

A MULTIDISCIPLINARY APPROACH
TO EMBRACE COMPLEXITY
AND SUSTAINABILITY

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Lost in Taxation, the Debate on the CBA of the Lyon Turin Rail Project

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Purpose

Rarely has cost benefit analysis be so present in the public discussion that it was in the debate on the high-speed Lyon-Turin base tunnel that took place in Italy in early 2019. This discussion invoked many statements on what a CBA should or should not be and the outcome of the analysis were heavily discussed.

Generally, the analysis provided a negative result, with a net present value for Europe around minus 8 billion euros. Some paradoxical effects also appeared. Most strikingly the more the tunnel link would be used, the less it would be beneficial for society. In addition, even if the tunnel were built for free, it would have a negative Net Present Value. This generated scepticism among some experts and in the public discussion.

It can thus be interesting and relevant for the community of economists to analyse the economic arguments that were brought in the discussion. This paper will review the various critics that were made to the Cost Benefit Analysis, focusing on the ones made by experts and academics and will examine their content and validity. It also looks for consistent explanation to the paradoxes that emerged for the analysis.

We review more in detail the content of these different critics and examine their consistency. While, on some of them, CBA theory offers clear and univocal answers, other leaves room for discussion. We expose the different views that economic theory provides on these contentious points.

Additional to this, we also examine the perception of the CBA in the wider public and policy makers, and we draw some conclusions on how proper presentation of CBA results may help the economists to provide results that are well understood by the policy makers and the general public.

Design/methodology/approach

We first cense the critiques formulated to the analysis, subsequently we formalize them in economic terms, and then we analyse their validity.

Mostly, the critics concentrated on:

- Consideration of taxation. This point was immediately and heavily criticized by fellow economists, which stated this is inconsistent with the logic of CBA where taxes are a transfer so that reduced tax should also appear as benefits in user. In the analysis, many critics stated, excise taxes should have been excluded, as they are mere transfers. This critique elaborates on the observation that the CBA results included an item corresponding to taxation loss, while no corresponding tax benefits for users were directly observable or named correspondingly. This gave rise to the critic that the analysis was distorted against the project. Other - few - economists accepted the view that the item labelled “user surplus” could actually include the benefits of lower taxation. However, scepticism was expressed on this solution. One could notice for instance that user benefits were smaller than the reduction in taxation. Others eventually commented that if a distortionary taxation actually existed on fuel (this is implicit in the CBA: taxation on fuel is much higher than the corresponding externalities), then the project evaluation should consider the benefits of a reduced distortion: more users are freed from this distortion.
- Use of the rule of half. The evaluation was also criticized for its use of the Rule of Half, a computation rule extensively used in transport project evaluation. It was criticized:
 - because of the simplification entailed by a linear approximation of a demand function;
 - as being inadequate in presence of more elaborate evaluation tools (like the Logsum);
 - as meaning that the authors were considering only half of the reduction of generalized costs as a benefit of the project. Or that it implied accounting only half of the reduction of users taxation: if a project attracts part of the demand on a good (rail transport) that is less taxed than the alternative (road transport), and if the value to consumers is estimated with the rule of half, the result would always be negative.
- Alleged inconsistency with the Italian or International guidelines. Other critics related to the adherence to international guidelines

- Italian guidelines,
- EU guidelines,
- Other international guidelines

Part of this preoccupation relates to the national regulatory context in Italy, where insistence on consistency with guidelines is receiving increasing attention and is increasingly the target of regulations.

- Lack of consideration for wider economic effects. This critique was labelled in different terms, referring to wider economic effects, gravitational effects, general equilibrium, and local development.
- Absence of a proper demand model. The CBA was based on assumed traffic scenarios without explicit economic modelling. This was seen as a general weakness of the approach that could have multiple consequences.

Concentrating on the issue of taxation, we summarize the critics in a list of formal statements:

- Statement 1: including taxation in a Cost Benefit Analysis is not conform to guidelines
- Statement 2: including taxation in Cost Benefit Analysis is wrong
- Statement 3: including taxation the way it is done is wrong
- Statement 4: measuring transferred users benefits as half of the reduction of Generalized costs of the destination mode is wrong
- Statement 5: With a distortive taxation on one mode, attracting more users to the other mode should reduce distortion, this benefit should be reflected in a CBA
- Statement 6: ... and is not in the Torino Lyon CBA
- Statement 7: computing NPV with users surplus, tax loss and other costs and benefits should be corrected by suppressing tax loss from the result
- Statement 8: if mode transfer projects would be evaluated by computing tax loss, and considering half of the corresponding sum as the benefit, any policy to transfer users from road to rail would be rejected by CBA.
- Statement 9: RoH estimate of user surplus on the improved mode would be half of the tax income reduction for the state.
- Statement 10: RoH estimate of user surplus on the improved mode would be half of users' benefits,
- Statement 11: RoH estimate of user surplus on the improved mode would be half of users cost reduction.

We review the validity of these statements by:

- Examining existing guidelines
- Examining the practice of CBA practitioners and the motivation they provide
- Setting up a parsimonious formalisation of how taxes should be accounted in a CBA
- Setting up a parsimonious model of how the rule of Half considers users benefits

Findings

Our findings strongly suggest that most of the critic relating to the consideration of taxation in CBA derive from a misunderstanding of how a CBA is performed, and the way taxation should be represented in it.

All statements except statement except statement 5 appear inconsistent with a simple micro economic investigation. Yet some features of CBA are counter intuitive and the reason for this can better be understood through our formal analysis.

Originality/value

While many have proposed corrections to the Lyon Turin CBA, our analysis suggest that these “corrections” were actually introducing errors in the analysis. These were in the order of magnitude of the billions of Euro.

Practical implications (if applicable).

Our analysis strongly suggests that the correction that was proposed by many participants the public debate on the Lyon Turin High speed line actually introduced an inconsistency in the computation.

Research limitations/implications

We also question the dynamics of public Opinion where a likely error is driving the public debate, and where most of the academics endorse a misinterpretation of the undertaken analysis.

We also examine the challenges faced by economists when communicating the results of evaluation in a context of constrained policy context.

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