

# WHY COST-BENEFIT ANALYSIS IS USEFUL FOR REGULATORY REFORM

By **Professor Euston Quah**

Legislation and regulation are “command and control” tools that are often thought to be antithetical to market-based tools such as taxes and subsidies that change behaviour through changing people’s economic incentives. However, that does not make economic thinking irrelevant to the design and implementation of legislation and regulation. In this issue’s section on *Education*, we explore the usefulness of Cost-Benefit Analysis, a standard economic tool, to regulatory reform through the writing of Professor Euston Quah, professor of Cost-Benefit Analysis and Head of Economics at Nanyang Technological University, Singapore, and President of the Economic Society of Singapore.



From assessing air quality to determining the value of damages in law suits, cost-benefit analysis provides a framework that can also guide policymaking.

In 1988, I began my full academic career at the National University of Singapore. I taught environmental economics and later established a new graduate course on cost-benefit analysis (CBA). At the time, CBA was not the main tool used for evaluation by the public sector.

Instead, something called cost-effectiveness analysis (CEA) was the main instrument for analysis of projects, programmes and policies. It was used widely at the time, and is still relevant now.

While the terms sound very similar, there is one crucial difference between the two. CEA ranks projects and policies in terms of which yields the least cost to achieve a certain targeted outcome. But it cannot indicate whether something

is more worthwhile to do. Conventional CEA usually does not measure social costs, unlike CBA. An example of a social cost is a cost such as traffic congestion that is borne by society. CEA may, for example, analyse a new redevelopment project in an area in terms of the value it adds to the economy and the increase in land use efficiency — but may not take into account the effect of congestion in the area. In that sense, CBA provides a more holistic appraisal of a project or policy.

In such circumstances, CEA falls short of CBA, as it does not capture all the costs. Furthermore, CEA provides no information or evaluation as to why certain policies or projects should be adopted in terms of benefits. Rather, the benefits are taken as a given.

### Background to CBA

Why this slightly academic discussion of cost-benefit analysis today?



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In a recent book by the celebrated Harvard law professor Cass Sunstein, *The Cost-Benefit Revolution*, he explains why policies should be considered carefully on the basis of their costs and benefits, rather than on mere subjective opinions, lobby groups and intuition.

Cost-benefit analysis began life in the United States Flood Control Act

of 1936 which required government agencies to use CBA to estimate benefits over costs.

A series of standardised CBA practices was provided by the then US Bureau of the Budget in the 1950s, followed by the Transport Ministry of the United Kingdom in evaluating highways and airports in the 1960s.

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should be adopted in terms of benefits. Rather, the benefits are taken as a given.

International agencies followed in deciding whether to support some projects in developing countries using CBA.

From the mid-1990s, government agencies in Asia became more interested in knowing whether there were significant net benefits of a proposed project or programme. With rising demands for various expenditure projects, a careful consideration of which projects to support given constraints on budget became paramount.

### **Cost-Benefit Analysis and Regulatory Reforms**

Regulatory reforms in environmental, health and safety regulations have become more prevalent.

These days, another instrument, called regulatory impact analysis (RIA), has come into

fashion. RIA takes into account distributional and equity considerations, going beyond pure economic considerations. In that sense, it is in fact a kind of cost-benefit analysis.

CBA in its complete form covers similar ground with its repertoire of mandatory questions. These include: Who is the reference target group; what and which costs and benefits have to be accounted for; how to estimate these costs and benefits; whether equity considerations are important (especially relevant to developing countries); what to do with uncertainties over long-term policies and projects; and what investment criteria to use to calculate the overall viability of the project.

## From Air Quality to Legal Cases

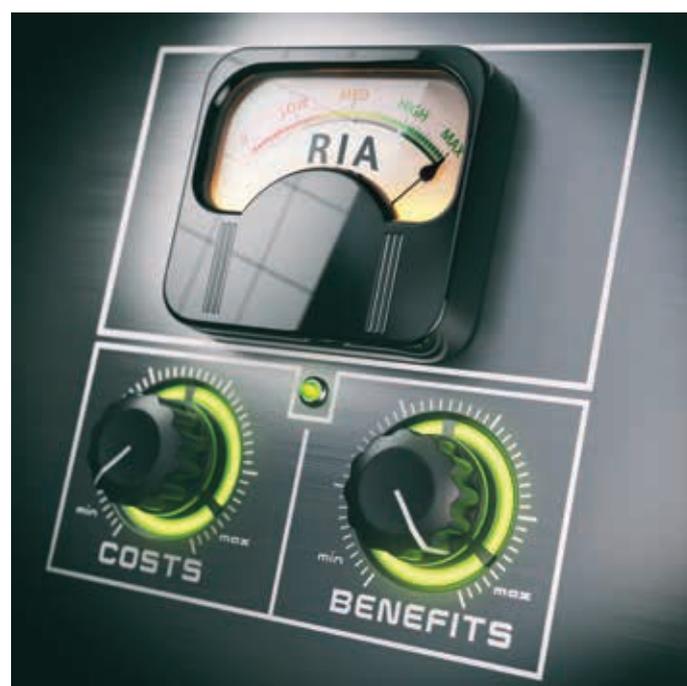
One area where CBA has played an important regulatory role is air quality.

Some years ago,

when the World Health Organisation (WHO) raised its guidelines for air quality, making them more stringent, countries all over the world, including Singapore, had to consider whether they would implement the new guidelines.

Fortunately, this was not an all-or-nothing choice as there were several interim air quality levels provided by WHO. Countries had to consider the cost of implementing these guidelines, such as the higher costs of doing business as well as of living. This in turn meant higher transport cost, and higher monitoring and enforcement costs.

If some countries follow the guidelines and others do not, those which do may incur higher costs and lose cost competitiveness. However, these higher costs have to be compared with the benefits of having better air quality, such as better health and increased productivity. A cleaner environment can also boost tourism and



make a city more attractive to skilled manpower. CBA provides a framework for a careful analysis of these benefits and costs in meeting the various interim guidelines.

In yet another example, in 2012, the US' environmental protection agency and transportation department came up with plans to increase the fuel economy of cars. This regulatory reform was shown to have huge positive net benefits. Such benefits include savings in fuel and time costs for motorists in not having

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to refill frequently and perhaps higher work productivity. The lower fuel consumption also means less environmental pollution. These benefits would have to be compared against the increased cost of manufacturing such fuel-economy cars.

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In the area of competition and anti-trust, many jurisdictions must consider the economic efficiency gains against the losses in competition when entities merge.

In workplace safety, in areas which involve the risk of lives and injury, the use of CBA in estimating the value of a statistical life is common. In establishing workplace regulations, the benefits have to take into account the reduced number of accidents and hence lives that would be saved. Economists calculate this by means of how much people would be willing to pay to reduce

the risk of death, and this is compared against the increased costs that employers have to bear to meet higher workplace safety requirements.

Legal courts also use CBA in the assessment of damages where some quantitative valuation is required. In environmental regulations, we tend to underestimate the cost of meeting higher environmental obligations. The cost of environmental pollution is not just the cost of damages but also the cost in controlling such damages. It is the total cost that matters.

CBA can be used to answer questions that may seem intractable. For example, if we were to cut emissions, and thus raise air quality, what will be the public health benefits?

If we save five lives per year from a road-widening project or health safety regulations in the workplace, how do we convert this information of five lives into some monetary equivalence?

If we were to reduce

incarcerations of people involved in certain types of crime and have more probations and perhaps even house arrests of the offenders, by changing legal regulations, what would be the net savings to society from incarceration compared to non-incarceration penalties?

Should we raise the level of employment training for certain industries - and how does this translate into monetary returns for society?

These issues and questions can to a large extent, be answered by CBA and there are many more. CBA, however, is a normative tool for decision-making in that it prescribes what should be done, but does not specify how it should be carried out.

### Limitations of CBA

While it provides a good objective framework, CBA does have limitations.

For example, if it is used to analyse a long-

term policy, uncertainty over the estimated benefits and costs in the future will affect the quality of its assessments. Also, concerns for intra-versus inter-generational equity often involves some philosophical issues.

The choice of methods for valuing benefits and costs can attract some controversy. The lack of local or indigenous studies may render some measurements of benefits and costs challenging.

The costs of doing a full and proper CBA often requires expertise, funding and time.

And while the principles of CBA do not vary between developed and developing countries, differences in labour, output and financial markets between these countries mean methodologies for measuring benefits and costs have to be adapted to suit the conditions of these countries.

It is not the answer to a question that is most important, but rather the process of getting to the

answer that matters more. And because governments' budgets have limitations, CBA provides a strong argument for rational and informed decision-making.

As Professor Sunstein wrote in a Bloomberg article: "It is not exactly news that we live in an era of polarised politics, but Republicans and Democrats have come to agree on one issue, the essential need for cost-benefit analysis in the regulatory process. In fact, cost-benefit analysis has become part of the informal constitution of the US regulatory state. This is an extraordinary development."

In Singapore, the Centre for Public Project Management unit was established in 2011, within the Ministry of Finance, and supports

the ministry in ensuring an efficient and effective use of public resources. However, this centre provides advice only on major development projects.

What is perhaps needed is an extension of this to encompass CBA of proposed or amended regulations across a variety of public policies. CBA should also be considered for use by financial regulators.

Besides rationality, CBA is often hailed as a check on arbitrary and incomplete regulatory actions.

As budgets continue to be constrained and demands for expenditure become greater, the need for justification for new projects and policies means that CBA is here to stay.

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