Economic Analysis of Public Policy

Mini Project Presentation Comments

All the reports are interesting and gave me an opportunity to learn about the possibility of an effective use of CBA in the areas that are new to me. The following are specific comments of mine and fellow students. The purpose of the project is for you to learn how to apply CBA to real world problems and its last stage is to carefully read criticisms and comments here to refresh your understanding and think about how to improve your report.

I have a few general points that apply to most of the projects.

First, all the projects yield revenues at least partly cover the costs. In these cases, it is desirable to conduct an explicit financial evaluation as well as the CBA (economic evaluation).

Second, clear distinction should be made between the primary and the secondary markets and you should note that in the secondary markets benefits and costs cacel out each other if there are no price distortions such as externalities, monopoly power, and asymmetric information. If you want to include benefits in the secondary markets, you have to look for price distortions there to calculate changes in the deadweight loss.

Third, there are a variety of approaches to estimating the benefits. You may want to estimate the demand curve to calculate the consumer surplus. If the availability of data makes this approach questionable, you may want to try disaggregating benefits and to estimate each component by some other method. For example, the benefits of electricity supply for the lighting purpose might be estimated based on the current use of kerosene for that purpose.

Fourth, in practice the actual calculation is often done using Excel tables. I should have taught you how to do this. An example looks like this.

Year	Discount factor $1/(1+r)^n$	Construction costs	Operation costs	Benefits category 1	Benefits category 2	Net benefit	Discounted net benefit
2011	1	200	0	0	0	-200	-200
2012	1/1.04		10	30	40	60	??
2013	...						
...	...						
Sum							

Using a table like this may save you from elementary mistakes.

Fifth, summary tables showing all the components of benefits and costs are useful for the reader to quickly understand the results.

Sixth, careful sensitivity analysis to evaluate the reliability of the CBA result is a must.

Vegetable Processing Factory: Instructor Evaluation 8.0; Students Evaluation Average 7.6

(Zhou Xiaojing, Li Xinyu, Siritala Saengduang)

Comments:

- On p.4, labor has the opportunity cost. If you do not use some estimate of opportunity cost of labor, you have to note that the profits includes the gross returns on labor in addition to usual profits.
- "Current value" is usually "Present value".
- There appears to be a mistake in sums of geometric series. If the discount (interest) rate is *r*, then the present value of a constant revenue of *A* from year 0 to year *n* is

$$\sum_{k=0}^{n} A\left(\frac{1}{1+r}\right)^{k} = \frac{A\left(1-\left(\frac{1}{1+r}\right)^{n+1}\right)}{1-\frac{1}{1+r}}$$

- The treatment of undervalued RMB does not appear to be correct. If the plant has no monopoly power, then the world price is constant. Currently, \$0.16 = RMB 1. Suppose RMB is undervalued and the "correct" rate is \$0.2 = RMB 1. If the processed vegetable is selling at \$16/unit, the factory receives RMB 10. If the exchange rate is "correct", then the factory receives RMB 8 (< 10). A better way to handle the exchange rate problem is to examine a case where the Chinese suppliers collectively have monopoly power and furthermore restrict the "standing" to chinese citizens only, ignoring the consumer surplus of foreingers.
- It is regrettable that the report does not have any analysis of the reliability of its results. You need to have a good sensitivity analysis.

Students Comments:

- The assumption of price-taker is justifiable in this project. The supply curve need not be vertical, but it does not make a problem in calculation of producer surplus, government revenue and external cost because the area of a parallelogram does not change as long as its base and height remain the same.
- "Discussion well organized.
- However, not easy to get where's your selling point.
- Is the derivation of current value correct? Not (1-(1.05)^15)/(1-1.05) but (1-(1/1.05)^15)/(1-(1/1.05)), isn't it?"
- " They say that they tried to avoid the double counting accounting, but they don't have to do it because they assume that CS will not be generated under thehorizontal demand curve and the vertical supply curve.
- The external cost is not explained so that I don't know what it is."
- Framework is clearly stated but the analysis seems too brief. It would be nice to include a sensitivity analysis to see how the valuations project fluatuates with the input parameters. Specifically, food price fluctuates a lot and therefore assuming a steady price might not be realistic. In addition, externality calculation is rather brief and it is unclear how the environment cost is calculated (6.61 million in 15 years?).
- The vegetable processing is narrow scope and even it cannot effect to the local consumption. However, project can give social surplus and benefit based on the projection data. Food prices are volatile and need to view the sensitivity analysis.Tax revenue for government and spillover effect of the project are the points to catch the policy makers.
- Although most values are hypothetical and assumed values, the group has displayed logical thinking and calculations for their CBA.
- This analysis is based on two major assumptions but seems hard to meet. It is better to carry out sensitivity

analysis on environmental and external uncertainties in farming.

- "Calculation is straight and well organized so that it is easy to understand. Based on the calculation, the inferred conclusion is impressive.
- But bullet point is used in writing report."
- This paper composes of essential components of cost-benefit analysis in term of financial and economic aspects. In both cases, this project seems to be profitable that brings the feasible application to the economy and society. Paper presents reasonable information and suggestion for better improvement of projects.
- "The presentation of cost and benefit is clear.
- It should be preferable to conduct sensitivity analysis in this CBA because agriculture sector has great uncertainty derived from environmental fractuation and other externalities.".

Hydro Power: Instructor Evaluation 8.5; Students Evaluation Average 8.0

(Keshav Raghuvanshi, Ira Camarao, Yuya Miyoshi)

Comments:

- The estimation of the consumer surplus using an elasticity estimate based on secondary sources is a theoretically consistent approach but the estimate might be unreliable. It is advisable to try alternative approaches and compare the results. For example, if you assume that for lighting purposes kerosene is close to a perfect substitute for electricity, you can use the kerosene price to estimate the benefits. Even if they are not perfect substitutes, the kerosene price may give you some indication on the willingness to pay for electricity. Analysis of this sort will provide a better sensitivity analysis.
- The following part in the conclusion needs more explanation:
  Given that the annual revenues both from residential and industrial usage cannot cover the annual total running cost. And since the demand for the electricity is highly inelastic, increasing the price or tariff on kilowatt per hour would only burden the villagers by making them pay a higher tariff as well as making their agricultural products expensive. Thus, the best way is for the government to give subsidies and grant in order to help the community meets the operational and maintenance cost of the plant.

Students Comments:

- In the final report, units of electricity are “MW,” “kW,” etc. They, however, should be written as “MW/day,” “kW/h,” and so forth. This type of mistake can make huge confusion, just as in news about radiation from the nuclear powerplants in Fukushima.
- This project did more economic analysis than others
- "Benefit and cost are well identified
- More discussion on secondary market will make the project more innovative."
- 1. An interesting approach to estimate demand – using elasticity. However, I have doubts whether we can estimate supply curve in the same manner since it is unlikely to be linear and has a maximum limit. 2. The definition of the notation used in the ratio formula is unclear. 3. Despite data limitation, externality calculation should also include time saving and fire hazard reduction by drawing reasonable assumptions from other studies.
- The micro-hydro power plant contributes to socio economic development in many ways, but the project calculateed the social benefit and cost based only on price of electricity, kerosene and operation cost , it is ambiguous.
- A very well structured analysis despite the unavailability of data, and the group has taken much effort to estimate the values through alternative calculations and providing sensitive analysis to compensate for the accuracy.
- "The result is quite clear than the class presentation. But the calculation is still difficult.

- Sensitivity analysis is done with worst and best cases. It is good job.
- The report is well organized."
- Coherent framework and paper that gives positive outputs in term of social and financial aspects. It composes all parts required for a cost-benefit analysis work,including primary and secondary markets, sensitivity analysis as well. However, they need time to get more accurate and sufficient data for a better analysis.
- The presentation of CBA, including sensitivity analysis is clear. Noting lack of actural data on secondary markets, it would be useful to try calculation of time saving and other social benefit e.g. improvement of education and heath condition, in order to justify that this type of project can help development of less industrialized countries.
- Some policy recommendations are not related to the result of the study.
- This report contains a demand prediction, which is a good attempt and a plus to this report. although we can have further discussion about the specifit figure(because it is a local project and most of the figures are predicted),it is still a utilization of the theory of CBA

Water Supply: Instructor Evaluation 8.5; Students Evaluation Average 8.3

(Onyi Lam, Trang Nguyen, Radhika Aryal, Takaaki Itoga)

Comments:

- I could not follow many of the calculations. For example,
  In the time cost part, the minimum wage of unskilled worker is US$ 87.3. Is this per day? Then it is much too high.
  In the electricity part, the following equality is confusing because units are not precisely stated:
  740*(1/6) = 105 million of RS annually = US$1.5 million
  Which numbers are summed to obtain the total benefit is not clear.
- Need a summary table to show the components of benefits and costs and how you added (or subtracted) them to obtain the net benefit figure. Please see World Bank Transport Notes TRN-5 and TRN-10.
- The following calculation is incorrect:
  the average household size in Kathmandu is 6.9 members. Since population is expected to grow at 3.3% per year, we expect that number of household will therefore grow at 0.049% (3.3%/6.9) per year in our projection period.
  If the household size is constant, the number of households grows at the same rate as the population.
- The discussions in the secondary market part are not clear about the fact that there will be additional benefits (or costs) only when there are market distortions in those markets.

Students Comments:

- It would be better to do a more concise statement.
- "Clear discussion in every part.
- A lot of sensitivity analyses make the discussion more valid and easy to get the perspective of the project."
- " This project made big mistakes, which are the double counting. The direct benefits include the double counting, and more, the member should not consider the indierect benefists because they are very ambiguous.
- In addition, the framework is not clear, I think."
- It is comprehensive and review for other fields converging to the CBA .
- A very comprehensive and detailed analsysis. However some points can be considered to improve on accuracy: For the health benefits part, although taking India's case as an estimate if probably the next best alternative since there is no similar data for Nepal, the susceptible rate of 15% and 67% of health

expenditure on waterborne diseases may be considerably different in both countries. While the data for susceptible may be unavailable, the percentage of health expenditure spent could be available from the health ministry/agencies sources. For the cost on loss of fishing activities, the group has taken the miminal wage of labour as estimate value, but most of these people involved in fishing activities would have been fishermen and their loss could be slightly higher than average minimal wage of labour. Another possible estimate for this is probably the cost of reduction of fish catch in the area if data is available. For the secondary market impacts, labour market created by the construction project itself should not be included but labour market created as a result of the project, i.e. small businesses using the clean water, shops opened along the river due to better accessibility etc can be considered.

- Melamchi water supply project is a very big project. It has significant effect in labor market. But, this study could not show its concrete benefit in labor market.
- Papers has successfully presented cost-benefit of primary and secondary markets. The results show negative outcomes; however, there are still some available alternatives that give possible outputs for the project to be done.
- Overall structure is very good and the presentation of CBA is very clear. In particular sensitivity analysis is very useful. Discussion and consideration of the economic analysis results are very significant.
- The secondary market effect is still not clear.
- The project they studied is controvesial, therefore, their conclusion, whether it is positive or negative, is meaningful for both policy makers and local citizens. I appreciate this kind of CBA related to real life.

Methane hydrate: Instructor Evaluation 9.0; Students Evaluation Average 8.3

(Moe Thida, Ushigami Satofumi, Iseki Noriko, Evonne Yiu)

Comments:

- It is not clear if your 'profitability' means the social net benefit for example in the Executive Summary. It helps to have both financial and economic evaluations. Please see World Bank Transport Notes TRN-10.
- As in other groups a summary table showing all the components of benefits and costs is necessary.
- The production cost is a critical variable. For example, the shale gas has become economical recently because of an innovation to reduce the cost of extraction. It would be more attractive to ask the question of how much the production cost should be reduced for the MH to be socially profitable.
- It may be interesting to consider the case where the MH production has an impact on the price of natural gas. In such a case the result depends on how you assume 'standing': if you ignore the benefits of natural gas producing nations, the net benefit of MH production becomes larger.

Students Comments:

- The contents of the report are thorough. It is very easy to read and to understand although I am not sure about how the probability distribution of the prices of methane hydrate is determined. To find how big the benefit from improved energy security is, value of imported crude oil, uranium, etc. should be used instead of GDP.
- This analysis says that CO2 emission cost of MH is 4.8Yen/gallon(CO2 emission of natural gas will be 25% less than that of petrol) but I thik this should be 19.2yen/gallon×3/4=14.4yen/gallon. And as for the energy security, they can consider it in the second market analysis (for example oil dependence cost = 4.8yen/liter) And more, of course it is difficult to consider the CS in this project, but I feel a little bit regrettable.
- The analysis is comprehensive, incorporating both monetary benefit and benefits that are harder to measure (energy security cost) The sensitivity analysis is also helpful since this project involves high uncertainty. However, the estimation on energy security cost does not seem convincing. It is unlikely that ALL economic activities will be terminated if energy import is disrupted. Therefore, the calculated benefit

presented overstated the energy security benefit.

- Although, CBA is carried out with so many assumptions, the group has tried to calculate cost and benefit of the project. It would be far better if group could include more components of cost and benefit.
- The Report is thorough, detailed and well organized.
- Overall structure and presentation of the CBA is good and clear. The R&D of the MH 21 project is ongoing and great uncertainty exists, calculating benefit in this CBA at this point in time is really challenging.
- Some externalitiy cost should be included.
- The topic is also interesting, with a detailed sensitivity analysis. but when analysis the benefit and cost, it seems to be unorganized to mix the primary market and the secondary market.