

I am looking for introductory economic assessment definitions and concepts

If you're new to economic assessment, the information here will provide you with an introduction to the key definitions and concepts, including some high-level good practice principles, to guide economic assessments.

More detailed [guidance on specific processes, methods and variables](#) is also available.

You can access the content on this page in a complete [information sheet](#).

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Introduction to economic assessment

What is economic assessment?

Economic assessment is the process of identifying, calculating and comparing the costs and benefits of a proposal in order to evaluate its merit, either absolutely or in comparison with alternatives.

For the purposes of this guidance material, the term, 'economic assessment' is also used to describe analysis of the economic impact of an intervention or proposal. These types of analysis are referred to as 'economic impact assessment'.

A range of different approaches and tools can be used to undertake economic assessment. The selection of approach and tool will be influenced by the nature of the investment or decision, the relevant inputs (including available data) and the outputs being sought.

What are the common methods of economic assessment?

A range of different methods and tools can be used to undertake economic assessment. Commonly used methods that assess the overall merits of a proposal or compare a set of options are: [cost-benefit analysis](#), [cost-effectiveness analysis](#), and [break-even analysis](#). These approaches are based on a monetary valuation of options and their impacts.

[Multi-criteria analysis \(MCA\)](#) can be used when it is not feasible to quantify or monetise the main impacts of an option. MCA can include a wide range of criteria (for example, social and environmental considerations), all measured in the most relevant unit rather than monetary values. This may mean that more criteria can be incorporated than would be the case with a quantitative analysis. However, Due to its lack of theoretical foundation in welfare economics, MCA is recommended as a method of last resort, or to be used to complement a CBA.

Economic modelling tools that focus on assessing the economic impact of an intervention or proposal (as opposed to its overall benefits to society)

include input-output analysis, computable general equilibrium (CGE) modelling and market-specific models. These tools are often used discretely or in combination with cost-benefit analysis.

When is economic assessment most likely to take place within the policy cycle?

Economic assessment is most likely to be used in the following three stages of the policy cycle:

1. *Issue identification and analysis*

The policy cycle usually starts with the identification of issues and analysis of policy options. Economic assessment is often used to understand the nature and extent of the problem. Specifically, it is used to better understand how the market, community or the environment is affected by an issue and what supporting evidence is available to justify action. Data can be used to outline the size and possible impact of the problem, and to understand the relationship between key variables and any possible correlation and causality.

2. *Decision making*

At the decision-making stage, the findings of economic assessments are used to help decision-makers choose between different options and policy instruments. The results of, for example, a cost-benefit analysis can assist in determining whether the government should proceed with a proposal by highlighting whether the benefits are expected to outweigh the costs. The objective of undertaking an economic assessment is to provide a systematic and objective approach to policy or program selection.

3. *Ex-post (after implementation) policy and program evaluation*

At the ex-post evaluation stage, economic assessment can be used to understand the efficacy of an intervention. Did the policy achieve its original objectives? Were the outcomes achieved due to the intervention? Were the costs of the policy more or less than expected? This form of assessment can also be used as evidence to support future proposals for

similar policies or investments.

What processes are likely to require an economic assessment?

Some government processes contain formalised requirements to undertake an economic assessment. For example, the Subordinate Legislation Act 1994 (Vic) requires the preparation of a regulatory impact statement (RIS) that outlines the costs and benefits of any new regulatory proposals. However, even where not formalised, it is generally desirable for some form of economic assessment to inform decision-making.

Economic assessments are commonly used to inform:

- Business cases for investment in capital and assets
- Business cases for investment in programs (outputs)
- Development of new regulation and legislation
- Development of new policy proposals
- Assessment of grant applications
- Rapid net benefit analysis for research, development and extension project investments
- Evaluation of lapsing programs and previous investments
- Pricing and investment regulations in certain industries.

Why is economic assessment important?

Governments are required to make decisions about the best ways to deliver desired objectives. For example, a government may need to decide whether to invest in a piece of infrastructure, implement a new policy or fund a program. To ensure governments make the best use of taxpayers' funds and generate maximum benefit for society, decisions should be based on a robust assessment of the merits of a proposal.

Economic assessment provides a relatively formalised and structured approach to assessing a problem and potential solutions based on

established economic theory. Economic assessments can be used to predict the expected costs and benefits of a proposal and to provide information to support the efficient allocation of resources. A decision maker is then able to compare alternatives, including a no-change option, on a consistent basis.

Economic assessments are, however, only one form of analysis used in the decision-making process. They should not be relied on exclusively as they are seldom able to tell the 'full story'. Qualitative factors such as social and environmental impacts (where these are not quantified and monetised in the economic assessment), and equity and distributional impacts are also important and must be taken into account in the decision-making process. There may also be other strategic factors to consider that are difficult to assess through an economic assessment.

How to undertake economic assessment

What is the preferred form of economic assessment?

Cost-benefit analysis is the preferred form of economic assessment to inform decision making across the Victorian Government. However, in practice it is not practical or possible to undertake a cost-benefit analysis for all proposals. For example, where:

- the cost of undertaking the cost-benefit analysis is disproportionate to the size of the investment or its expected impact on the economy and community
- there is limited data available to support a cost-benefit analysis
- quantification of the main costs and/or benefits is difficult or impractical

In these circumstances it may be appropriate to use an alternative form of economic assessment.

What are some good practice principles to guide economic assessment?

Irrespective of the form of economic assessment used to inform decision making, the following good practice principles can be considered.

Before undertaking an economic assessment:

- Initiatives being assessed should be considered in the context of other investments taking place and/or relevant overarching strategies.

When planning and undertaking an economic assessment:

- Consistent data inputs, approaches and reporting templates should be used.
- The investment in undertaking an economic assessment should be proportional to the scale and risk of the particular issue, initiative or investment.
- Assessments should be transparent and outline all assumptions, data sources, and methodologies used.
- Assessments should focus on examining the welfare impacts (market and non-market) on society of the particular investment, preferably through a cost-benefit analysis.
- Assessments should be integrated in the policy or investment development process and be used to support decision making. This includes allocating appropriate time to undertake a robust assessment at a point in time when it can inform a decision being taken.
- Where appropriate, the results should be made available internally and externally, in particular to assist in the collection of data relevant to the departmental objectives, end-of-program outcomes and portfolio outcomes.
- Planning for ex-post (after implementation) evaluation should begin when an intervention is being designed. The identification and collection of suitable data early on will enable any impacts to be more easily attributed to the intervention to build more evidence and understanding about its activities.

What kinds of costs and benefits should economic assessments consider?

An economic assessment ideally should capture all of the costs and benefits of an initiative or intervention to 'referent group'. The referent group is the group whose benefits and costs are relevant to the decision-maker. For the Victorian Government, this will typically be the entire Victorian population. Most types of economic assessment will compare one or more options to what is known as a 'base case'. Only impacts that would not have occurred in the base case should be included in the cost-benefit analysis.

Costs

The assessment should take into account all of the costs of the policy or investment option. These could be the financial costs of implementation, or any undesirable impacts. All costs must be considered relative to the base case. Costs of goods and services that have already been incurred or are irrevocable should not be included in the assessment.

Individuals or groups that may experience costs as a result of a policy or investment typically include:

- *Government* – e.g. capital costs, ongoing costs of running a program or initiative.
- *Business* – e.g. additional time or money spent on performing administration, education and compliance associated with meeting government requirements.
- *The community* – e.g. short-term disruption of services, noise pollution, changes to amenity.

Benefits

The assessment should take into account all of the advantageous or desirable effects of an investment. It may be helpful to ask: who is made better off as a result of the investment?

Benefits should take into account the direct effects of interventions and

wider effects on other areas of the economy and society. These effects should be carefully identified and analysed as there may be associated indirect costs (such as environmental costs) that will then need to be included in the assessment.

It is also important to avoid double counting. For example, the benefits of a new piece of transport infrastructure could be valued in terms of savings in travel-time or increases in house prices in surrounding residential areas.

Benefits to individuals and groups may include:

- *Government* – e.g. time or money saved through more efficient programs or processes.
- *Business* – e.g. reduction in time or cost, particularly with respect to administration, or improvements in efficiency, productivity and innovation.
- *The community* – e.g. increase in welfare, safety, participation, connectivity or environmental benefits.

In general, benefits should be valued (monetised) unless it is clearly not feasible to do so.

What are non-market impacts?

Non-market impacts are changes in the quantity and/or characteristics of non-market goods and services due to action or intervention. Many government initiatives include social and environmental impacts that are difficult to measure in dollar terms. Some commonly cited examples of non-market impacts arising from policies and initiatives include changes in 'amenity', 'wellbeing' or 'liveability.'

What are non-market values?

Non-market values are the values society places on non-market goods and services. Many goods and services that are valued by society do not have a readily identifiable monetary value, primarily because they are not traded in traditional markets.

Examples include the value of a wildlife reserve, the benefit an individual feels from viewing a piece of public art, or the benefit to society of bees pollinating plants. Such goods and services are termed as having 'non-market values'.

Despite the absence of market price, the value that individuals have for these goods and services in dollar terms can be empirically proven to exist using non-market valuation methods. These goods and services are often quantifiable in other units, albeit sometimes only indirectly.

How can economic assessment deal with non-market impacts?

Non-market impacts should be quantified, monetised and incorporated into a cost-benefit analysis (CBA) where possible. More [detailed guidance on non-market valuation](#) is provided in a separate guidance note.

Where it is impractical to monetise non-market costs and benefits, the Victorian Government [Technical Guidelines on Economic Evaluation](#) [↗] endorse the inclusion of a qualitative description of the impacts of an initiative alongside a CBA.

In some cases, a partially quantified cost-benefit analysis can clearly identify a preferred option. This is because the option showing the highest net benefit based on quantified costs and benefits is also the one that produces the best non-market outcomes. In other cases, a partially quantified cost-benefit analysis leaves the decision maker to judge whether differences in non-market outcomes tip the scales in favour of an option that would not be preferred based on market costs and benefits alone.

[Multi-criteria analysis \(MCA\)](#) is another assessment framework that can be used when it is not feasible to quantify or monetise the main impacts of an option. MCA can include a wide range of criteria (for example, social and environmental considerations), all measured in the most relevant unit as opposed to monetary values. MCA should only be used where a compelling case can be made that conventional CBA is inappropriate, and ideally as a supplement to a partially quantified CBA.

Whichever method is used, it is important to be aware that the omission of relevant non-market impacts on either the benefit or cost side can lead to a sub-optimal decision being made. Where non-market values are prevalent in a policy or initiative as either a benefit or a cost, a CBA restricted to market impacts may be incorrect and welfare may in fact be reduced rather than enhanced by the initiative.

Methods that assess the merits of a proposal or compare a set of options

What is cost-benefit analysis?

Cost-benefit analysis (CBA) is the primary economic assessment tool used to inform many major public expenditure and regulatory decisions. Cost-benefit analysis quantifies in monetary terms as many of the costs and benefits of a particular policy proposal as feasible, including private and social costs and benefits, and items for which the market does not provide a satisfactory measure of economic value.

Cost-benefit analysis involves a systematic evaluation of impacts. It endeavours to account for effects on the entire community and economy, and not just account for the immediate, direct, or financial effect on any one group. This involves the consistent valuation of market and non-market costs and benefits in a single monetary value across time.

By doing this, cost-benefit analysis makes it theoretically possible to determine whether a proposal has a net benefit (whether the benefits outweigh the costs) and which of the alternative proposals has the greatest net benefit. By translating impacts into a monetary value, cost-benefit analysis provides a framework for weighing up different options and determining 'whole of government' spending priorities across diverse sectors such as transport, health, and education.

The following sections provide more information about cost-benefit analysis, including its limitations. More [detailed guidance on undertaking cost-benefit analysis](#), is also available.

Limitations

While cost-benefit analysis is the preferred approach used in economic assessments, proper use of this method requires a clear understanding of its limitations and weaknesses. Key limitations of cost-benefit analysis, and many other forms of economic assessment include:

- **The expertise required** – The credibility and robustness of a cost-benefit analysis is dependent on the objectivity and expertise of the practitioner engaged. A cost-benefit analysis is only as good as the practitioner undertaking the analysis with the specific skill-set required of the practitioner dependent on the project under consideration.
- **Cost and time involved in undertaking a cost-benefit analysis** – The cost and time involved in undertaking a rigorous cost-benefit analysis can be substantial. The effort expended in undertaking a cost-benefit analysis should be proportional to the size of the investment and/or its expected impact on the economy and community. Smaller investments or government actions with more limited potential impacts may warrant a rapid cost-benefit analysis or an alternative evaluation method.
- **Uncertainty in estimates** – Analysing future costs and benefits rests on making assumptions about future states of the world. The resulting evaluation is therefore uncertain and may not accurately reflect the realised impact of the investment. This is exacerbated when assumptions reflect a bias in the forecaster's view of the future. Sensitivity analysis can help to better understand the uncertainty around future benefits and costs. Ensuring post-implementation evaluations are undertaken introduces further accountability to the accuracy and quality of analysis.
- **Equity considerations** – Cost-benefit analysis does not assess the equity impacts of a particular investment. Costs and benefits to different groups (e.g. regional versus metropolitan Victoria) can be estimated, but a CBA does not value benefits or costs for one group more highly than another. Equity considerations for decision-makers need to overlay the CBA.

- **Optimism bias** – Studies of historic cost-benefit analyses demonstrate a persistent bias towards the overestimation of benefits and the underestimation of costs. This could be due to optimism bias in planning or strategic misrepresentation to increase the likelihood of a project being funded. This persistent bias underscores the importance of ensuring objectivity.

A cost-benefit analysis is most usefully applied when the major benefits of a program can be reasonably quantified and measured in dollar terms.

Limitations that arise from difficulties in monetising impacts include:

- **Accounting for wider economic benefits** – Wider economic benefits (WEBs) refer to the additional benefits to the economy that stem from large transport and infrastructure projects. Traditionally WEBs have been omitted from CBA appraisals because they are usually very difficult to quantify, however this may change over time as new research and analysis becomes available. It is recommended that practitioners follow Infrastructure Australia's advice and present CBA results without WEBs, and then with WEBs, treating WEBs effectively as a sensitivity test.
- **Valuing non-market impacts** – A cost-benefit analysis must account for all costs and benefits from a project in order to be valid. However, non-market impacts (such as environmental and social impacts) are often excluded from a traditional CBA framework due to difficulties in their measurement and valuation. Most appraisals will identify some costs or benefits for which there are no readily available market values. In these cases, a range of techniques can be applied to elicit values.

What is a base case?

The base case can be understood as what would occur in a business-as-usual scenario where there is no decision to undertake government investment or policy reform. The base case is used as a reference point for comparing the costs and benefits of a policy or investment decision. The base case should be clearly defined to enable an understanding of the incremental impacts of a policy or investment decision.

What to incorporate in a base case:

The base case is generally defined as continuation of the current policy setting. This might be the 'do-nothing' or 'business-as-usual' option which represents the minimum cost of using the existing arrangements to deliver services at current levels and standards. The base case should specify observed long-term trends such as future population and economic growth. In some cases it will be appropriate to include planned investment or policy decisions.

However the base case is defined, it is important that it is logical and clearly articulated. If the base case is not logical or well-articulated, it will be difficult to assess the incremental impacts of investment options.

How do I identify the options that should be assessed?

The purpose of any investment is to achieve an outcome that improves the wellbeing of the community. In many instances there are multiple approaches that could achieve the outcome. These are described in cost-benefit analysis as policy options. The base case is considered a special policy option as it corresponds to a "no change" option.

More detailed [guidance on the development of options](#) is available in a separate guidance note.

What is a discount rate?

The costs and benefits identified in a cost-benefit analysis 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.

Discounting is distinct from inflation adjustment. Adjusting for inflation accounts for the general increases in prices over time. Discounting accounts for how the present is valued more highly than the future. A 'real' discount rate is applied to future costs and benefits that have been

adjusted for inflation.

Determining an appropriate rate requires a judgement about the value of an outcome to future users as compared to current users. The discount rate may also reflect the alternative uses of the capital proposed for use in the investment.

Department of Treasury and Finance [Technical Guidelines on Investment Development and Delivery](#) [↗] currently recommend a discount rate of 4% or 7% depending on the category of investment. A real discount rate of 4% is recommended for regulatory proposals as outlined in [Toolkit 2: cost benefit analysis - checklist and alternatives](#) [↗].

[Infrastructure Australia's Assessment Framework](#) [↗] requires appraisal summary results to be presented with a 7% real discount rate for the central case, with sensitivity testing at 4% and 10%.

[More detailed guidance on discount rates is available.](#)

What is sensitivity analysis?

Generally, of guidelines for economic analysis and appraisal recommend undertaking sensitivity analysis to better understand the impact of risk and uncertainty on a policy or project proposal. Sensitivity analysis is the process of analysing how different estimates or assumptions affect the value of a proposal. There are several ways to undertake a sensitivity analysis, including: worst case analysis, partial sensitivity analysis, and a full risk analysis. Sensitivity analysis allows the decision maker to examine the plausibility of assumptions made in the analysis. Specifically, the decision maker can observe the effect of changing discount rates, prices, and other assumptions on the estimates of benefits and costs and the associated effect on the net present value of a proposal.

More detailed [guidance on addressing risk and uncertainty](#) is available.

What is the net present value?

The net present value (NPV) is one of three commonly used metrics to help assess and rank different options in a cost-benefit analysis (the others

being the benefit-cost ratio and internal rate of return). The NPV of an option equals the present value of benefits (the sum of discounted benefits) minus the present value of costs. If the NPV is positive, the investment improves efficiency because it involves benefits that, over time, more than outweigh the costs. If the NPV is negative, the proposal is inefficient (the costs outweigh the benefits). Policy options can then be compared by the size of their NPV.

The NPV is the most straight-forward and commonly used method to calculate the overall value of an option in cost-benefit analysis. It is the Department of Treasury and Finance's preferred metric when assessing options.

What is the benefit-cost ratio?

The benefit-cost ratio (BCR) is one of three metrics commonly used to help assess and rank different options in a cost-benefit analysis (the others being the net present value (NPV) and the internal rate of return). The benefit-cost ratio (BCR) is the ratio of the present value of benefits (the sum of discounted benefits) to the present value of costs. The ratio must exceed one for the proposal to be assessed as generating a net benefit.

The Department of Treasury and Finance recommends that the BCR be reported with the NPV, but it does not recommend it as the only quantitative assessment tool for decision-making purposes as it tends to result in bias towards small projects and projects with early returns.

What is the internal rate of return?

The internal rate of return (IRR) is one of three metrics commonly used to help assess and rank different options in a cost-benefit analysis (the others being the net present value (NPV) and the benefit-cost ratio). The IRR is the discount rate at which the NPV of a new investment's expected costs and benefits equals zero. In general, the IRR is compared with a benchmark figure to determine whether a project should proceed. IRRs are also compared across projects to determine their relative performance. In some cases, the higher the proposed investment's IRR, the more preferable it is to undertake.

The IRR is not preferred by the Department of Treasury and Finance as it generates irregular results where there is no discount rate that would generate an NPV of zero or where there is more than one IRR. In addition, using the IRR tends to bias towards small projects and projects with early returns that are inconsistent with NPV rankings of projects.

What is cost-effectiveness analysis?

Cost-effectiveness analysis (CEA) is a partial cost-benefit approach which compares the costs of alternative ways of producing the same or similar outcomes. CEA provides an estimate of the average cost per unit of a given outcome.

Cost-effectiveness analysis is useful when the main benefits cannot be easily valued in dollar terms or when it would be unduly expensive to undertake the valuation. In such cases, benefits are expressed in terms of physical units (e.g. the number of lives saved, number of accidents prevented) while costs are expressed in dollar terms. Cost effectiveness offers a priority ranking of options based on the comparative 'cost per unit of outcome'.

Cost-effectiveness analysis is most often used in areas such as education, health, corrections and the environment where quantification of benefits can prove more difficult.

Limitations

Cost-effectiveness analysis cannot assess if the preferred option is of net benefit to society. It can only assess which of the options under consideration can deliver the outcome most cost effectively. In addition, this method cannot be used to find or compare alternative projects that could achieve greater net social benefits by targeting different outcomes. Therefore, cost-effectiveness analysis should generally only be used where the decision to target a specific outcome has already been agreed upon by decision-makers.

What is break-even analysis?

Break-even analysis (BEA) is an analysis to determine the point at which the benefits of a policy option equal its costs. In conducting a break-even analysis, policy makers estimate the degree to which a policy option could be expected to deliver benefits. The costs are divided by the monetised value of a 'unit' of benefit in order to identify the minimum amount (or units) of benefits required for an option to break even. By estimating the minimum benefits required, break-even analysis allows a judgement to be made about the likelihood of those benefits actually being achieved.

Break-even analysis can be used where a monetary estimate of units of benefits is possible but the effectiveness of a policy option or the magnitude of the likely benefits is uncertain. For example, where anti-smoking health warnings can be expected to reduce tobacco-related deaths and health costs, but it is unclear as to how effective the policy will be in directly realising those outcomes.

Limitations

Break-even analysis is a useful tool for analysing policy options but less useful for comparing the relative effectiveness of several options. For example, if two policy proposals have the same break-even point, break-even analysis provides no guidance on which one is likely to deliver greater net benefit.

What is multi-criteria analysis?

Multi-criteria analysis (MCA) refers to techniques to assess policy options against quantitative and qualitative impacts. The approach enables the inclusion of a wider range of criteria (for example, social and environmental considerations) all measured in the most relevant unit as opposed to monetary values.

MCA provides a framework for investigating, analysing and resolving policy options characterised by multiple objectives or criteria. The evaluation framework ranks or scores the performance of options against multiple criteria measured in different units. Typically, the criteria are weighted by decision makers or members of the community to reflect their relative importance and a total score is derived for each option, allowing the overall

relative value of options to be compared.

The major strengths of MCA are its ability to handle performance measures in any units (either quantitative or qualitative) and its ability to provide decision makers with a logical structure for complex problems. Multi-criteria analysis is most effective when there is a very clear basis for scoring project options against criteria and where this evaluation framework is agreed and documented before the analysis has commenced.

MCA should generally be limited to the assessment of smaller projects and/or where the main costs and benefits cannot be valued (or are impractical to do so).

Limitations

MCA does not have the same grounding in economic theory as cost-benefit analysis. Because MCA involves subjective judgements on values to assign scores, consistency of analysis and like-for-like comparisons can be challenging. Importantly, MCA does not tell the decision-maker whether individual proposals are of net social benefit.

Choosing a decision-making tool

If...	and...	then use...	Limitations
	<p>Most benefits are known and can be quantified and estimated</p>	<p>Cost–Benefit Analysis (CBA), to compare different options, supported by qualitative explanation.</p>	<p>Requires all costs and benefits to be estimated, which may not be practicable in all cases. If at least the main costs and benefits can be quantified, a partial CBA can be completed.</p>
<p>Most costs, including the most important, are known and can be</p>	<p>Most benefits cannot be quantified, but can be estimated (for example, it may not be possible to determine number of injuries avoided through the</p>	<p>Break Even Analysis (BEA), to establish how effective an option needs to be to offset its costs.</p> <p>Provide supporting reasoning and evidence to explain whether the</p>	<p>Requires units of benefit to be estimated. Does not allow the relative effectiveness of different options to be compared.</p>

<p>quantified and their value estimated</p>	<p>proposal, but the dollar cost of an injury avoided is known).</p>	<p>proposal will likely deliver or exceed the 'break even' point.</p>	
	<p>Most benefits can be quantified but cannot be estimated in monetary terms (for example, the likely area of habitat preserved by the proposal may be known but not the dollar value of the benefits of preserving that habitat).</p>	<p>Cost Effectiveness Analysis (CEA), to compare different options and identify which option delivers the outcome at lowest cost 'per unit of outcome'.</p>	<p>Considers only the least cost way of achieving a given outcome, not whether the outcome itself is optimal.</p>
<p>It is not possible to quantitatively estimate the effects of many or most of the impacts of an option.</p> <p>However, you are able to define the objectives and their relative importance, as a basis for comparing options.</p>		<p>Multi Criteria Analysis (MCA), to assign and aggregate scores to decision criteria and compare across options.</p> <p>Use transparent criteria and weightings that are consistent with the policy objectives.</p>	<p>Requires clearly defined criteria to be weighted based on their relative importance, and a credible explanation of the allocation of scores to compare different options.</p>
<p>You are working with a complex proposal that involves a range of parts, each with different data limitations and characteristics.</p>		<p>Use the most rigorous tool available to compare within choices, estimating overall costs and benefits to the extent feasible.</p>	

Source: DTF (2016) [Victorian Guide to Regulation](#) [↗], p.38.

Methods that assess the economic impact of an intervention or proposal

What is computable general equilibrium (CGE) modelling?

Computable general equilibrium (CGE) modelling is a quantitative technique used to estimate the 'economy-wide' impact of a proposed project or policy within a particular country or region. A CGE model accounts for the complex interactions between economic agents

(producers, households, and government, among others) and is therefore useful for assessing the wider economic impact of public investments and government policies, including flow-on impacts ('second and third round effects'). CGE models specify all of these economic relationships in mathematical terms and combine the equations in such a manner that enables the model to predict the change in variables such as prices, output and economic welfare arising from policy changes or public investments.

The use of CGE modelling in economic assessment has increased in recent years as policy makers have attempted to include the wider economic impact of proposals in the appraisal process. This approach is appropriate where a proposed project or policy is expected to have wide-ranging effects beyond a particular sector or segment of the economy.

Limitations

CGE modelling requires a high level of expertise.

Where a proposed investment or policy change is expected to be relatively small and its effects limited, a CGE approach may not be an appropriate method due to the costs involved in sourcing the necessary quality data and constructing the database. Similarly, CGE is most applicable where wide-scale economic impacts are expected to flow across multiple sectors.

Unless specifically adapted to do so, the scope of a CGE model is limited to market-based goods and services and therefore does not take into account non-market impacts such as environmental and social goods.

Market-specific (partial equilibrium) modelling

Market-specific modelling is a technique that analyses effects on a small part of an economy (often on one or two markets) as compared to computable general equilibrium models which estimate effects on the entire economy. Partial equilibrium analysis can be static or dynamic. This 'partial' approach either ignores effects on other industries or assumes that the sector in question is very small and therefore has little, if any, impact on other sectors of the economy.

Market-specific models are simpler than computable general equilibrium models and are useful for analysing single markets or when the introduction of certain assumptions into general equilibrium models would introduce problems.

Limitations

The scope of a market-specific model is restricted to a particular portion of the economy and as such, lacks the ability to study interrelations throughout the economy.

The scope is also limited to market-based goods and services and therefore does not take into account non-market impacts such as environmental and social goods.

What is input-output analysis (IO)?

Input-output (IO) analysis is a quantitative technique which estimates the wider impacts of a proposed project or policy on the economy. IO analysis uses input-output tables which describe the flow of goods and services between sectors of an economy. IO is designed to be a simple, low-cost, relatively easy to use tool. Because of this, it needs to simplify the complex, multi-dimensional 'real world' economy into a straightforward model. However, due to its simplicity it needs to make many assumptions about the economy which limits its accuracy.

Typical outputs of input-output modelling include impacts on gross domestic, state, or regional product; employment impacts; and impacts on wages and salaries.

Limitations

While input-output modelling is common it often comes under scrutiny because the simplicity of the model and its assumptions restrict its capacity to provide accurate results in some situations. Typical assumptions of input-output modelling include: a fixed input structure in each industry, prices not changing with the demand or supply of goods and services, and unlimited labour and capital assumed to be available at fixed prices.

These limitations mean that while input-output modelling is able to describe the relationships in an economy at a point in time, it is not suitable to assess the impacts of an initiative (such as an investment) on an economy as it takes place over time.

In addition, input-output modelling may overstate the benefits of proposals, especially where there is a displacement effect (for example, where investment in one region displaces investment in another region). Most importantly, while input-output modelling can be used to assess the economic impact of an intervention or proposal, it cannot be used to weigh the merit of a proposal or compare policy alternatives on the basis of quantifiable (monetary) costs and benefits.

Overview of methods that assess the economic impact of an intervention or proposal

Method	When to use	How to use	Common limitations
Computable General Equilibrium (CGE) models	Where a proposed project or policy is expected to have significant and wide-ranging effects beyond a particular sector or segment of the economy	To estimate economy-wide impacts As a complement to cost-benefit analysis	Typically, does not take into account non-market impacts Costly to source data and construct Complex to understand or test results Cannot assess overall merit of a proposal Cannot compare policy alternatives on the basis of quantifiable impacts
Market-specific (partial	Where a proposed project or policy is	To estimate impacts to one or two interconnected sectors	Does not take into account non-market impacts Complex to understand or test robustness of results

equilibrium) models	expected to affect a small segment of the economy	of the economy As a complement to cost-benefit analysis	Cannot assess overall merit of a proposal Cannot compare policy alternatives on the basis of quantifiable impacts
Input-output analysis (IO)	Not generally recommended	Not generally recommended	Requires many assumptions Open to misuse May overstate benefits Does not estimate impacts over time Cannot assess overall merit of a proposal Cannot compare policy alternatives on the basis of quantifiable impacts

Economic assessment for evaluation

How is economic assessment used to evaluate projects and programs after implementation ('ex-post evaluation')?

Ex-post (after the event) evaluations are evaluations of proposals that are complete or already implemented. The objective of most ex-post evaluations is to determine to what extent an investment, policy, or program has met its objectives and delivered on its expected benefits. Ex-post evaluations can also be undertaken to assess the strategic alignment, efficiency and effectiveness of investments, policies, and programs.

Specifically, an ex-post evaluation can be undertaken to assess:

- evidence of the continued need for the program and role for government in delivering this program
- evidence of the program's progress toward its stated objectives and expected outcomes, departmental objectives and other stated government objectives

- whether the program was delivered within scope, budget, expected timeframe and in-line with appropriate governance and risk management practices
- whether efficiency or economy has been demonstrated in the project.

Not all ex-post evaluations will involve economic assessment. If an economic assessment is necessary for the ex-post evaluation, the process would be the same as for any other economic assessment.

Page last updated: 5 March 2020

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