckland average prices.

The government auditor raised concerns including that the franchise:

- allowed price increases that would fail the council’s objective to protect ratepayers’ interests by locking in the pre-existing low-cost regime
- contained no specific, agreed method for calculating Auckland average prices
- provided no protection against potential inefficiencies of other councils in the Auckland area that could be reflected in their service charges and, consequentially, in the Auckland average prices
- provided no protection against the franchisee’s ability and incentive to influence the Auckland average prices through securing a franchise for water services from one or more of the other local authorities in the area
- had no provision for sharing any potential benefit from increased efficiency in service delivery that would accrue to the franchisee.

It was concluded that any claim of efficiency gains and competition benefits obtainable from the franchise remained speculative.

Source: Controller and Auditor-General (1998, 2001).

A key advantage of short-term contracts over long-term contracts is that a recurrent tendering process facilitates adaptive, sequential changes to franchise arrangements over time. This helps overcome the problem of *contractual incompleteness* in long-term contracting — that is, contingencies affecting franchisee performance cannot be comprehensively described and appropriate adaptations to each contingency cannot be fully anticipated and specified in advance. However, contract establishment costs can increase considerably over a series of franchise renewals or rebidding.

‘Yardstick competition’ is a means by which virtual competition is created through comparing relative performance between franchisees operating different segments of an infrastructure network. In some cases, comparative performance measures are used as the basis for determining franchise payments.

This competition for the franchise does not alleviate the need for government monitoring of service delivery. However, the level of control retained by government often seems excessive. Government franchises typically include

prescriptive contract terms that enable governments to regulate tariffs, service levels, performance standards, and maintenance and investment requirements.

Among the examined applications of government franchising, few involved giving a franchisee the autonomous right to set service prices. Arguably, such an arrangement constitutes selling off the revenue-generating capacity of particular infrastructure assets over the franchise period, thus deviating from a typical procurement relationship.

The government's regulatory capability would be compromised when pricing rights or discretions are transferred to the private sector, even though infrastructure ownership is retained in the public sector. This problem is particularly prominent in relation to safeguarding against the extraction of economic rent from monopolistic production in the private sector (box 9.6).

In reality, incentive problems also arise in periodic tendering of government franchises, compromising fully competitive and efficient outcomes (box 9.7). This has been evidenced by limited or dissipated competitive pressures in some applications of government franchising where the number of bids per contract dwindled considerably upon retendering or the franchised service reverted back to public-sector management.

In some refranchising cases, competitive tendering was replaced by negotiation — a less effective way to sustain competition (Bulow and Klemperer 1986; Milgrom 1989). This might be necessitated by an insufficient number of bidders leading to no-bid contract extension, or additional complications in revised franchise arrangements that render a price-based competition mechanism unsuitable. However, the award of franchises to particular businesses would then likely be related in part to their negotiation skills and tactics, rather than their relative cost efficiency to the extent that could have been revealed in competitive tendering.

Practical use of yardstick competition in franchise arrangements appears to have been limited, reflecting the difficulty of measuring operational performance and establishing comparability between franchises. Splitting an infrastructure network into separate franchises for the purpose of peer competition can also cause coordination problems, reducing overall network efficiency (OECD 2006c).

Taking advantage of private-sector efficiency

The notion that private businesses, given their profit motive and greater flexibility in employing labour and capital, are better run and more efficient than their

public-sector counterpart is a commonly cited rationale for government franchising. There have been claims that government franchises brought innovations, service improvements and cost savings.

Operational cost decreases attributable to government franchise arrangements have been quoted as ranging between 20 and 60 per cent (Cox and Duthion 2001; Cox, Love and Newton 1997; Wallis and Bray 2001). Such savings, if fully attainable, could be exploited to reduce public subsidies, increase services, upgrade maintenance, or expand infrastructure capacity.

Hensher and Wallis (2005) noted that such cost savings were, in the main, once-off and the outcome of a first-time tendering process. Subsequent retendering delivered

Box 9.7 Incentive problems in periodic tendering

Numerous potential incentive problems in a periodic tendering process have implications for the outcome of a government franchise. These include:

- Facing the risk of severe service disruptions and costly franchise retendering, the government is vulnerable to ‘hold-up’ by a franchisee running into financial trouble and threatening to seek renegotiation of contract terms and conditions.
- Anticipating the possibility of a government bailout, franchise bidders have incentives to strategically underbid competitors in order to ‘buy in’ the contract first and, later on, renegotiate better terms and conditions. This contributes to the ‘winner’s curse’ — that is, the winner is whoever most overestimates the true profitability of the contract — and reinforces the tendency for governments to bail out failed franchises or to increase franchise payments in retendering or renegotiation. The study by Athias and Nuñez (2007) provides econometric evidence of the winner’s curse in tenders for infrastructure service contracts.
- It is difficult and costly to measure and verify asset conditions. As such, there is a risk that the incumbent franchisee will skimp on infrastructure maintenance. Further, government-owned assets can be allowed to unduly deteriorate towards the end of the franchise term if franchise renewal is expected to be unlikely.
- The incumbent franchisee is likely to have an information and resource advantage over other bidders, imposing significant barriers to competition at the time of franchise retendering. The study by Wolfram (2004) provides econometric evidence of incumbent advantages in periodic tendering for infrastructure service contracts, even when such contracts required little purpose-specific investment.
- The government can be left with no choice but to continue a franchise program that displaced its in-house capabilities, despite unclear cost implications and diminished competition among potential bidders.

Sources: OECD (2005c); Ribreau (2004).

minimal further cost reductions or even led to increases in franchise costs. Such cost increases resulted partly from more demanding contract specifications and partly from contract price corrections associated with the winner's curse effect as explained in box 9.7.

On the other hand, there have been critical reports about the unsatisfactory outcomes from government franchising. Some criticisms reflected discontent over service problems or disruptions believed to be caused by the poor performance of individual franchisees, particularly inadequate asset maintenance (Birnbauer 2003; Carty 2003; Due 2003; Moist 2006). Some questioned claims of cost saving as an advantage of franchising and emphasised the difficulty of verifying such claims owing to limited access to financial information because of commercial confidentiality (Mees et al. 2006; Spoehr et al. 2002).

Transferring infrastructure assets

The characteristics of infrastructure capital — costly to build, long-lived, and site- and purpose-specific — have crucial implications for the way that government franchises are structured to ensure efficient asset maintenance and renewal. These characteristics are the root of the *stranded-asset problem*. Reflecting this problem, the value of an infrastructure asset is intrinsically tied to it being used for the production of a particular service. As such, their values are hostage to changes in service requirements and production technology. Consequently, infrastructure asset values are difficult to assess for resale purposes.

Very few government franchises involved bundling a procurement contract with a sale of infrastructure assets in bids — they have been confined to cases where the infrastructure could be traded in an established leasing market or had a low residual value as a result of prior depreciation. This franchise characteristic is attributable to incentive and transaction problems associated with the valuation of specialised, long-lived assets that tend to impede the efficacy of periodic tendering (Williamson 1976).

There is likely to be a wide gap between the asset price assessments by the incumbent and the succeeding operator in cases of refranchising. Typically, the incumbent is well informed of asset conditions and the cost-saving effect of previous maintenance efforts. In contrast, any other prospective bidder is informationally disadvantaged and faces considerable uncertainty about the residual asset value at the end of the franchise period. Consequently, costly negotiation or arbitration would become necessary in order to determine a 'fair' or agreed asset price — if this is possible at all.

The burden of proof in any claim of excess capitalisation falls on the would-be franchisee inasmuch as information on true asset values is asymmetrically distributed to the disadvantage of prospective bidders. Indeed, it is notoriously difficult to detect and litigate against the manipulation of accounting records by private-sector businesses intent on inflating asset value.

Retaining infrastructure ownership in the public sector appears to be a pragmatic solution to the asset valuation problem that could have beset periodic franchise tendering inclusive of an outright asset sale. Through financial engineering, nominal leases have been devised to transfer publicly-owned assets between government and private business and between successive franchise holders. Moreover, three-party financial leases — involving the government, franchisee and lessor — have been used to facilitate public investment through government franchises without accessing private-sector equity.

The way in which lease charges are set for the use of government-owned assets varies between different applications of government franchising. In some cases, commercial rates have been applied to leasing equipment and facilities from governments. The norm, however, appears to be that governments provide infrastructure assets at no cost or for a nominal consideration to franchisees.

There is no standard accounting procedure to record asset transfer transactions in the use of government franchise. Reflecting the diversity of contract structures and accounting discretions, the costing of asset transfer appears to have been arbitrary and inconsistent. This adds to the difficulty of finding credible cost information to evaluate government franchises (box 9.8).

Specifying maintenance requirements

Effective use of government franchising requires adequate protection of the condition or quality of publicly-owned infrastructure assets that have a service life beyond the franchise duration. To this end, performance incentives or prescriptive contractual specifications are normally included in franchise arrangements.

The incentive-based approach to ensuring adequate asset maintenance by franchisees basically involves transferring to them some consequential risk arising from asset deterioration and degradation. Depending on the structure of the contract, franchisees have incentives to undertake maintenance activities that increase service demand or lower overall operating costs.

Provided that franchisees are rewarded for any increase in demand, the commercial desire to grow profit can be a driver of improved maintenance efforts. Alternatively,

Box 9.8 Accounting of asset transfer in government franchises

Estimates of the relative cost advantage in government franchises are affected by the treatment of government-provided assets as an uncompensated input for use by franchisees. This is apparent in the following examples.

Bus services in Denver

The US Denver Regional Transportation District (RTD) was required by law to convert 35 per cent of its public bus services to competitive tendering by 1998. In its procurement program for the period 1994 to 1999, RTD required the franchisees to supply new buses instead of providing the buses through a nominal lease. This resulted in increased franchise payments by RTD.

Subsequently, RTD advised the state legislature that franchise costs had escalated to the point that there was little difference from the costs of internal provision. This convergence of costs, however, was a direct result of excluding capital financing charges in its own costs for leasing new buses to the franchisees but including these charges in franchise costs in the case of franchisees supplying new buses (Cox and Duthion 2001).

Bus services in Adelaide

The franchise arrangements for bus operations in Adelaide include provision for the franchisees to lease buses and depots from the SA Government. On behalf of the transport department that owned these facilities, the Passenger Transport Board (PTB) charged the franchisees for using government-owned buses and depots at commercial rates. The lease charges were around \$30 million in 2002-03 (DTUP 2003).

The dissolution of PTB and its replacement by an agency within the transport department in late 2003 eliminated the need for the interdepartmental transfer of lease charges. Consequently, franchise payments were adjusted to exclude lease charges for government-owned buses and depots — of which the total nominal value in 2004-05 was reported to be less than \$3 million (DTEI 2005).

Tram and train services in Melbourne

The Victorian Auditor General Office assessed that the 2004 refranchising arrangement for Melbourne train and tram services represented reasonable value-for-money (VAGO 2005). As part of the evidence presented to support this conclusion, the auditor noted that franchising expenses increased mainly as a result of policy initiatives, the withdrawal of the original franchisee (National Express) and the interim operating agreements.

The auditor's estimation of moderate costs associated with the collapse of the 1999 franchises, however, was a direct result of: (i) revaluing old rolling stock 'returned' to the State — which was initially 'provided' to franchisees for nominal consideration — at \$448 million; and (ii) applying this appreciation of asset value to offset over 60 per cent of the settlement and transaction costs incurred for the refranchising exercise.

the incentive can be based on a direct relationship between franchise payments and some indicators of the asset maintenance performance. Generally, this approach has the advantage of encouraging innovation in maintenance practices and avoiding prescriptive contractual control of franchised operations.

Despite its theoretical attractiveness, the use of contractual incentives for asset maintenance seems to have been beset by practical hurdles.

- It is often unlikely that franchisees can increase service demand through improvement of their maintenance performance, provided that certain minimum service standards are met.
- Demand is not observably related to maintenance input.
- A relatively short franchise duration does not allow franchisees to innovate and reap the financial gains from innovation, whereas increasing the franchise duration would compromise competition pressures and innovation initiatives.
- Aggregate or simple measures of asset condition or quality, devised on the grounds of practicality, can be poor indicators of maintenance adequacy.

Clear and detailed specification of asset maintenance and management duties has increasingly been recognised as an important part of franchise arrangements for providing infrastructure services. This approach places an emphasis on having a comprehensive asset management regime before franchising (box 9.9).

Box 9.9 Inadequate attention to asset management

Although it is a normal business practice to prepare asset management plans in both the public and private sectors, it was not followed in some franchise arrangements.

- In awarding a franchise for water services, the Papakura District Council in New Zealand did not include a contractually binding asset management plan. Afterwards, the franchisee produced one for its own purposes but refused to formally give the council the right of access to its plan for reasons of proprietary rights and commercial sensitivity (Controller and Auditor-General 1998, 2001).
- The OECD (2006c) reported that a complete asset management regime for franchised railway services in the Netherlands was not initially established. With no register of the infrastructure facilities and their remaining life and quality, it was found impossible to assess the maintenance costs of the whole network.

A sound asset management regime underpins an effective contractual relationship between the government and the franchisee in three ways, namely it:

- provides an inventory of the assets and a record of their initial condition or quality so that both parties can have a common understanding about the state of the infrastructure at the commencement of the contract
- provides benchmarks for the existing maintenance input and sets exacting standards or requirements for asset maintenance and enhancement to be undertaken by the franchisee over the contract duration
- includes procedures for monitoring franchisee performance in asset management and maintenance, addressing any performance shortfall and ensuring that the assets are returned to the government in a suitable condition at the end of the franchise.

For effective asset management, franchise contracts must contain sufficient detail about the asset management regime to be used. An agreement containing only broad standards invites opportunistic or ‘gaming’ behaviour by franchisees, increasing the risk of dispute over the interpretation and implementation of what constitutes satisfactory performance. For example, descriptive asset condition grading systems are vulnerable to subjectivity.

9.3 Strengths and weaknesses

In sum, government franchises have potential advantages compared with the conventional public-sector provision of public infrastructure services through:

- lower budgetary costs, and stronger incentives for efficiency and innovation
- ‘regulation by contract’ to ensure consistency of market outcomes and policy objectives
- compatibility with integrated network or system planning
- retention of public ownership of valuable and strategic infrastructure assets.

However, the experiences considered in this chapter have generally been disappointing. Effective use of government franchising depends on:

- experienced and capable government staff to design and administer periodic tendering and negotiation processes
- prudent and secure procedures to transfer and recover publicly owned assets
- effective management of the contract over the franchise period
- adequate investment and access to finance by government.

Importantly, the success or failure of a government franchise can be affected by whether the franchisee makes adequate provision to ensure that infrastructure assets are maintained in good condition. In turn, this depends on the presence or absence of rigorous oversight and monitoring of the asset maintenance undertaken by the franchisee. In this respect, there is no substitute for a sound and strict asset management regime in order to preserve publicly-owned infrastructure used for government franchises and, thereby, to protect the interests of taxpayers and service users.

In summary, while not directly related to financing, the three assessment categories can be considered to assess the overall contribution to efficiency of infrastructure provision of government franchising.

Risk management — The scope for risk management comes with the incentives for optimal maintenance of the infrastructure assets by the franchise operator. While it has proved difficult to construct contracts that shift the risk of poor maintenance, or costs of over investing in maintenance onto the franchise operator, this could be more a reflection of the public sector contracting skills.

Transaction costs — Franchise arrangements can be expensive to tender, negotiate and contract. There are also potentially high costs of monitoring performance, including asset maintenance.

Market and other disciplines — The aim of franchising is to bring private sector efficiencies to bear in the operation, rather than in the construction phase of the infrastructure asset's life. Hence franchising is unlikely to impose any discipline on the investment decision, unless the attractiveness of this operating option is taken into consideration. This may provide additional information that would affect the investment choice.

10 Towards efficient financing

Key points

- The total cost of financing is made up of the return paid to investors in interest payments or return on equity, the cost of contingent liabilities to the government (taxpayer) and/or investor, the transactions costs and any costs of delay.
 - For tax exempt bonds, the forgone tax revenue must also be included in the cost calculations.
 - While the deadweight costs of raising taxation revenue for funding revenue gaps must be included in the cost of the project, they are not a financing cost.
- The return paid to investors is not a good indicator of the total cost of financing as it depends on the investor's exposure to financial risk and the compensation they require for bearing this non-diversifiable risk.
 - The government bond rate is lower than the project bond rate because the lenders in the former case face only a very low risk of default and no project related financial risk.
 - The required return on equity under PPP arrangements depends on the gearing (ratio of debt to equity), with a higher gearing associated with a higher required return on equity.
- The greatest scope to reduce the total cost of financing is likely to be through minimising the cost of project risk — by assigning risks to those best able to manage that particular risk.
 - PPPs allow for construction and operation risk to be borne by the private partner who is best able to manage these risks
 - Improving policy certainty about the regulatory environment and funding of CSOs reduces the risk premium required by private investors.
- The transaction costs of arranging PPPs can be considerable, and the success in minimising the cost of project risk will depend on the:
 - comprehensiveness of the information available to government and the private sector bidders on the project as well as the regulatory and operating environment more generally
 - skills of the government and private sector negotiators, and the government's capacities for monitoring and contract enforcement
 - extent of competition for the project

Continued next page.

Key points (Continued)

- whether risk can actually be transferred (for example it may be difficult to successfully transfer all operational risk to the private supplier for essential services).
- Utilising capital markets in the financing of public infrastructure may also:
 - expose project selection to greater pressures to apply sound cost benefit principles
 - reduce the cost of financing where infrastructure projects returns have a lower covariance with market returns providing gains from portfolio diversification
 - stimulate the development of long-term investment products that offer greater choice for superannuation funds and life insurance companies
 - encourage greater transparency and disclosure, and the development of infrastructure management skills in the private sector.

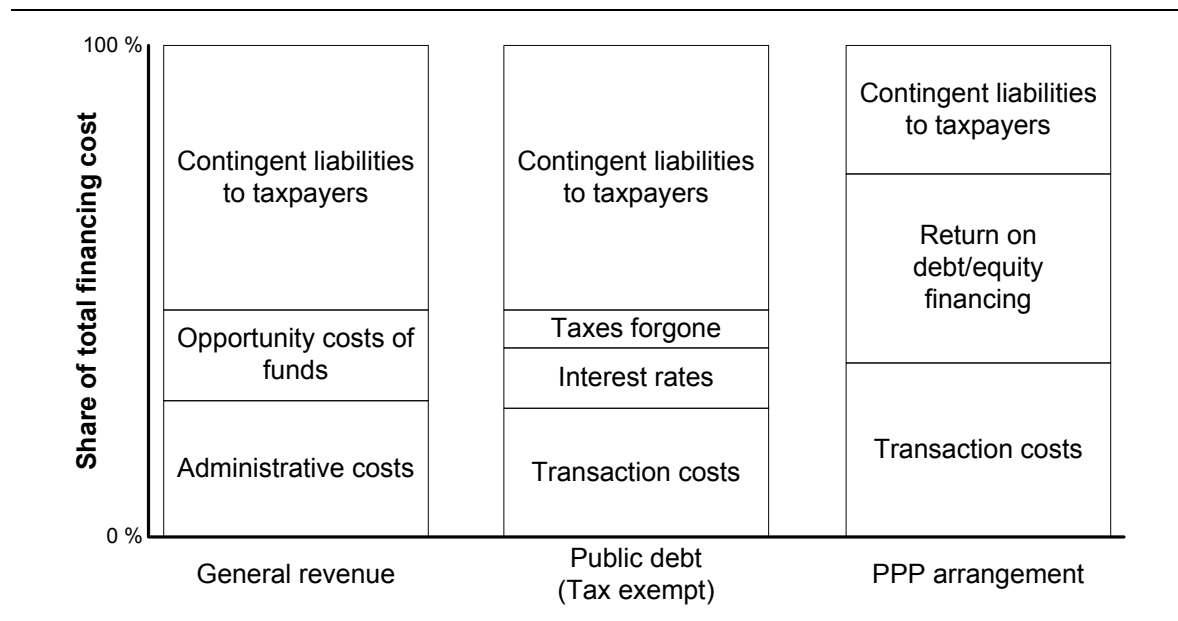
The diversity of financing vehicles for public infrastructure, ranging from funding from consolidated revenue to PPP arrangements, raises the question of whether, and under what circumstances, one is superior to the others. This chapter describes the sources of costs making up the total cost of financing and discusses how these costs are allocated under different financing vehicles. It then explores the conditions under which the total cost of financing might be lower for particular financing vehicles. Apart from the general market interest rate, the main determinant of the total cost of financing is the cost of project risk — with the lowest cost of financing usually associated with a financing vehicle that allocates project risks to those best able to manage these risks. There can also be small savings in the cost of financing where financial risk is allocated to those better able or willing to bear (in contrast to managing) these risks. In addition, transaction costs and costs of delay can influence the total cost of financing. Finally, there may be scope for the financing vehicle to deter investments that do not meet stringent cost–benefit tests. The chapter concludes with a summary of the strengths and weaknesses of the different financing vehicles and some related issues that may affect the choice of financing vehicle.

10.1 The total cost of financing

The total cost of financing is made up of the return paid to investors, the cost of contingent liabilities to government arising from project risk, the transaction costs of the financing arrangement, and any costs of delay that might be associated with a particular financing vehicle. The cost of financing does not include the deadweight loss associated with the collection of this revenue, although this is an important cost

of the project (chapter 2) that must be taken into account in the cost-benefit assessment. For financing from consolidated revenue, there is however, an opportunity cost as these funds cannot be used to support other programs. For projects funded from tax exempt bonds, the cost of the forgone tax revenue must also be included in the cost of financing. Figure 10.1 sets out the major costs to be considered in comparing the total cost of financing vehicles.

Figure 10.1 Stylised breakdown of total cost of financing public infrastructure by different types of financing vehicles



The return paid to investors is the interest rate on public or private debt, or the return on equity required by investors to commit their funds to the investment. The cost of contingent liabilities arise from the call on owners — investors and/or government — to fund cost overruns in construction, and/or shortfalls in operating revenues or overruns in operating costs. Given the potential for the infrastructure to be destroyed or stranded (rendered worthless by events — for example, a port facility build to ship live cattle when a ban on such shipments is enacted), or for make good provisions to be applied on decommissioning, these risks also add to the contingent liabilities. Contingent liabilities are realised with requests for additional capital from the owners and/or losses arising from inability to pay dividends, interest or release the capital invested.

Other costs associated with financing an infrastructure project are the costs of negotiating and contracting the financing of the project and management of this contract. There are also potential costs of delay where finance is not available in a

timely manner. This may result in bridging finance costs, but alternatively could reflect the value of lost services arising from slower delivery of the project.

These financing costs apply whether the project is commercially viable in that the revenue from user charges is sufficient to cover the full costs of the project (capital and total cost of financing) or whether it needs to be subsidised from general government revenue. The need for such subsidies could be due to public good characteristics such as difficulty in levying fees for service, or the provision of services below cost for a section of the population. Ideally such requirements are formalised in explicitly funded community service obligations (CSOs). In the case of social infrastructure, government may bear the full responsibility of purchasing the services to be provided by the infrastructure. In evaluating the net benefits of such public investments the deadweight and administrative costs of raising general revenue through taxes or other means to pay CSOs and other subsidies must be taken into account. However, this cost is independent of the choice of financing vehicle, depending only on the government's decision about the extent to which full cost recovery will be applied. Hence the deadweight costs of taxation associated with these financing obligations are not included in figure 10.1, or the following discussion.

The cost of contingent liabilities

Contingent liabilities arise from project risks. Some risks can be managed, others just have to be borne. For example, construction risks arising from poor work flow planning can be managed by improving the incentives for the construction company through imposing financial penalties for delay. On the other hand, demand risks associated with the level of use related to general economic activity that affects revenue cannot be avoided. The risk of an optimistic bias in GDP projections used to estimate revenue flows, however, can be avoided through aligning the incentives of the private operator with unbiased projections of revenue.

Project risks were discussed in detail in chapter 2, which identified four broad dimensions of risk — construction, operational, demand and policy. Construction risks are associated with bringing the project construction phase in on time and on budget. Operational risks are associated with uncertainties in the ongoing costs of service provision which include unforeseen maintenance needs. Demand risk arises from the realised level of demand relative to expectations and is the result of market forces and the quality of service provided. Policy risks are associated with changes in the policy environment, including payment of CSOs, price and service regulation, third-party access requirements, and other policies that impact on the costs of supply or demand facing the service provider.

The cost of contingent liabilities could be estimated if the probability of various risks eventuating and the financial costs arising from such events were known. Unfortunately, the information required to estimate the expected cost of risk is rarely known. The best estimates available are what the market charges to take on such financial risks. Construction insurance might be available in some situations, but insurance markets do not exist for most of the risks associated with major infrastructure projects. This leaves the cost of private equity above the market average rate, where the owners bear the full contingent liability, as the best estimate of the cost of the project's undiversifiable risk.

Public debt financing options leave all contingent liabilities with government

Public debt financing mechanisms, whether tax exempt bonds or the more familiar government bonds, expose the lenders to sovereign risk — arising from the risk that the government will default on their bonds. This risk is generally considered to be low (box 10.1) so investors price in only a small risk premium for holding public debt in most OECD countries. Most debt instruments also expose investors to inflation risk and some to liquidity risk. In countries with a history of high and/or volatile inflation the return may also include a premium for inflation risk, which would apply to all debt and equity instruments.

Project bonds issued by the government often attract a relatively small risk premium, reflecting the expectation of an implicit government guarantee. This also tends to be the case for borrowing by a GTE. As the government is the equity holder, it is expected that it will bear most of the project risks — the risk of default, even if the infrastructure becomes stranded, tends to be low.

PPPs may enable the transfer of some of the contingent liabilities to the private sector investor

There are trade-offs between some of the costs making up the total cost of finance, most notably between the return paid to investors and the cost of contingent liabilities to government. Trade-offs also occur between the contingent liabilities taken on by different types of investors. Investors will price their exposure to contingent liabilities into their required return, so the greater the share of project risk borne, the higher this required rate of return.

The private sector can invest in public infrastructure through debt, equity or a combination of both. The exposure to contingent liabilities depends on the gearing

Box 10.1 **Sovereign risk and the return on public debt**

The interest rate on government debt has been found to be sensitive to fiscal imbalance, liquidity, market appetite for credit risk, governance discipline and public-debt management practices. On the other hand, governments' tax-raising capability was found not to have been a consistent and compelling influence on the default risk of government bonds from an investor perspective (Alesina et al. 1992; Bernoth, von Hagen and Schuknecht 2006; Lemmen 1999; Lemmen and Goodhart 1999).

In Australia and Canada, budget rules and other market discipline indicators appear at times to exert modest influences on the yield spreads between subnational and federal government bonds, especially when global investors have had strong aversion to credit risk (Balassone, Franco and Giodano 2004; Lemmen 1999). In the US capital markets, there has been relatively strong sensitivity of yield rates to indicators of the creditworthiness for individual government bonds.

Within the European Economic and Monetary Union (EMU), government bond yield spreads attributable to sovereign default risk have been found to have varied significantly between countries and over time (Lemmen and Goodhart 1999). These yield spreads were differences between the 10-year government bond yield and the corresponding 10-year interest rate swap yield.

The rate of return for bearing the risk of government default in EMU countries was estimated to be less than 0.4 per cent in most cases — although measures of default risk in excess of 1.5 per cent have been common. This compares with common estimates of the default risk with high-grade corporate debt at between 0.5 and 1 per cent (KMV 2001).

There are cases where bond investors have been aware of the default risk but the bond rates have remained relatively low. For example, no national government within the Economic and Monetary Union has the sole authority for printing or creating Euros. As such, they cannot halt a process of falling bond prices by 'monetising' their debt.

Revenue bonds issued in the United States have no government guarantees. Further, the credit has little collateral protection because the courts are unlikely to allow project assets to be liquidated in the event of default in order for bond investors to be repaid (chapter 5; Francis 1986). Nevertheless, these bonds have relatively low yield rates averaging around 4 per cent as at September 2007. After adjusting for the effect of tax exemption, the cost of borrowing through this vehicle would be modestly higher than the concurrent rate of return on tax-backed general obligation government bonds (at around 5 per cent).

— the debt to equity funding ratio. A higher gearing (the share of debt to equity), magnifies the risk to the equity holders so they require a commensurately higher return on their equity investment. As a result, the measured rate of return paid to investors in a PPP arrangement will depend on the gearing of the investment. The premium investors require is the valuation of the risk of ownership that is being transferred to the private sector. This will depend on the nature of the investment

and the contractual arrangements. Box 10.2 reports on some estimates of the premium required for assuming some of the contingent liabilities.

According to some analysts, a reason for the increased equity premia in PPPs is the contractual complexity associated with using private-sector equity to finance a public project (Jenkinson 2003; Spackman 2001). In many situations, it is difficult to precisely define the scope of contractual responsibilities and achieve a clean split of operational and policy risks. This mirrors the difficulty of writing a ‘complete’ contract to specify the legal and financial consequences of every possible situation. In addition, to the extent that the risk is overvalued this will increase the financing costs of using PPPs (Asenova, Beck and Toms 2007; Grant and Quiggin 2003; Quiggin 1997; Vickerman 2004).

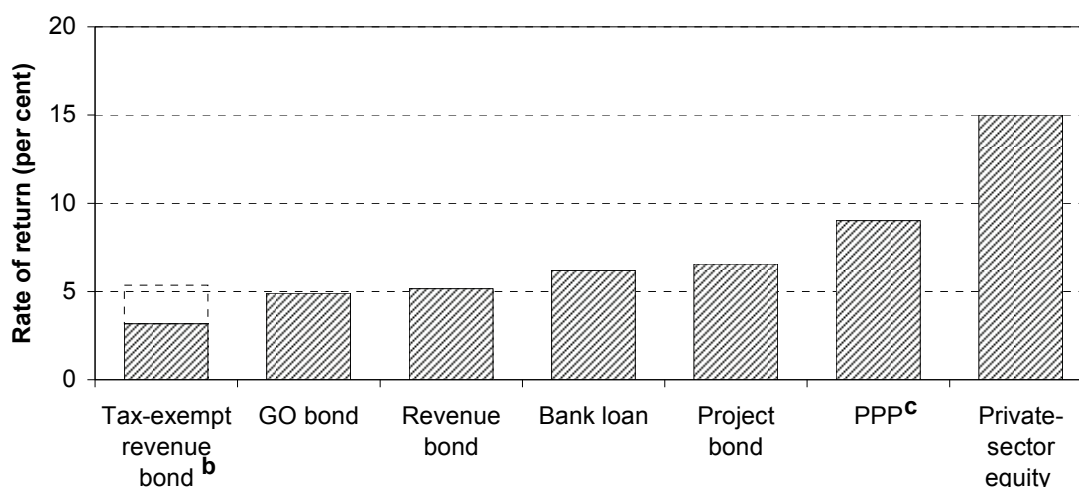
Figure 10.2 shows a stylised picture of the return to investors under the different financing vehicles. It highlights the danger of looking only at the interest cost component of the cost of financing in selecting the financing vehicle. For government what matters is the total cost of financing and this includes the combined cost of the return to investors and the expected cost of contingent liabilities (ACG 2007; EPAC 1995; Klein 1996). The potential to choose a financing vehicle that is efficient, in that it reduces this combined cost, is explored in the next section.

Box 10.2 PPPs and the premium for assuming contingent liabilities

Subject to potential limitations of financial modelling, the cost of PPP financing in the United Kingdom has been estimated by some to be, on average, between one and three percentage points higher than the public-sector borrowing rate (Arthur Anderson and Enterprise LSE 2000; HM Treasury 2003a; PwC 2002). The PwC (2002) study examined the financing arrangements of 64 projects that reached financial close between 1995 and 2001. For this sample of PPP projects, the post-tax internal rates of return were estimated at 7 per cent on average. By comparison, the relevant government bond rates were at around 4.5 per cent in December 1999.

Over the past decade or so, the gap between the costs of PPP and conventional public-sector financing appears to have narrowed. Different explanations for this trend have been offered. Arthur Anderson and Enterprise LSE (2000) attributed this to the maturing of PPP as a procurement process and increased competition in British capital markets — particularly as a result of the entry of equity funds and building societies into infrastructure investments. Other reasons, made prominent by recent developments in broader financial markets, include the cyclical variation in investors’ risk appetite and the prevalence of financial engineering and asset leveraging (chapter 8). Another possible explanation is that the market is learning how much of the contingent liabilities associated with revenue shortfalls end up remaining with the government.

Figure 10.2 Indicative relative estimates of the return required by investors^a



^a Estimates are based on market data on bond yield rates, and published data on project financing costs from Arthur Anderson and Enterprise LSE (2000), Carey (2006), Credit Suisse (2006), HM Treasury (2003a) and PwC (2002). ^b The rate of return for tax-exempt revenue bond is exclusive of tax revenue forgone, which is indicated by the dotted-line bar in this figure. ^c The PPP rate of return represents the weighted average cost of finance for a representative capital structure comprising bank loan, project bond and private-sector equity.

Source: Productivity Commission estimates.

10.2 Minimising the total cost of financing

A particular financing vehicle can reduce the total cost of financing where it can:

- better align the incentives for managing non-diversifiable project risk to those who have the capability to better manage this risk
- improve the portfolio balance for the investors, reducing the market risk through diversification, consequently lowering the return required to hold this asset
- reduce the life-time transaction costs of financing and/or the costs of delay.

Of these three avenues for lowering total costs of financing, the most powerful is usually the potential for a financing vehicle to reduce the cost of contingent liabilities through aligning the incentives to better manage project risks.

Aligning the incentives to better manage project risks

As a general principle, efficient allocation of risk requires that those with the best (lowest cost) capability to manage a risk are exposed to the costs of failing to manage that risk. This alignment of incentives suggests that the construction company should bear construction risks, the operating firm bear operational and

demand risks, while the government should face the risks it creates from regulatory uncertainty. There can be trade-offs between the four types of risk. For example, operation costs are dependent on the quality of the construction, as well as the design. Hence combining design, construction and operation can internalise this type of operational risk. Similarly, the quality of the service impacts on demand; so it is sensible to ensure that the operator faces revenue implications if they do not deliver a quality service. As discussed in chapter 8, this linkage across construction, operation and demand risks is a primary motivation for PPP as the firm will have an incentive to build an asset at a scale and quality that maximises the (discounted) difference between user revenues and life-time costs.

In forming a PPP, the government aims is to minimise the cost of project risks, by shifting construction, operational and demand risk to the private sector. It also aims to bring in private sector expertise that has specialised skills such as better asset management; but, here too, incentive alignment matters for outcomes. The key question is whether government is successful in transferring risk to the private sector where the private sector is better able to manage, and hence reduce the cost of, this risk. Experience to date with PPPs (chapter 8) and franchising (chapter 9) is not yet compelling, but both the private sector and governments are learning from experience.

A crucial weakness in the past has been failure of governments to adopt a no-bailout policy for investments in the public sector. The prospect of a government bailout can lead to the ‘soft budget constraint’ phenomenon, whereby a GTE, PPP operator or lower-level government faces attenuated disciplines. That is, there are expectations of being able to receive assistance from the owning or higher-level government in event of financial distress (box 10.3). Where continuity of service delivered by the infrastructure is essential, it is very difficult for a government not to bail out the PPP operator.

Clearly the contracting is critical to the allocation of construction and operation risks. The government can, however, contribute to problems where they have unrealistic expectations of the efficiency gains to be had from involving the private sector. Bailouts may be precipitated by the acceptance of unsustainable bids in contract tendering whether for construction, operation or under a BOOT arrangement. It is important for governments to evaluate bids for infrastructure investment carefully and realistically to ensure that the winning bid is financially sound. A bid should not be accepted simply because it represents the most optimistic forecast of particular cost or demand conditions, which could turn out to be unsustainable.

Box 10.3 Debt leverage and government bailouts of PPPs

Public-private partnerships have features contributing to the increased likelihood of financial distress and, in the event of potential debt default, government bailouts through unscheduled tariff increases or injections of public funds (Ehrhardt and Irwin 2004). These features include: operation by highly leveraged companies; regulation of service conditions and tariff charges restricting an operator's flexibility in responding to unanticipated market conditions; and monopolistic provision of essential services.

The true allocation of risk in a PPP project can differ from the apparent risk allocation embodied in its underlying contract or capital structure because of significant equity stakes implicitly held by the public sector. Taxpayers or service users bear the potential burden of government bailouts, the cost of which tends to vary with the likelihood of equity holders bearing the residual risk and the extent to which regulation restricts the pricing flexibility of the project operator.

Government franchises that do not require franchisees to invest substantial own capital to purchase or build infrastructure assets are an extreme case of the private-sector equity-thin capital structures used in PPPs. The franchisees typically do not have to take on major debt to finance capital and operating expenditures. However, the combined value of their equity and the performance bond (that is, the security deposit to be retained by government on default) is less than the potential loss in the event of adverse changes in their business prospects. Consequently, when encountering financial difficulties they have little at stake, putting them in a more powerful position to renegotiate contracts.

In the early 2000s, a number of PPP or privatised infrastructure businesses required temporary government support or intervention because of financial distress. Notable examples include the Melbourne transport franchises, and the National Air Traffic Services and Railtrack in the United Kingdom.

On the other hand, there is some evidence of governments avoiding bailouts. For example, the NSW Government neither bought out nor provided financial assistance to Sydney's Cross City Tunnel when it became insolvent in December 2006. Instead, the tollway was subsequently sold to a syndicate, with the original equity investors realising considerable financial losses.

The difficulty that government often displays in transferring risk to the entity with the best ability to manage that risk raises the question of whether there are particular project characteristics that lend themselves well to transferring risk. Box 10.4 lists some of the main characteristics of public investments to be considered in the financing decision. As a rule of thumb, those projects that have the greatest potential for user payments to fully cover the operating (including financing) costs are best placed for transferring risk to the operator, whether under a franchise or PPP arrangement.

Box 10.4 **Project characteristics affecting financing decisions**

Before deciding how best to finance an infrastructure project, a range of basic project characteristics and their attendant risks have to be identified, including:

- physical profile — size, complexity, construction time, asset life
- cash flow profile — revenue potential, up-front costs, future commitments, payback period, asset marketability
- user profile — public awareness, demand projection, price affordability
- network profile — integrated or stand-alone, new or replacement, economic or social, community-wide or localised
- policy profile — priority, regulatory approach, essentiality of services.

Source: Adapted from Ploeg (2006).

Scope for gains through portfolio diversification and other capital market instruments

While the main source of risk for an investor is the project risk associated with cost overruns and revenue underperformance, deepening in the market for infrastructure-based assets could reduce several other risks faced by investors and hence reduce the required return on such assets and hence the total cost of capital. It is likely, however, that any such gains would be small.

The first possible gain arises from the contribution that public infrastructure based assets might make to the diversification of the market portfolio¹. The required return on an asset is higher the greater the covariance of the asset return with the market return. Put another way, to the extent that the asset returns are high when the market returns are low, this provides insurance for the investor so they are willing to accept a lower expected return on the asset. Over time, adding assets that reduce the overall variance of the market portfolio will lower the equity premium.

The second possible gain comes from reducing liquidity risk — whether the asset can be converted to cash whenever this is required. Infrastructure projects, by their nature are usually long lived, but in recent years new financial products have made investment in infrastructure assets more liquid, lowering the required rate of return. As the volume of infrastructure-based financial assets grows, the liquidity of these assets should improve.

¹ This refers to the measured market as infrastructure assets already are part of the broader 'market'.

Related to liquidity risk, is refinancing risk. Generally, the cost of financing is lower where the maturity of the financing vehicle matches that of the asset. Hence infrastructure investments ideally draw on long-term investment funds. Fund sources with a shorter investment horizon than the expected economic life of the assets introduce refinancing risk — the possibility that the refinancing of maturing loans becomes difficult or more costly than expected. Refinancing also results in higher transaction costs with multiple capital raisings.

The difference between the government bond rate and the rate of return on project bonds and equity reflects the additional compensation required for investors to take on these risks. The equity premium points to a high average level of risk aversion in the investor population as well as a quite high exposure to market (non-diversifiable) risk (box 10.5). According to the Colonial First State Asset Management (CFS 2006, 2007), the risk-return profiles of Australian listed and unlisted infrastructure funds are different to those of other asset classes, offering higher risk-adjusted returns to attract investors.

Transaction costs and costs of delay

There is evidence to suggest that transaction costs are significantly higher for PPP financing than for conventional sources of finance used in the public sector. According to the study by PwC (2002), 1 percentage point of the average return on PPP finance (7 per cent) is attributable to investors' recovery of tendering costs incurred in unsuccessful bids. This cost estimate excludes the tendering costs in a winning bid and the substantial contracting and administrative costs incurred by governments.

The transaction costs of accessing finance from government bond markets are considerably less. Relatively high credit ratings and large, trade-size bond issues by the public sector help reduce transaction costs such as underwriting fees and credit rating agency charges. For lower-rated, smaller-sized bond issues, transaction costs can be reduced by pooling bond issuance through central borrowing authorities (chapter 4). According to a study by Gilbert and Pike (1999), transaction cost savings from pooled bond issuance could amount to 0.4 percentage point on average in the bond rate relative to stand-alone issues.

It can be difficult to compare like with like for transactions costs. With a PPP the costs of contracting and management may be more transparent, but alternatively could be opaque and instead included into a margin on the required rate of return. For projects managed by government agencies, these costs too may not be transparent as they may not easily be separated from other agency costs.

Box 10.5 The compensation for equity risk — the equity premium puzzle

The equity premium depends on the level of market portfolio risk and the compensation required by investors to take on this risk. The so called equity premium puzzle is the finding that the average difference between the rates of return on risky equity and on low-risk debt (public-sector or corporate) is much greater than can be explained by standard theoretical modelling of intertemporal risk response behaviour in capital markets (Mehra and Prescott 1988).

By assuming that capital markets are perfectly efficient and investors are rational, standard economic models of asset-price determination would predict that equity stocks pay investors more than bonds — to reward them for bearing the higher risk of equity investment — but that the average risk premium should be no more than 1 per cent. Although individual stocks tend to have distinct risk profiles reflecting the nature of their underlying business, most of the associated equity risks have been found to be ‘non-systemic’ (company- or project-specific). In the presence of perfectly efficient capital markets, investors would have been able to substantially neutralise these risks through a well-diversified portfolio of stocks. Such an outcome would be consistent with capital markets providing an effective means of risk spreading, reducing the required rates of return on individual stocks and hence the costs of equity raised to finance their underlying business.

Nevertheless, there are many empirical studies producing results that contradict the prediction of an insignificant risk premium under the scenario of efficient capital markets. These studies, using diverse data sources and sample periods, produced estimates of the equity premium mostly at between 6 and 8 per cent (Allen and DeMello 2004; Brailsford, Handley and Maheswaren 2008; Dimson, Marsh and Staunton 2003). An equity premium of such a magnitude implies a very high degree of risk aversion among investors, or that they face larger portfolio or market risks, or that there are major inefficiencies in capital markets.

Various explanations have been put forward, but until recently none claimed to explain the full premium. Building on Barro (2005) and Rietz (1988) who argued that market risks are much greater than previous studies have recognised, Weitzman (2005) demonstrated that when uncertainty is explicitly addressed the high equity premium, low risk free rate and the excessive volatility can all be explained. This is because of the way infrequent but catastrophic events are factored in. Indeed, the measured equity premium may decline going forward as it is larger in the United States (and Australia) than in most other countries (Jorion and Goetzmann 1999). In line with the Weitzmann explanation this may be simply because at the time of measurement, the United States was yet to suffer a catastrophic event of a magnitude to drive down the measured premium.

A substantial proportion of transaction costs are likely to be independent of the scale of the project. This suggests that more complex financing vehicles such as one-off PPPs that have high transactions costs are only justified for large investments.

Financing vehicles can also affect the timeliness of an investment. Delays impose real costs where the benefits have been assessed as exceeding the costs. Reliance on internal resources for GTEs or financing from general revenue may restrict cash flows, slowing construction. The shift to PPPs has been seen in part as a response to limits on the government's ability to raise revenue due to restrictions on debt accumulation.

10.2 The effect of the financing vehicle on investment discipline

The financing vehicle can introduce investment discipline through enforcing government fiscal responsibility and governance, or through bringing market scrutiny to bear. Such investment discipline reduces the probability that projects go ahead that would not meet rigorous cost-benefit thresholds.

Investment discipline can be imposed on government through their own governance mechanisms for fiscal responsibility. They may also be able to utilise the capital market to improve due diligence required for good public investment decisions. These two drivers of investment discipline reinforce each other.

Government fiscal responsibility

A fundamental tenet of efficient public infrastructure investment is that projects compete for capital funds on the basis of their worthiness. Achievement of this objective requires an effective budget and financial management system in the public sector. On-budget investments have the advantage of parliamentary scrutiny, while for off-budget investments the scrutiny depends on the governance arrangements for the GTE or the treatment of a PPP arrangement.

Transparency and disclosure are central to effective fiscal control and to the provision of the information necessary for governance discipline. For investments financed through budget appropriations and intergovernmental transfers, fiscal disciplines have depended on the integrity of budget preparation and execution as well as the rigour of administrative scrutiny and legislative oversight.

Budget reforms have brought about an increased emphasis on the use of legal instruments to discipline governments. The design and implementation of such instruments have varied between countries, depending on specific institutional and procedural setups enshrined in constitutions, legislations, policy rules or intergovernmental agreements. For example, voter approval is required for general obligation bond issues in some jurisdictions (chapter 5).

Organic budget laws, as another example, have been extensively introduced in Europe in the early 2000s (Ahmad, Albino-War and Singh 2005). These laws are aimed at specifying the schedule and procedure by which the budget is prepared, approved, executed, monitored, reported and audited. In Australia, the adoption of output-based budgeting has led to improved budget appropriation processes (chapter 4).

The emergence of off-budget government activity has been accompanied by changes in governance structures and processes used to monitor and regulate infrastructure provision. These have included the establishment of corporate boards or similar governing bodies to take over the primary responsibilities of governments in infrastructure procurement and operation (chapter 6).

Australian GTEs, for example, have notionally gained operational autonomy through increased access to internal and external financial resources after corporatisation. However, the levels of their capital spending and borrowing are usually subject to approval by the treasurer or the shareholder minister. The regulators also play a major role in imposing discipline, although the Commission has argued that a light hand in matters such as investment decisions is preferred (PC 2006a, 2006b). The reform of GTE capital management practices has also contributed to potential disciplines that encourage sustainable investment and efficient financing. For example, a target capital structure has to be annually approved by the board and the shareholder minister in some GTEs.

In a number of jurisdictions, PPPs have been subject to government scrutiny in the same way as other public investment proposals at the project development stage. However, the fiscal controls for a specific project would differ from those applicable to on-budget investment once a decision has been taken to deliver the project through a PPP. The effectiveness of government scrutiny also depends on their familiarity with the type of investment. Infrastructure projects that are novel and complex present a greater degree of difficulty for governments to assess the risks.

Capital-market discipline

Capital markets discipline lenders and borrowers by providing ‘signals’ to motivate and reward the sustainable use of capital funds (Lane 1993). According to studies by Bishop, Damrau and Miller (1989) and Lane (1993), a number of conditions are essential for capital markets to be fully effective in exerting disciplinary influences on public infrastructure investment, namely that:

-
- free and open financial markets exist to enable flexibility in interest rates for accommodating variable risk profiles of investments
 - market participants have access to reliable information for evaluating the creditworthiness of borrowers and their projects
 - governments minimise capital controls and do not support privileged access to finance
 - governments avoid creating ‘moral hazard’ by bailing out financially delinquent borrowers and troubled projects, even in event of an impending or actual default.

Empirical evidence on capital-market performance indicates that many of the above conditions for market-based investment discipline have been fulfilled in advanced economies. However, others have remained problematic (Balassone, Franco and Giordano 2004; Lane 1993; Pisauro 2001) (box 10.6). Nevertheless, financing vehicles that expose the private sector financier to risks create incentives for due diligence, which in turn imposes investment discipline. The challenge, discussed above, is to ensure that the contractual arrangements do force the private financier to fully analyse the viability of the project. Any explicit or implicit guarantee on costs or revenue reduces the risks to private capital and with it the incentive for due diligence.

Box 10.6 Efficiency of the capital markets

Mature financial markets, such as those in Europe and North America, are open and largely free of restrictions on capital movement and access. Reflecting the ability to induce solvent investments, these markets — unlike some others in developing countries — have been able to consistently deliver investment returns in excess of fund costs over the long term (Gugler, Mueller and Yurtoglu 2001).

Nevertheless, capital markets are subject to distortions caused by such factors as taxes and subsidies, asymmetric information, lack of depth or liquidity, regulatory rigidity as well as incentive problems that exist between and within different levels of government.

Historically, there have been many examples of corporate distress leading to the default of bank loans and systemic banking crises. In such circumstances, the resolution typically involves a government bailout of the banking system — not necessarily the defaulting corporation or project — through the use of public money to subsidise bank restructuring or the disposal of impaired loans. Generally, bank bailouts can contribute to the ex post efficiency of financial intermediation by mitigating the systemic impact of loan defaults on aggregate liquidity, particularly when this involves the foreclosure of ‘healthy’ loans. However, this benefit has to be weighed against the potential moral hazard effect on lending prudence (Diamond 2001; Diamond and Rajan 2002; Gorton and Huang 2004; Gorton and Winton 2003).

10.3 Developments to promote efficiency

The financing vehicles examined in this study exhibit a number of characteristics that affect different aspects of efficiency in the provision of public infrastructure services. These characteristics and their primary roles include:

- effectiveness of risk management and apportionment — which minimises the cost of finance from a whole-of-government perspective, given the project risks involved and the relative competence and capacity of bearing and managing such risks between the public and private sectors
- incorporation of incentives for efficient service production — which encourages efficient provision of services by exploiting synergies between construction, operation and financing of infrastructure
- incurrance of transaction costs — which adds to project costs, offsetting efficiency gains as contractual and financing arrangements become more complex
- availability of funding options — which affects the timing of the investment and commencement of delivery of services
- amenability to public scrutiny — which increases the accountability of government and provides an incentive to improve performance
- degree of exposure to capital markets — that discipline the allocation of financial and economic resources for capital formation
- government capacity to manage the process — which affects the relative efficiency in the public and private delivery of the infrastructure project and is a source of gain if the private sector can be involved effectively.

These characteristics determine the relative strengths and weaknesses of individual financing vehicles, as discussed in chapters 4 to 9 and are summarised in table 10.1. They underlie the tradeoffs of the costs and benefits associated with the financing vehicle that have to be made to arrive at an appropriate choice.

Table 10.1 Strengths and weaknesses of various financing vehicles

<i>Strengths</i>	<i>Weaknesses</i>
General budget appropriations:	
<ul style="list-style-type: none"> • Legislative control of capital spending and financing • Relative transparency of financial arrangements for public scrutiny • Easier to enforce accountability of governments for their investment and financing decisions 	<ul style="list-style-type: none"> • Absence of market signals on the financial viability of projects and the risks involved • Fiscal policies constrain ‘lumpy’ capital expenditure • Distortion in investment decisions by governments if intergovernmental transfers are open to cost shifting • Diminished opportunities for annual scrutiny in the case of special standing appropriations • Can result in intergenerational inequity
Specific-purpose securitised borrowing:	
<ul style="list-style-type: none"> • Access to low-cost financing in mature municipal bond markets • Exposure to capital-market disciplines • Relatively low transactions costs for bond issues, especially those of a large size • Opportunities to apply the ‘beneficiary pays’ principle if user charges are raised for debt repayment 	<ul style="list-style-type: none"> • Low flexibility for debt restructuring through bond defeasance • Distortion in investment decisions by governments if federal or state assistance is offered in the form of tax exemption for bond interest payments • Rent-seeking activities encouraged when revenue bonds are used for financing private assets • Losses of tax revenue for governments if bond interest payments are tax exempt
Off-budget financing by GTEs:	
<ul style="list-style-type: none"> • Capacity to generate revenues from user charging for financing specialised infrastructure assets • Financial independence and operational autonomy from owner governments • Managed by people with the financial and technical expertise necessary for sound investment and financing decisions 	<ul style="list-style-type: none"> • Poor investment performance if insulated from capital market pressures • ‘Soft’ budget constraints resulting from government subsidies for specific policy obligations • Open to ad hoc equity withdrawals by owner governments • Reduced accountability from a whole-of-government perspective if not carefully managed through external governance arrangements
Development contributions:	
<ul style="list-style-type: none"> • Capacity to provide adequate finances for infrastructure facilities that are well-suited to the application of the ‘beneficiary pays’ principle • Availability of finances synchronised with the construction of development-specific infrastructure • Providing partial price signals on the costs of land development 	<ul style="list-style-type: none"> • High transaction costs reflecting the uncertainty, complexity and disputation of individual contributions systems • Land development ‘sterilised’ if too much of the financing cost is shifted to developers • Cannot be used to finance the maintenance, upgrading and replacement of existing infrastructure • Applicability limited by competing policy objectives

(Continued next page)

Table 10.1 (Continued)

<i>Strengths</i>	<i>Weaknesses</i>
Development contributions (continued)	
	<ul style="list-style-type: none"> • Less effective in apportioning and spreading financing costs and project risks across all potential users of specific facilities, especially shared infrastructure • Vulnerable to distortion in investment decisions by planning authorities
Public-private partnerships:	
<ul style="list-style-type: none"> • Capacity to finance public infrastructure without adding to government borrowing and debt • Potential for whole-of-life cost savings through bundling the financing, design, construction, operation and maintenance of infrastructure • Strong incentives of private-sector sponsors to avert optimism biases in project planning and attain operational efficiency in service delivery • Exposure to capital-market disciplines through project financing 	<ul style="list-style-type: none"> • High transaction costs reflecting a range of contractual and administrative complexities of the procurement process • High financing costs reflecting the shift of project risks to private-sector equity sponsors • Transparency and accountability diminished by limited disclosure of contract details for public scrutiny
Government franchising:	
<ul style="list-style-type: none"> • Capacity to reduce budgetary costs and promote efficiency and innovation through private-sector involvement in asset management • Consistency of service outcomes and policy objectives through 'regulation by contract' • Compatibility with integrated network or system planning • Retention of public ownership of valuable and strategic infrastructure assets 	<ul style="list-style-type: none"> • High requirements for experienced and capable government staff to design and administer periodic tendering and negotiation processes • Critical dependence on effective contract management as well as on prudent and secure procedures to transfer and recover government-owned assets • Government remains responsible for financing investment

Other factors affecting efficiency of financing vehicles

While consequences of the choice of financing vehicle for the allocation of project risk and transactions costs emerge as the most important factors that affect the efficiency of project financing there are several other factors that need to be considered. These include the efficiency considerations of user charges, the availability of information to support decision making, the management skills and systems to manage not just the project but also the financing, and the extent of competition for PPP contracts.

Where infrastructure only generates exclusive and direct benefits for a specific group of individuals, or where some individuals hold asymmetric information on the benefits and costs of a specific project, efficiency requires that these beneficiaries should bear at least some of the cost of financing the investment. For example, greenfield developments of housing estates bring amenity benefits to residents in specific areas. Accordingly, development contributions can be a more efficient way to provide certain local infrastructure facilities.

The quality of information and management capabilities available to both government and private firms will also affect the choice of financing vehicle. A key lesson learned from the global experience with PPPs over the past decade is that fiscal liabilities and resources committed by governments through long-term payment obligations, guarantees or implicit undertakings must be carefully managed. This requires appropriate information and management systems to assess and mitigate potential fiscal burden. Similarly, the market will price in the cost of uncertainty if the information provided on the proposed project is inadequate. In addition, uncertainty in relation to the regulatory regime and the commitment to fund CSOs will raise the risks for private investors and require compensation in the cost of funding.

Finally, concern has been raised as to the extent of competition in the PPP market. The high cost of preparing bids and the relatively small pool of potential suppliers may reduce the competitive pressures that are important for delivering an efficient outcome under a PPP arrangement. The extent of potential competition for any proposed PPP will be a consideration in the selection of an appropriate financing vehicle.

There are no regulatory impediments to the choice of financing vehicle

Regulations that restrict the supply of savings from being deployed in the kinds of financial assets used for infrastructure financing would raise the cost of financing. This is not an issue in Australia, but until the last decade, this segment of the market was not well developed. The largest and fastest-growing sources of long-term finance in the sampled countries are life insurance and superannuation funds. The growth of funds available from these sources in recent decades represents a significant development in capital markets. Household savings have been increasingly ‘institutionalised’ through legislative pension systems and channelled into investments managed by specialised financial institutions on behalf of the small investors.

In Australia, superannuation funds have grown by 17 per cent annually on average since 2001, reaching a total of \$933 billion by mid-2007 (RBA 2007b). Over the

same period, the funds managed by Australian life insurance companies have grown by 5 per cent annually on average to reach the current level of around \$260 billion. The combined value of superannuation and life insurance assets is roughly equivalent to annual gross domestic product and represents more than 24 times annual gross fixed capital formation in the public sector. These legislated savings increase the supply of funds available for investing in public infrastructure.

Nevertheless, to date, only a small proportion of superannuation funds have been invested in infrastructure. Statistics quoted by Nielson (2005) indicate that 4.3 per cent of Australian investment in industry funds was allocated to infrastructure equity in 2003. Anecdotal evidence, however, points to a growing interest of fund managers in this type of investment.

There are several plausible reasons why investment in public infrastructure could be attractive to life and superannuation fund managers:

- earnings stability — reflecting the monopolistic supply of public infrastructure services in specific markets that brings a dependable dividend stream and capital growth potential with a relatively low level of investment risk
- portfolio diversification — reflecting the merit of infrastructure revenues as a counter-cyclical hedge against adverse performance of other investments
- long maturity — reflecting the horizon of infrastructure investment that is comparable with the term of liabilities to fund holders.

Life insurance companies and superannuation fund managers can invest in infrastructure in various ways. These include debt instruments, portfolio investment in listed or unlisted managed funds, and direct investment through a sole proprietorship or a partnership with other entities to own and operate the asset.

Direct investment is more onerous than lending or purchasing units in infrastructure funds. However, it can keep transaction costs down — for example, by avoiding paying reward fees to fund managers — and bring higher returns (and associated higher risk of equity ownership). Generally, the diversity of these investment opportunities reflects the breath and depth of mature capital markets.

The existence and continuing development of sophisticated investment banking, credit rating, bond insurance and secondary trading services, as well as financial regulatory systems, provide the support of market institutions necessary for channelling long-term savings into infrastructure investments. Moreover, financial globalisation and the availability of currency hedging products have resulted in capital funds being mobilised across countries.

The financial regulatory regime in Australia does not place any specific restriction on asset or portfolio allocations. The *Superannuation Industry (Supervision) Act 1993* requires, among other things, that funds be invested in a ‘prudent’ manner rather than according to specific asset-allocation rules (APRA 2006). This should not pose a barrier to investment in infrastructure if the assets are packaged in a manner that suits investors.

The typical lack of liquidity with infrastructure assets has posed a barrier to equity investment by superannuation funds (Nielson 2005). These liquidity constraints are related to the difficulties of:

- changing the amount of a fund’s holdings in project financing
- exiting from an investment, especially in unlisted assets
- determining the current market value of an investment
- distributing changes in investment value to departing members
- maintaining the capital value of a PPP asset when approaching the end of the concession term.

Inadequate availability of project investment and management skills among fund managers has also dampened investment in public infrastructure. In order to acquire a controlling interest or active management role in particular projects, direct investors have to exercise due diligence and possess expertise in infrastructure investment and management, particularly the ability to evaluate, monitor and control project risks. In reality, superannuation funds are more likely to hold diversified infrastructure backed products prepared by specialist investment banks and intermediaries, than to directly invest in infrastructure projects.

In an endeavour to overcome liquidity and skill constraints, the Australian managed superannuation fund sector has been undergoing a process of consolidation — with smaller funds merging or closing and larger funds taking over the management of most of the formers’ fund assets (Nielson 2005). The size of larger funds enables them to invest in a diverse range of infrastructure assets while maintaining the liquidity and portfolio diversification necessary to meet prudential requirements.

The trend of fund consolidation also facilitates the development of in-house skills and experience in infrastructure investment and management. Consequently, the significance of superannuation funds for infrastructure financing is not only the sheer size of financial resources under their management but also the potential of the fund managers to monitor and improve disciplines on corporate governance.

Notwithstanding these developments, increased information disclosure on the creditworthiness and prospects of public infrastructure projects could increase

market acceptance by investors. In turn, increased investor participation could lead to the capital-market disciplines necessary for efficient financing. It could also facilitate the development of secondary markets required for asset liquidity.

What can be concluded about the relative cost of funds for different financing vehicles?

In comparing the costs of funds, it is not sufficient to compare the rate of return required by investors. The cost of contingent liabilities due to project risk must be included. The transactions costs of arranging the finance and managing the contract over time have also to be taken into account. And there are other features such as the tax revenue implications, the capacity to assess the real risks and costs, and negotiating power that will affect the total cost of financing an infrastructure project.

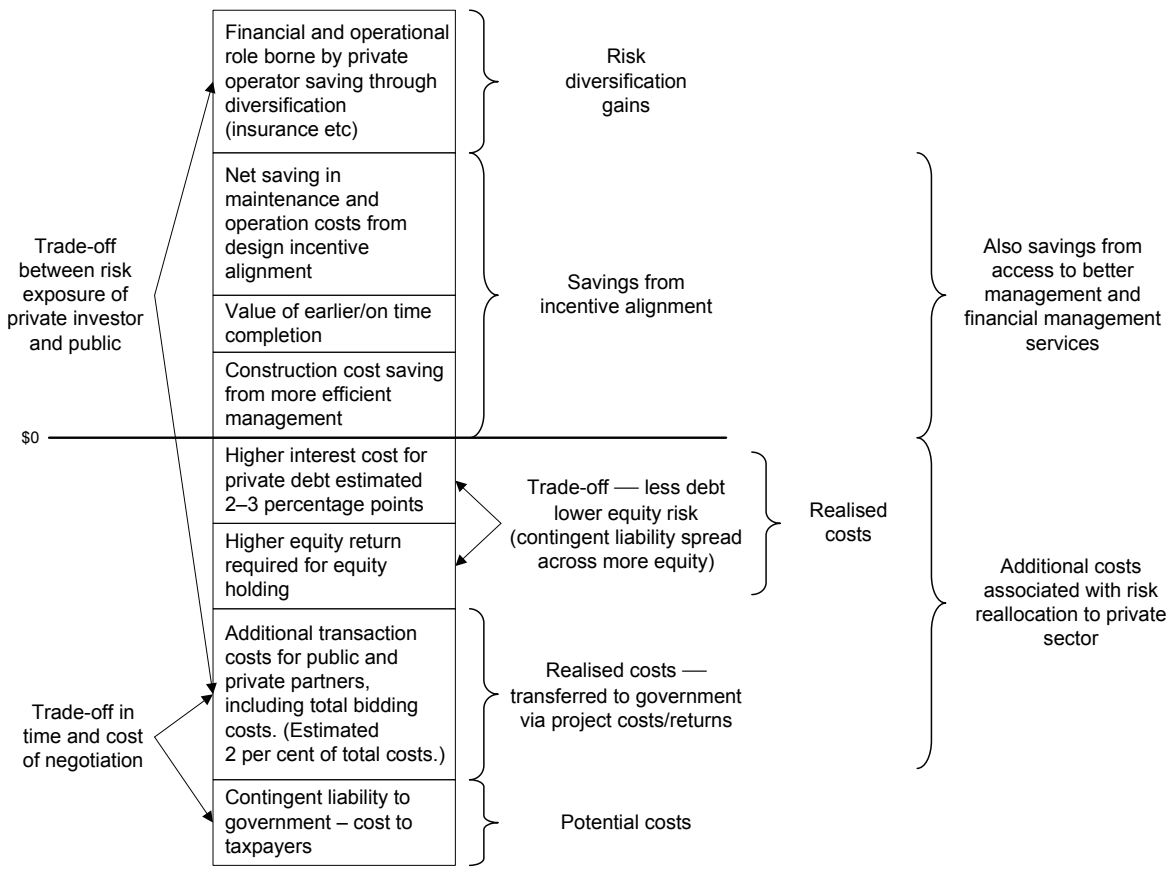
Public debt prices in the default risk at a general government level, and even for project bonds a more general government guarantee appears to be priced into most. But these prices do not include the cost of the contingent liabilities for the taxpayer arising from project specific risks. PPP costs, however, are more likely to price in these risks. The private equity price reflects the extent of gearing and hence the exposure to project specific risk as well as the more general market risk facing equity investments. As a consequence it is unlikely that there will be one financing vehicle that has a systematically lower cost of funds as a lower required return is offset by greater contingent liabilities.

At an individual project level, if the government thinks the market is over pricing the project risk they should choose public debt as the financing mechanism. If government thinks the market is underpricing the project risk it should utilise PPPs. But this assumes that the government agencies are better at estimating these costs than the market. This may be the case for some investments where government has superior knowledge. If the market systematically under or over prices project risk there are gains to be made from arbitrage across financing vehicles. Such actions will reduce the pricing gaps as it provides the market with information.

For some PPPs, transaction complexity and commercial sensitivity have made it hard to assess the long-term budgetary implications on a comparable basis with conventional financing through appropriations or government bond issues. Consequently, the challenge for policy makers is to strengthen the capacity of reporting and managing public-sector liabilities — explicit and contingent — from such transactions. And to the extent that high premiums reflect ongoing uncertainty in the nature and extent of regulatory risks, government can reduce the costs by improving its commitment to regulatory certainty and explicit pricing of CSOs.

The major advantage of PPPs comes when projects risk can be better managed through engaging one firm to design, build and operate the infrastructure asset. This can substantially reduce the contingent liabilities to the government, and the investor. The trade-off is with transactions costs, which can be high in tendering and in negotiating and enforcing contracts that effectively shift risk to the private partner. Figure 10.3 summarises the major considerations that need to be taken into account in comparing PPP to conventional government bond finance. While this provides a guide to the considerations required, the balance of the savings in the total cost of financing with the additional costs needs to be determined on a case by case basis.

Figure 10.3 Cost of PPP financing, relative to government debt finance



A Workshop participants

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<i>Participant</i>	<i>Organisation</i>
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