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European and International Perspectives on Benefit-Cost Analysis: Symposium Introduction

Abstract: The idea of assessing the costs and benefits of public and private projects is not new to Europe, dating back to studies at the Ecole des Ponts et Chaussees (Paris) in the XIX century. Later on, in the last century, Benefit-Cost Analysis (BCA) in its current form has been more extensively used in the United States than in Europe. In the last two decades, however, there has been a rapid increase in its use in a number of European countries and at the European Union (EU) level. European governments often undertake tasks that would be done by private companies in the United States, such as the provision of transport, energy, water and waste management, health services, etc. In the United States the focus of BCA has often been regulatory impact analysis, rather than public project evaluation. One might, therefore, expect that Europeans might approach some things differently from their American counterparts and that new insights might result from these efforts. The articles in this symposium, taken from the recent European Society for Benefit-Cost Analysis (SBCA) conference in Toulouse, illustrate some of these differences and some converging themes.

Keywords: airports; distribution and cost-benefit analysis; open access; public investment appraisal; seabed mining.

JEL classifications: D61; D62; H43; H54

1 Introduction

Lively conversation was the essential ingredient (along with generous albeit diluted wine) of a "symposium" in ancient Greece. The most famous one was narrated by Plato, in a philosophical text (published perhaps around 370 BC), with characters including Socrates, the most celebrated Athenian philosopher, Pausanias, a legal scholar, Phaedrus, an aristocrat, Aristophanes, the author of comedies, Agathon, a

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poet, Eryximachus, a physician, and Alcibiades, one of the most famous Athenian statesman: a very interdisciplinary meeting (Plato 1980).

The Toulouse conference of the Society for Benefit-Cost Analysis (SBCA), 26–27 November 2019, was the modern form of a free exchange of ideas among brilliant minds, the true essence of the Athenian symposium. Like the ancient one, it was interdisciplinary, as is typical in the BCA tradition, with economists, other social scientists but also experts in environmental studies, legal scholars, engineers, and civil servants (I am not sure if poets attended the event, perhaps they were in disguise).

The European SBCA conference, rather than being in the private mansion of an aristocrat, was hosted by a public institution: the Toulouse School of Economics (TSE), one of the best places in Europe to study economics. It was founded in the 1980s by the late Jean Jacques Laffont (who returning from Harvard, decided to invest his efforts in his home town) and it currently educates around 2500 students, nearly half of them from abroad: a really cosmopolitan environment.

One of the keynote presentations was offered by a frequent coauthor of Laffont, Jean Tirole, a Nobel laureate, and a TSE faculty member. The other keynote presentation, published here, was from the other side of the Atlantic, by Jim Hammitt, Harvard TH Chan School of Public Health, and also a visiting professor at TSE.

Overall, there were 19 sessions, 4 panels, and around 100 participants, largely from European countries, but also from Brazil, Canada, China, Korea, and the United States.

The five papers published here were selected from a much larger number of submissions, and should give the reader a feel for both the quality and the mixture of topics and perspectives. Several other conference papers were worth publication, and I hope they will be published in future elsewhere or even in the Journal of Benefit-Cost Analysis (JBCA) itself, as the Toulouse conference was quite rich in ideas, empirical evidence, policy-relevant issues, and proposals. Credit is deserved to all participants, but special thanks are due to the scientific committee, which included 16 experts,[1] and particularly to Henrik Andersson, who chaired it and was the local organizer. I would also like to thank the anonymous reviewers for this issue.

1 Glenn Blomquist, University of Kentucky, Susan Chilton, Newcastle University, Natalia Fabara, Universidad Carlos III, Massimo Florio, University of Milan, Dan Graham, Imperial College London, Ben Groom, LSE, Bengt Kriström, Swedish University of Agricultural Sciences, Phoebe Koundouri, Athens University of Economics and Business, Anil Markandya, Basque Centre for Climate Change, Emile Quinet, Paris School of Economics, Christoph Rheinberger, European Chemicals Agency, Lisa Robinson, Harvard University, Milan Ščasný, Charles University, Mikael Svensson, University of Gothenburg, Nicolas Treich, TSE, Erik Verhoef, VU Amsterdam, Witold Willak, European Commission (Unit DG.REGIO.F.1).

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In the rest of this editorial introduction, I briefly discuss what kind of cost-benefit analysis (BCA) panorama is revealed by the conference and why I think that the five selected papers are especially interesting. I will conclude with some thoughts for the next European conference.[2]

2 A journey across topics

Over the last two decades, BCA has come to be applied to an ever-increasing variety of areas while looking in ever-increasing depth at the theoretical underpinnings of the approach. The Toulouse Conference was a good example of this variety. Browsing through the conference panels and parallel sessions, one can detect – along with more classical topics – original papers on legal issues about the use of BCA for regulatory impact assessment, work on the behavioral aspects, and career concerns of bureaucrats, as well as analysis of the cost-effectiveness of research infrastructures in social sciences.

The long-standing tradition of BCA in transport was well represented by papers on the willingness to pay (WTP) by commuters for more frequent trains, on valuation of land and property in the appraisal of transport projects, and on the use of statistical information on trip time variability. Other papers outlined the taxonomy of wider impacts, the reasons for political approvals of projects with negative present value, and the limits of BCA when a project is charged with political significance (for example, the Turin-Lyon high-speed rail between France and Italy). There was a full session devoted to the evaluation of the Toulouse Aerospace Express (a rail link around the city, which is a major technological hub in the industry), and papers on the high-speed rail between Beijing and Shanghai, China, as well as papers on the impact on productivity of underground rail in London and accident risk related to use of cell-phones by car drivers.

No BCA conference can lack papers on discounting and on risk. There were papers on different approaches in discounting in the transport field; discounting conditional risk sequences and the value of a life year. Other papers looked at the utilitarian versus "prioritarian" value of risk reduction over a whole lifetime, the treatment of uncertainty, and the benefits of risk-reduction projects. There were also papers on the risk component of health project, on the welfare cost of ignoring risk profiles in projects, and on risk-adjusted social discounted rates. The latter approach is currently strongly advocated by some French economists.

2 One was expected to be held in Stockholm, Sweden, in November 2020, but had to be postponed: some webinars will try to fill the gap in the meanwhile.

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European countries have more emphasis on public provision of health care and on preventing climate change, than does the United States. Reflecting this, there were many papers on the environment and on health provision in Toulouse. In the environmental area, there were papers on waste pricing policies, on the disutility value of environmental impact as a function of its health causes, on the social value of state-owned forests, and on the use of BCA in the authorization process of chemicals (according to EU legislation). Other topics related to the environment included flood risk management, psychological impacts of flood prevention programs, nudging acceptability for wood ash recycling in forests, electricity interconnections with renewable sources, and the impact of oil spills. There was a sub-stream of papers more strictly related to climate change issues, such as grass conservation, adaptation investments, use of randomized control trials, and benefit transfer in this domain of studies.

Turning to the broad area of research on the welfare economics of health, I would mention ongoing research on the value of statistical life in the context of suicide risks, on the interplay between health status and the value of consumption, on metals and chemicals in consumer preferences, on the classic efficiency-equity trade-off, on self-interest, and on moral principles in health and safety valuation.

A panel discussion was devoted to the emerging field of the social benefit-cost analysis of science projects in the form of research, including particle accelerators, but also large-scale digital data platforms. There was also a paper on inequalities in higher education, one of the very few papers dealing with distributional issues (more on this below).

Another topic typical of any BCA conference is the value of statistical life (VSL), and the role of stated preferences (validity was discussed in a lively panel). There were papers on altruism and efficient allocations in three-generation families, sample restrictions, and the elicitation of a constant WTP per quality-adjusted life years. In some cases, there was interaction with health and transport studies, as in papers on value of a statistical life (VSL) as a function of age or baseline health, on safety measures against natural hazards, road accidents, and crime, and on meta-analysis of VSL and road safety.

3 Contributions to this symposium

Given this range of topics, it was not an easy task to pick up just five papers out of the abovementioned contributions. With the help of several anonymous reviewers, the result of the selection process combines quality, interest, and representativeness in different subfields. I briefly present the papers with some personal remarks for each of them.

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Jim Hammitt, in his keynote paper Hammitt (2020), is right when he notices that distributional concerns are often paid lip service in the theory of BCA, but are largely ignored in practice. He suggests that BCA, when each individual is given the same weight, in fact, ignores the fact that there are social preferences about inequality of wealth or income, or of welfare in general. He suggests that the separation of efficiency and equity is misleading, because the measure of efficiency depends on the numéraire chosen for the analysis. For example, the reader may use a metric based on money, on life years, or on the health status of individuals, and the results may be different, unless there are stable conversion factors between units of the different numeraires. Thus, the choice of numéraire is often not neutral, as it can affect the ranking of policies in terms of net benefits. According to Hammitt, in principle, one can solve this non-neutrality problem by an appropriate social welfare function (distributional weights being embodied in it). However, the latter cannot be empirically estimated and must be seen as normative criteria, to be defended as such. The paper also offers a worked example of the non-neutrality argument.

Some economists, in the Harberger tradition, may disagree with this conclusion. They may still argue that distributional concerns should be addressed by taxes and subsidies, not by projects and policies with other objectives that equity. Personally, however, I guess that the majority of the profession would now concur that the old view of a sharp separation of efficiency (particularly in the form of Pareto efficiency) and distribution (ideally in the form of non-distortionary transfers) is untenable. More generally, the two fundamental theorems of welfare economics are a poor guide to policy making, something acknowledged in mainstream public economics texts, such as Atkinson and Stiglitz (1980), or Hindricks and Myles (2006), or Gruber (2016), just to mention three well-known examples. But this paves the way to a different question: If such a new consensus is there, (perhaps we can try a referendum at the next SBCA conference and test this conjecture) why is it so uncommon to read a good empirical BCA paper that openly incorporates distributional concerns? Distributional concerns in terms of the intergenerational distribution issue involved in estimating the social discount rate are often discussed, but what about inequality within each generation? As I mentioned before, this absence of interest on inequality was the case in Toulouse as well (browsing the list of topics in the previous section). Is it a matter of empirical difficulty? Of methodological problems? Of residual theoretical uncertainty? Or is it related to a lack of interest of policy makers who often sponsor BCA in practice? I leave the answer to the readers. Perhaps, in future, the Society may consider discussing this puzzle.

Most people arrived in Toulouse for the SBCA conference by airplane, in the happy (?) times when airports were overcrowded, flights were late, connections missed (as happened to me after having jumped between three airports). Currently (July 2020), courtesy of the Covid-19 pandemic, airports are often much quieter. This

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seems to be the right time to think about how to appraise their economic impact and welfare effects. This is just what is done by Forsyth *et al.* (2021). In their paper, the authors take stock of over 50 years of the literature. Some readers may remember the BCA of a third London airport was often cited in the literature as a remarkable case study, after the appointment in 1968 of the Roskill Commission, and the split of the Commission in between a majority and a minority opinion, see Roskill (1971), Price (1977). Forsyth *et al.* compare three approaches: BCA, Economic Impact Analysis, and Computable General Equilibrium (CGE) models, and discuss the strengths and weaknesses of each method, with a survey of what has been done in practice. They conclude that the frequent use of economic impact assessments tends to be misleading. I concur with this view, as I have seen that several impact assessment reports, particularly in the grey literature commissioned by project promoters, tend to contain a heterogeneous set of evidence, such as employment multiplicative effects, that may or may not be informative, but are often not based on a consistent metric. The authors of the paper, published here, advocate both BCA and CGE, and they discuss the relationship between these approaches, looking also to the wider economic benefits of aviation. Readers of this journal may also consider the connection of this applied paper with the broader methodological discussion of partial versus general equilibrium in BCA as discussed by Farrow and Rose (2018).

Oceans are less part of our usual experience. Sailing on them is less common in our times than flying over them, but after all most of the surface of our planet is just water, and in the depth of oceans there is a seabed potentially rich in minerals (including metals and rare earth elements with an economic value). As we might expect there are companies planning to extract such minerals from the seabed. The authors of the paper included in this symposium (Krutilla *et al.* 2021) argue that the challenging uncertainties faced by the industry cannot be solved by regulations and contracting mechanisms only, and advocate – unsurprisingly – the use of BCA for evaluating seabed mining projects. As far as I know, this would be a new application for our field, and the authors suggest that BCA would reduce regulatory noncompliance, reduce legal disputes, and improve decision making. Such application may matter in terms of avoiding the risk of regulatory noncompliance and legal disputes, and would, in general, improve decision-making. After all, we need to believe that what we do is potentially relevant to improve policies. An interesting topic for the future would be to actually test if our optimism is supported by evidence from government decisions.

France is the very place where BCA was invented in the XIX Century at the Ecole des Ponts and Chausee' (founded in 1747, now part of ParisTech). The BCA tradition, in that School, stretches from the founding father, Jules Dupuit, to our colleague, Emile Quinet (who attended the Toulouse event and was part of the scientific committee). Hence it is interesting to see, after such a long time, to what

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extent the economic appraisal of projects is embedded in the functioning of government in the country. We can learn this by reading the paper by Baumstark *et al.* (2021) in this symposium. They focus particularly on the French government Act of 31 December 2012, about Public Finance Planning. This Act creates an obligation for project sponsors to prepare an *ex-ante* socioeconomic evaluation of all public civil investments. Perhaps, the most interesting aspect of this legislation is that, for the largest projects, this is not the end of the story, as a counter-analysis should be provided by independent experts. Such analysis may contradict or confirm the previous findings. It is a fact of life that BCA in practice, when sponsored by a project promoter, tends to be affected, for example, by optimism bias of some kind (typically by exaggerating the demand for a service and underestimating costs). Hence readers may be interested to learn whether, in the opinion of the author, this corrective mechanism in France is working and consider if it is worth replicating it elsewhere.

Railways, airports, and seabed mining facilities are all tangible investments. But is BCA able to assess the value of something intangible as a data repository? The paper by Koundouri *et al.* (2021) in this Symposium tries an application of BCA to the Open Access Infrastructure for Research in Europe project (OpenAIRE), launched in 2008. This project aims at supporting Open Access to scientific information and research output. The authors, after estimating and comparing the costs and benefits of OpenAIRE, conclude that the net benefits are several times greater than costs. Crucially important in this estimation is a Choice Experiment aiming at calculating the Total Economic Value generated by OpenAIRE with a full preference ranking approach.

I am personally inclined to think that valuing information created by some new types of infrastructures, particularly in the form of open access to data, is a new frontier of BCA. I have discussed elsewhere (Florio, 2019) the cases of Earth Observation open data collected by a fleet of satellites (the Sentinels/Copernicus program of the European Union), or the tens of millions of biodata downloaded for free everyday by researchers through the EMBL – European Bioinformatics Institute server. In Europe and elsewhere, the infrastructures providing open access to data are spreading. Governments are interested to know to what extent they have to fund such projects. As by definition, there is no monetary price for such open data, but there is a cost of providing them, this is exactly the kind of issues BCA is well tailored to deal with.

4 Concluding remarks

This is not the first European Symposium hosted by the JBCA. A previous one was published in 2018, with Andersson (2018) as guest editor. It included four papers: on

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economic appraisal of transport projects in Sweden (Andersson *et al.,* 2018), on the mainstreaming of environmental valuation in BCA in the UK (Atkinson *et al.,* 2018), on cost-benefit analysis in the EU legislation on chemicals (Georgiou *et al.,* 2018), on the BCA of infrastructure projects in the context of EU regional policy (Florio *et al.,* 2018).

In his symposium introduction, Andersson (2018, p. 93–94) stated that "Europe is still lagging the United States when it comes to using BCA for policy evaluation. However, the last couple of decades have seen a change, with BCA becoming both more accepted and implemented in European policy-making, both at national and European level." I agree with this statement.

The situation may be reversed, however, for project evaluation, particularly of public infrastructure. My guess is that perhaps in Europe more BCA is done – both at the national level and EU level – than respectively at the level of individual States and of the US federal government. This may reflect the historical fact that BCA in the US was mainly promoted in the last decades as a way to estimate the social value of new regulations, while in the EU, the government has retained a non-marginal role in public investment for civilian purposes, such as, for example, in high-speed railways, highways, airports and ports, energy and telecommunications networks, water and waste management, and other infrastructures, including more recent major research infrastructures (such as the CERN Large Hadron Collider that was built after the demise in 1993 of the US Superconducting Super Collider, see Riordan *et al.,* 2017).

Hence there is room for mutual learning because the perspectives are complementary, and the language of BCA (or more often CBA in Europe) is after all the same across the scientific communities in different countries and continents.

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