

A Work Project, presented as part of the requirements for the Award of a Master Degree in  
Management from the NOVA – School of Business and Economics.

Field Lab

ONE.COST – Assessing social problems costs

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## Appendix

### - Tables

**Table1:** Concepts of objective, reality and subjective components

|                      | Source         | Explanation                                                                                                   |
|----------------------|----------------|---------------------------------------------------------------------------------------------------------------|
| Objective component  | Barkan, 2012   | Negative repercussions of social problems.                                                                    |
| Reality component    | Barkan, 2012   | Recognition that a certain social condition exists.                                                           |
| Subjective component | Guerrero, 2005 | Related to the social construction view, in that when a problem is addressed it becomes defined as a problem. |

Source: Authors' own table based on (Barkan,2012) and (Guerrero, 2005)

**Table 2:** View's about Social Entrepreneurship

|    | Source                 | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SE | Miller & Wesley, 2010  | Social entrepreneurship addresses problems in an innovative way and uses business skills to explore social return opportunities <b>(Miller &amp; Wesley, 2010)</b> . The hybrid nature of these ventures borrows from the social sector and entrepreneurship and is the hallmark of social entrepreneurship. Social entrepreneurship has its fundamental basis in the field of entrepreneurship and combines traditional visions of exploring opportunities with social missions. <b>(Miller &amp; Wesley II, 2010)</b> .                                                                                                                                                                                                                                                                                                                                                                         |
| SE | Dees, 2009; 2012; 2014 | Suggests that there are two clusters that have a significant interaction for the evolution of social entrepreneurship (Dees, 2012): on the one hand, there is the ancient culture of charity that is linked to the moral systems in which Confucius claims there is a combination of "benevolence, charity and humanity", while Aristotle places it within the virtue of "generosity" <b>(Dees, 2012)</b> . On the other hand, there is a modern problem-solving culture that is linked to the traditional practices of charity and to the scientific problem-solving techniques <b>(Dees, 2012)</b> . Social entrepreneurship is a recent extension of this analytical impetus for problem solving <b>(Dees, 2012)</b> . It recognizes the perception that entrepreneurial efforts can add value to this decentralized process to innovation, experimentation and learning <b>(Dees, 2009)</b> . |

Source: Authors' own table based on (Miller & Wesley,2010) and (Dees, 2009: 2012:2014)

**Table 4:** Different types of economic evaluation

|                             | Identification of consequences                                                       | Measurement of consequences                                                                                                                             | Outcomes                                                                                          |
|-----------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Cost Analysis               | None                                                                                 | None                                                                                                                                                    | Costs of the implementation of a program or intervention into account                             |
| Cost Effectiveness Analysis | Single effect of interest, common to both alternatives achieved to different degrees | Natural non-monetary units, which normally corresponds those units to an intervention is aimed at and that are of the same interest in the alternatives | Cost Analysis + referring these to the consequences measured in <b>natural non-monetary units</b> |
| Cost Utility Analysis       | Single or multiple effects, not necessarily common to both alternatives              | In non-monetary preference scores or utility weights that do not correspond to the units that an intervention is directly aimed at                      | Cost Analysis + referring these to the consequences measured in <b>utility weights</b>            |
| Cost Benefit Analysis       | Single or multiple effects, not necessarily common to both alternatives              | Monetary units                                                                                                                                          | Cost Analysis + referring these to the consequences measured in <b>monetary units</b>             |

Source: Authors' own diagram based on (Drummond et al. 2005) and (Yates 2009)

**Table 5:** Philosophical purposes behind methodologies and approaches

| Cost Approaches |                                                                                                                                                                                                                                                                                                                                   |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1)              | Can and should use cost and impact information to decide which areas of the program to invest in                                                                                                                                                                                                                                  |
| 2)              | Can only use cost and impact information to decide, within program areas, if it is going to invest                                                                                                                                                                                                                                |
| 3)              | Should use cost and impact information to decide which areas of the program to invest in, but in fact, one would be lucky to have access to the information that impact the decision-making process, within an area of the program at all, not to mention assessing whether a program in and of itself is a worthwhile investment |
| 4)              | Should use cost and impact information to publicize the work of the organization concerned, and at the same time, publicize the use of social value creation metrics to develop an evaluation for social programs                                                                                                                 |

Source: Authors' own diagram based on (Gates Foundation, 2008)

**Table 6:** Three main applications of measuring social value

|    |                      | Main Applications                                                                                                                                                                     |
|----|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) | <b>Perspective</b>   | Looking at possible philanthropic investments in order to determine whether the costs and whether the projected benefits in the future indicate a positive investment for the present |
| 2) | <b>Ongoing</b>       | By testing projections about creating the social value they claim over time, so as to correct it                                                                                      |
| 3) | <b>Retrospective</b> | Taking into account past philanthropic investments to determine whether these investments were positive, given the costs incurred, in order to improve their future decisions         |

Source: Authors' own diagram based on (Gates Foundation, 2008)

**Table 7:** Concepts to Cost-Benefit and Cost-Effectiveness

| Steps | Concept                       | Source                        | Defenition                                                                                                                                             |
|-------|-------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.    | Financial Cost                | (Cellini & Kee, 2010, p. 501) | Financial Costs are cash outlays of the organization considering the program or project.                                                               |
| 1.    | Social Cost                   | (Cellini & Kee, 2010, p. 501) | Social Costs are not cash outlays, but represent real costs to society                                                                                 |
| 1.    | Benefit                       | (Cellini & Kee, 2010, p. 494) | Benifits are postive impacts                                                                                                                           |
| 1.    | Marginal/Incremental Cost     | (Arnold, 2008,p.8)            | Marginal Cost are additional costs. The costs connected to consuming a n additional unit of a good or undertaking one more unit of na activity.        |
| 1.    | Marginal/Incremental Benefits | (Arnold, 2008,p.8)            | Marginal Benefits are additional benefits. The benefits connect to consuming a n additional unit of a good or undertaking one more unit of na activity |
| 1.    | Units of effectiveness        | (Cellini & Kee, 2010, p. 494) | Units of effectiveness are simply a measure of any quantifi able outcome central to the program ' s objectives.                                        |

|        |                                  |                               |                                                                                                                                                                                                                                                                                                                 |
|--------|----------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.     | Musgrave Model                   | (Cellini & Kee, 2010, p.499)  | According to Musgrave, with a company, actual profits and costs represent net profits and losses, while transfers only change the distribution of resources in a geographic area.                                                                                                                               |
| 3.     | Direct costs and direct benefits | (Cellini & Kee, 2010, p.500)  | It is called direct costs and benefits (affixed to the additional cost) those that are directly related to the main purpose of program implementation                                                                                                                                                           |
| 3.     | Indirect costs                   | (Cellini & Kee, 2010, p.500)  | Indirect costs are exactly the same, occur as a result of an action unintentionally                                                                                                                                                                                                                             |
| 3.     | Indirect benefits                | (Cellini & Kee, 2010, p.500)  | Indirect benefits are usually calculated as the loss of income and productivity avoided that would have happened without the program being implemented                                                                                                                                                          |
| 3.     | Tangible benefits and costs      | (Cellini & Kee, 2010, p. 494) | Tangible benefits and costs are those that can be readily stated without unit terms for the CEA and that can be converted into currency units for the CBA.                                                                                                                                                      |
| 4 & 5. | Opportunity cost                 | (Cellini & Kee, 2010)         | The opportunity cost of using a resource is the value it could have provided in its best alternative use. Because this value is lost when the resource is used by another project, we should include the opportunity cost as an incremental cost of the project.                                                |
| 4 & 5. | Cost of capital                  | (Cellini & Kee, 2010, p. 505) | The cost of capital assets should be spread out over their expected useful life. Normally the asset (less its final salvage value) is depreciated equally per year over the life of the asset (straight - line depreciation).                                                                                   |
| 4 & 5. | Sunk Costs                       | (Berk & Demarzo, 2014,p.239)  | Sunk cost is any unrecoverable cost for which the firm is already liable. Sunk costs have been or will be paid regardless of the decision about whether or not to proceed with the project. Therefore, they are not incremental with respect to the current decision and should not be included in its analysis |
| 4 & 5. | Accounting or Budgetary Costs    | (Cellini & Kee, 2010, p. 505) | Accounting or budgetary information typically will provide data on salaries, capital costs and materials, and other expenditures, used in a program                                                                                                                                                             |

|    |                          |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----|--------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6. | Shadow prices            | (Cellini & Kee, 2010, p. 512) | Shadow prices is when, in most public programs, the recipients are not fully paying for the benefits received; therefore the evaluator must make an alternative assessment of value.                                                                                                                                                                                                                                                                                                                                          |
| 6. | Cost Avoidance           | (Cellini & Kee, 2010, p. 512) | Cost avoidance (or cost savings ) is also a benefit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 6. | Time Saved               | (Cellini & Kee, 2010, p. 513) | The time that is saved is a clear tangible benefit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 6. | Increased Productivity   | (Cellini & Kee, 2010, p. 513) | Increasing productivity is an objective that should be common in all programs that are based on capital investments. These benefits can take the form of increased profits or wages for example.                                                                                                                                                                                                                                                                                                                              |
| 6. | Property Values          | (Cellini & Kee, 2010, p. 513) | When there is an increase of property values, it may or may not be of geographical scope.                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 6. | Taxes                    | (Cellini & Kee, 2010, p. 513) | Taxes are considered as a benefit of a fiscal or budgetary perspective. These are very important if the objective is to produce revenue that is equal to expenditure. As we are faced with a social perspective, taxes are considered transfers because the gain for the government is a loss for the individual who is obliged to pay taxes. While the individual gains with the services that the government provides with the money generated by taxes paid, loses in monetary value due to spending on private purchases. |
| 6. | Value of the Environment | (Cellini & Kee, 2010, p. 514) | Many projects — particularly those that affect the environment — provide recreational activities such as hiking, fishing, or swimming. In this case one must calculate recreational values.                                                                                                                                                                                                                                                                                                                                   |

**Table 8:** Comparing Cost-Benefit Analysis and Cost-Effectiveness Analysis

| Methodologies | Advantages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Limitations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CEA</b>    | When relating different programs that are focusing on the same benefit (Jamison, Breman, Measham, Alleyne, Claeson, Evans, Jha, Mills & Musgrove, 2006); When observe interventions that address different benefits and risk factors (Jamison, Breman, Measham, Alleyne, Claeson, Evans, Jha, Mills & Musgrove, 2006); No need to monetize social impacts that are complex to express in units of money (Tuan, 2008); Outcomes are easier to quantify than CBA (Devereaux & Yusuf, 2003); It is easier to calculate than CBA because require less information and the information required is more easy to compute (Meunier, 2009); | Scale can affect the result (Cellini & Kee, 2010); Organizations often differ about the way of performing the calculation (Jamison, Breman, Measham, Alleyne, Claeson, Evans, Jha, Mills & Musgrove, 2006); Interventions with different types of outcomes cannot be analyze (Karoly, Kilburn, Bigelow, Caulkins, Cannon& Chiesa, 2001); The cost-effectiveness ratio is limited and cannot combine more than one outcome – what makes difficult to analyze multiple benefits of a program (Tuan, 2008); Cost- effectiveness is difficult to interpret (Karoly, Kilburn, Bigelow, Caulkins, Cannon& Chiesa, 2001);Program impacts are measured in natural units, unless the units are common across all areas of impact, it makes impossible to compare CE ratios across (Karoly, Kilburn, Bigelow, Caulkins, Cannon& Chiesa, 2001); Provide no value for the output, leaving that to the subjective judgment of the policymaker (Cellini & Kee, 2010). |
| <b>CBA</b>    | Provide a summary by diminishing all impacts to a common currency (Karoly, Kilburn, Bigelow, Caulkins, Cannon& Chiesa, 2001); Flexible framework – provides information about the returns for stakeholder (Karoly, 2008); Monetize primary and secondary, tangible and intangible, direct and indirect benefits and costs (Karoly, Kilburn, Bigelow, Caulkins, Cannon& Chiesa, 2001); It is less subjective than CEA on determine if benefits exceed cost of program (Rascati, 2004); Compare more than one programs with unrelated outcomes - CEA cannot (Rascati, 2004)                                                           | Complex to distinguish between which benefits and costs are or not part of a program (Karoly, 2008); Sometimes, it is impossible to measure all the impacts or costs (Karoly, Kilburn, Bigelow, Caulkins, Cannon& Chiesa, 2001); Cannot monetize all the measured impacts and costs; Lack of standards in calculating benefit-cost ratios (Karoly, Kilburn, Bigelow, Caulkins, Cannon& Chiesa, 2001); Analysis sometimes confuse because when comparing programs, they can have NPV positive but IRR different (Karoly, 2008); Place dollar values on all (or most) costs and benefits (Cellini & Kee, 2010); Allows to compare more than one outcome - very demanding (Münich & Psacharopoulos, 2004);                                                                                                                                                                                                                                                 |
| <b>SROI</b>   | a) Based on actual historical and ongoing outcomes (Gair, 2002); Clarify the investors on their donations (Tuan & Jones, 2000); Total investment date represents the total investment by funding sources (Tuan & Jones, 2000);                                                                                                                                                                                                                                                                                                                                                                                                      | Based on outcome data and not impact data (Tuan & Jones, 2000); Do not allow comparison (Gair, 2002); Only consider primary, tangible and direct benefits (Tuan & Jones, 2000); Does not consider interdependencies (Gair, 2002); Uneven data quality collected through stakeholders interviews, estimates, assumptions, outputs and outcome (Nicholls, Lawlor, Neitzert & Goodspeed, 2009); Calculations for interdependencies are based on estimates (Moody, Littlepage, Paydar, 2015).;                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

Source: Authors' own diagram based on (Jamison, Breman, Measham, Alleyne, Claeson, Evans, Jha, Mills & Musgrove, 2006), (Gair, 2002), (Tuan & Jones, 2000), (Moody, Littlepage, Paydar, 2015), (Nicholls, Lawlor, Neitzert & Goodspeed, 2009), (Karoly, 2008), (Karoly, Kilburn, Bigelow, Caulkins, Cannon & Chiesa, 2001), (Cellini & Kee, 2010), (Münich & Psacharopoulos, 2004), (Devereaux & Yusuf, 2003) and (Meunier, 2009)

## **Figures**

**Figure 4:** Present value of costs calculation

$$Pv \text{ of costs} = C_0 + \frac{C_1}{(1+r)^1} + \dots + \frac{C_r}{(1+r)^t} = \sum_{t=1}^T \frac{C_r}{(1+r)^t} \quad (a)$$

Source: Authors' own figure based on (Cellin and Kee, 2015)

**Figure 5:** Present value of benefits calculation

$$Pv \text{ of benefits} = B_0 + \frac{B_1}{(1+r)^1} + \dots + \frac{B_r}{(1+r)^t} = \sum_{t=1}^T \frac{B_r}{(1+r)^t} \quad (b)$$

Source: Authors' own figure based on (Cellin and Kee, 2015).

**Figure 6:** Cost-effectiveness ration

$$\text{Cost – Effectiveness Ration} = \frac{PVC}{Units \text{ of Effectiveness}} \quad (c)$$

Source: Authors' own figure based on (Cellin and Kee, 2015).

**Figure 7:** Net Present Value

$$NPV = \sum_{t=1}^T \frac{(B_t)}{(1+r)^{t-1}} - \sum_{t=1}^T \frac{(C_t)}{(1+r)^{t-1}} \quad (d)$$

Source: Authors' own figure based on (Cellin and Kee, 2015)

**Figure 8:** Benefit-Cost Ratio

$$\text{Benefit} - \text{cost ratio} = \frac{PV \text{ benefits}}{PV \text{ costs}} \quad (e)$$

Source: Authors' own figure based on (Cellin and Kee, 2015)

**Figure 9:** Internal Return Rate

$$\begin{aligned} &\text{Internal Return Rate} \\ &= r_a + \frac{NPV_a}{NPV_a - NPV_b} (r_b - r_a) \quad (f) \end{aligned}$$

Source: Authors' own figure based on (Cellin and Kee, 2015)