The following general guidance aims to answer some frequently asked questions about using discount rates when undertaking a cost-benefit analysis for economic assessment.

What are discount rates?

The costs and benefits identified in an economic assessment typically occur over a number of years. In order to compare costs and benefits over time, the values attached to costs and benefits need to be converted and expressed in today’s dollar value. This is referred to as ‘discounting’ future values. The discount rate is the percentage rate at which future values are reduced to bring them into line with today’s values.

How is the discount rate chosen?

A discount rate can be based, broadly, on two distinct concepts. First, the social ‘time preference’ theory suggests that costs and benefits should be set according to the rate at which society is willing to trade present consumption for future consumption, or the ‘welfare-preserving’ rate of compensation for deferring consumption. This is relevant because public investments are concerned with maximising social welfare. People value consumption now more highly compared to in the future due to factors such as impatience, uncertainty about the future, and the expectation that wealth will grow over time. Costs and benefits in the future can be discounted to reflect this.

The second concept on which a discount rate can be based is the opportunity cost of capital, being the next best use of the same funds. This is important because government is concerned with investing in efficient initiatives. Costs and benefits in the future can be discounted to reflect this.

Unfortunately, these two concepts do not result in the same discount rate – the opportunity cost of capital generally exceeds time preference rates. The current practice is to use the opportunity cost of capital approach. Discounting using this approach thus ensures that costs and benefits incurred over different time periods are assessed using their current dollar values to reflect the opportunity cost of investing in a particular project.

What are the appropriate discount rates to use?

Determining an appropriate discount rate is important; as the discount rate chosen reflects a judgement about the future value of costs and benefits associated with a project. There is great value in using a common discount rate across projects where possible to enable comparison.

Substantial variation in Australian and international guidelines on approaches to discount rates reflects the ongoing debate, however, for current purposes, the following are the commonly accepted discount rates.

Business cases

The Department of Treasury and Finance (DTF) [Technical Guidelines on Economic Evaluation](http://www.dtf.vic.gov.au/sites/default/files/2018-03/Economic%20Evaluation%20-%20Technical%20Guide.doc) recommends that proposed public sector investments be separated into one of three categories to reflect the risk level of the project. DTF recommends using the following **real** discount rates (i.e. rates adjusted for inflation. These should only be applied to real cost and benefit flows):

* A **four per cent discount rate** for the provision of goods and services in **traditional core public service delivery areas** where the benefits are not easily quantifiable in monetary terms (e.g. education, public health and justice)
* A **seven per cent discount rate** for when **benefits are more easily monetised** (e.g. public transport, roads and housing)
* A third category for commercial investments requires consultation with DTF to determine the appropriate rate.

*Regulatory Impact Statements and Legislation Impact Assessments*

* A **real discount rate of four per cent** is recommended for **regulatory and legislative** proposals (Victorian Guide to Regulation [Toolkit 2: cost-benefit analysis – checklist and alternatives](http://www.dtf.vic.gov.au/sites/default/files/2018-02/Toolkit%202%20cost%20benefit%20analysis%20-%20checklist%20and%20alternatives_0.docx) (2014)).

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*Infrastructure Australia*

[Infrastructure Australia](http://infrastructureaustralia.gov.au/policy-publications/publications/files/IFA_Infrastructure_Australia_Assessment_Framework_Refresh_v26_lowres.pdf) requires the presentation of appraisal summary results with a **real discount rate of seven per cent** with sensitivity testing at four and ten per cent.

Comprehensive discussion and guidance on discount rates are available in the references noted below.

**Further reading**: *Economic evaluation for business cases – technical guidelines* (DTF, 2013), *Infrastructure Australia assessment framework* (Infrastructure Australia, 2018)

How do I address uncertainty in the choice of discount rate?

It can be helpful to test the sensitivity of the results under a range of different discount rates.

“In cases where sensitivity testing shows the choice of discount rate to be an important factor in a project’s viability, further consideration and analysis of the appropriate rate should be undertaken. Further analysis should focus primarily on the risk characteristics of the proposal – those that are more sensitive to market returns and other factors should have a higher discount rate, while projects that are less sensitive should have a lower one” (DTF 2013).

When should I be using the real discount rate?

The discount rate should be consistent with the dollar flows that are measured. If costs and benefits are measured in nominal (or current) dollars, they should be discounted with a nominal discount rate. Costs and benefits measured in real terms (that is, adjusted for inflation), should be discounted with a real discount rate. Both methods should result in the same net present value (Harrison, 2010).

The usual approach in cost-benefit analysis is simply to express all costs and benefits in real dollars, which avoids having to estimate the future course of inflation. This requires the analyst to convert past nominal flows into real dollars and to specify a real discount rate.

The financial analysis component of the business case uses nominal prices (or cash flows). Therefore, the use of real discount rates provided in this guidance would need to be converted to nominal rates in order to be used in the financial analysis.

How should I communicate the discount rate in my economic assessment?

A CBA should clearly define the discount rate used and the year at which the value of all the costs and benefits are expressed (the base year). The base year is typically the year in which the CBA is conducted.

What is the difference between social infrastructure and regular infrastructure projects and how does this relate to discount rates?

Infrastructure, broadly defined, includes long‑term assets, structures and facilities that enable the development of a sector, city, region or country. Within this broad definition, infrastructure can be classified as either ‘social’ or ‘economic’.

Social infrastructure refers to the physical assets that support the social development of a community, including education, health and public housing facilities. Examples include ‘hard infrastructure’ such as: health facilities and centres, education facilities, recreation grounds, police stations, fire and emergency service buildings, art and cultural facilities and other community facilities. ‘Soft’ infrastructure includes physical assets that support programs, resources, services and community and cultural development.

Regular infrastructure projects or ‘economic’ infrastructure refers to the physical assets available to support the full range of economic and social activity, including communications, transportation and distribution networks.

It is important to distinguish between social and economic infrastructure, particularly when assessing the likely benefits of the infrastructure investment and choosing the appropriate discount rates to use. To assign the right discount rate to the type of public sector infrastructure being considered, DTF recommends different discount rates based on how easily benefits can be monetised. More information is described in the section above: ‘*What are the appropriate discount rates to use?*’

References

DTF (2013) [Economic evaluation for Business Cases – Technical Guidelines](http://www.dtf.vic.gov.au/sites/default/files/2018-03/Economic%20Evaluation%20-%20Technical%20Guide.doc).

Harrison, M. (2010) [Valuing the Future: the social discount rate in cost-benefit analysis](http://www.pc.gov.au/research/supporting/cost-benefit-discount/cost-benefit-discount.pdf), Productivity Commission Visiting Research Paper.