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# 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

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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).

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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.

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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.

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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.

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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.

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## 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.