

A General Evaluation Model for Sustainable Business Certification

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Business, trade and investment are essential pillars for prosperity and peace. But in many areas, business is too often linked with serious dilemmas - for example, exploitative practices, corruption, income equality, and barriers that discourage innovation and entrepreneurship. Responsible business practices can in many ways build trust and social capital, contributing to broad-based development and sustainable markets. Terms as "Sustainable Finance", "Socially Responsible Investing (SRI)", "Corporate Socially Responsible" (CSR), "Ethical Business" are new and important concepts which have penetrated the business and social life. It could be interesting to understand if this extraordinary growth it's explained only by ethical behavior and moral commitment or it's a just a consequence of a good marketing campaign.

Due to its large international influence it is fundamental to analyze, evaluate all the parameters connected to the Corporate Social Responsibility. Managers and companies are now continuously required to demonstrate their ability to manage their social and environmental impact in the countries where they operate. In this context, this paper introduces a general model, based on the construction of a synthetic quantitative index, in order to rate the degree Corporate Social Responsibility. This model measures through the use of the index which evaluates a set of elements fixed by an external and independent Committee or Advisor, such as social political behavior and economic and environmental decisions, the company sustainability level and determine a flexible rating. In this paper we refer to a generic sustainability certification exercise allowing the firm's social policies evaluation through a synthetic quantitative index that provides a flexible rating in line with the financial ones. The model is conceived to be deployed in other evaluation contexts

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1. Introduction

The last decade showed an increasing awareness about the relevance of Corporate Social Responsibility i.e. the firms' behaviour in relation to the social and environmental issues.

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The sustainability of the firm's activities has become the main parameter taken into account beyond the financial and economic performances. The Social Report in its broad definition, is the instrument that shows which is impact produced by the activities of a private or public organisation (the entities) and it represents the tool for the management of trust among the stakeholders (customers, institutions, citizens...) providing an analysis about the social sustainability of organisations actions in relation to their mission statement and objectives. The social report is the needed complement of the financial report since it shows all the non-monetisable aspects of the entity's performance. Originally it born as communication instrument towards sensible stakeholders and it assumes a strategic function by supporting the development of medium and long term mission and objectives.

For example, looking at the case of ethic finance, Socially Responsible Investments (SRI) are the ones that respect the sustainability principles that impose some constraints on the way to operate them. These principles are not always the same for all the investments and the weight of the different ethical aspects varies quite often. A similar index construction has been proposed in [1-2] for the portfolio selection of investors in ethical funds according to the individual ethic propension. In [1-2] the index based on investor's ethic preferences is subjective and it depends from his geographic origin, his religious and political belief etc. In the case of the Corporate Social Responsibility there are a number of independent certification advisor that measures the sustainability rating through a worldwide accepted set of parameters.

2. Measuring the Corporate Social Responsibility

The parameters that are used for measuring the Corporate Social Responsibility are not always homogeneous, numerous and quite often complex. In general, as an example, we can accept the categories provided by the Global Compact initiative promoted by the United Nations. The Global Compact initiative is a framework for businesses that are committed to aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labour, the environment and anti-corruption. As the world's largest, global corporate citizenship initiative, the Global Compact is first and foremost concerned with exhibiting and building the social legitimacy of business and markets. The ten principles are categorized under three main pillars; to each principle may correspond a variable number of specific indicators according to the kind of business and the Advisor policies.

Global Compact pillars and principles are listed below:

Human rights

1. Businesses should support and respect the protection of internationally proclaimed human rights
2. Businesses should make sure they are not complicit in human rights abuses.

Labour standards

3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
4. the elimination of all forms of forced and compulsory labour
5. the effective abolition of child labour
6. eliminate discrimination in respect of employment and occupation
7. Business should support a precautionary approach to environmental challenges
8. undertake initiatives to promote greater environmental responsibility
9. encourage the development and diffusion of environmentally friendly technologies

Transparency and Anti-corruption

10. Businesses should work against corruption in all its forms, including extortion and bribery

An important ethic advisor is ETHIBEL - www.ethibel.org - that according to the guidelines "*Measuring Sustainability: Ethibel's Evaluation Scheme*" divides its evaluation principles into five areas. The first area gives a general description of the context of the enterprise but is not the object of evaluation. The four remaining areas are internal social policy, environmental policy, external social policy and ethical economic policy. These four areas compose the whole terrain of the social responsibility of companies. Each of the four areas is given equal importance. The evaluation is carried out according to the Standard & Poor's rating system.

3. An Evaluation Model For Sustainable Firm Certification: A Proposal

Taking into account the existence of heterogeneous approaches such as the ones of the examples used, we propose a general model able to incorporate the system of principles and indicators that the Advisor usually adopts to evaluate the corporate social sustainability. It is our opinion that the system of principles should not take into account any conditioning aspect such as the geographic, religious and political driving to a common and global accepted definition of social responsibility. On the other hand, if useful, should be possible to define a subset of principles that adapt the evaluation to specific

cultures and geographic areas. In our model the sustainability is expressed through a rating system similar to the Standard & Poor's one.

Let $F_{k,c}$ the k -th entity under evaluation for the certification c , $\eta(F_{k,c}) = \eta^{(k,c)}$ the related sustainability index that is supposed to have different levels like happens for the financial ratings.

If

$$\eta^{(k,c)} = 0 \quad \text{rating DD}$$

$$0 < \eta^{(k,c)} \leq 1 \quad \text{rating D}$$

$$1 < \eta^{(k,c)} \leq 4 \quad \text{rating CCC, CC, C}$$

$$4 < \eta^{(k,c)} \leq 7 \quad \text{rating BBB, BB, B}$$

$$7 < \eta^{(k,c)} \leq 10 \quad \text{rating AAA, AA, A}$$

meaning

AAA: An entity rated 'AAA' has the highest rating assignable. The entity's capacity to meet the social commitment connected to its activity is extremely strong.

AA: An entity rated 'AA' differs from the highest-rated ones only to a small degree. The entity capacity to meet its social commitment is very strong.

A: An entity rated 'A' is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than entities in higher-rated categories. However, the entity's capacity to meet its social commitment is still strong.

BBB: An entity rated 'BBB' exhibits adequate sustainability parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its social commitment.

BB¹: An entity rated 'BB' faces major ongoing uncertainties or exposure to adverse business, financial, or economic conditions which could lead to the entity's inadequate capacity to meet its social commitment.

B: An entity rated 'B' is more vulnerable to than entities rated 'BB', but it currently has the capacity to meet its social commitment. Adverse business, financial, or economic conditions will likely impair the entity's capacity or willingness to meet its social commitment.

CCC: An entity rated 'CCC' is socially vulnerable. In the event of adverse business, financial, or economic conditions, the entity is not likely to have the capacity to meet its social commitment.

CC: An entity rated 'CC' is socially highly vulnerable.

C: An entity 'C' is currently socially highly vulnerable. The 'C' rating may be used to cover a situation where a “social bankruptcy” in ongoing and petitions have been filed or similar action taken.

D: An entity rated 'D' is in “social default”. The 'D' rating category is used when the entity fails on all the most relevant sustainability principles.

3.1 Building Up The Sustainability Indexes

Let \bar{V} the system of all principles adopted by the Advisory Board, represented by a vector of N principles-components

$$\bar{V} = (v_1, v_2, \dots, v_N)$$

To this system it is assigned a weighting vector with not all the components null at the same time that indicates the relevance for the particular certification c and the typology of k -th entity.

$$\bar{\alpha}^{(k,c)} = (\alpha_1^{(k,c)}, \alpha_2^{(k,c)}, \dots, \alpha_N^{(k,c)}), \quad 0 \leq \alpha_i^{(k,c)} \leq 2, \quad \forall i = 1, \dots, N$$

Indicating with $F_{k,c}$ the k -th entity that requires the certification c and with $\eta^{(k,c)} = \eta(F_{k,c})$ the related index resulting from the evaluation let proceed to the classification of system principles.

A first classification of the principles is determined from the assignation of the weighting vector. A second classification determines a partition of system \bar{V} : the sustainability principles are classified in primary (not renounceable) or secondary (complementary) that are respectively indicated with $\{v_{ij}\}$ and with $\{v_j\}$.

Being a partition of \bar{V} we obtain:

$$\bar{V} = \{v_{jj}\} \cup \{v_j\} = \{v_i\}, \quad j \neq jj, \quad i = 1, \dots, N$$

It is now possible to build two partial indexes referred to the k -th entity and certification c : the index of primary principles and the index of secondary principles respectively indicated with $\eta_p^{(k,c)}$ and $\eta_s^{(k,c)}$. A principle is present if complied otherwise is absent. We provide two definitions of primary sustainability principles one more restrictive than the other; these definitions imply different kinds of functional relations as shown ahead:

Definition 1

A principle is primary if without it an entity cannot reach the ratings AAA, AA, A and BBB, BB because the partial index $\eta_p^{(k,c)}$ is null; the contribution of the secondary partial index allows only to reach the B rating.

Definition 1* (more restrictive)

A principle is primary if without it an entity is in social default with rating D since the global index $\eta^{(k,c)}$ is null.

Definition 2

A principle is secondary if without it an entity results still sustainable because both the global and partial indexes are not null and its absence may be recovered by another secondary principle.

Thus assuming the Definition 1 the sustainability index is obtained through an additive link or as a linear combination of primary and secondary index components with β and γ chosen opportunely by the certification advisor board

$$\eta^{(k,c)} = \beta^{(k,c)} \eta_p^{(k,c)} + \gamma^{(k,c)} \eta_s^{(k,c)}$$

In general, we can suppose that these coefficients might be specific of entity k and certification c , or more simply we can suppose that β and γ are fixed:

$$\eta^{(k,c)} = \beta \eta_p^{(k,c)} + \gamma \eta_s^{(k,c)}$$

If, on the other hand, we use the Definition 1* the sustainability index is obtained through a multiplying link among the two partial indexes thus, if the primary index is null also the global one is null

$$\eta^{(k,c)} = \eta_p^{(k,c)} \left(\beta + \gamma \eta_s^{(k,c)} \right)$$

From now onwards we will use the Definition 1 and the coefficients $\beta^{(k,c)}$ and $\gamma^{(k,c)}$.

Remark

The role of the weighting vector $\bar{\alpha}^{(k,c)}$ with its components $\alpha_{jj}^{(k,c)}$ e $\alpha_j^{(k,c)}$ is to provide flexibility to the model applied in the evaluation process taking into consideration the entity typology and the certification approach. The combination of the two partial indexes $\beta^{(k)}$ and $\gamma^{(k)}$ concur to provide a flexible instrument to the certification advisor in quantifying their importance.

3.2 Building Up The Partial Indexes Of Sustainability

We now build the partial sustainability indexes, respectively:

$\eta_p^{(k,c)}$: partial index of primary principles

and

$\eta_s^{(k,c)}$: partial index of secondary principles.

The vector of the system \bar{V} is composed by the two vectors of the partition with the components of primary and secondary principles related to the k -th entity and the peculiar certification c indicated respectively with $\bar{V}_p^{(k,c)}$ and $\bar{V}_s^{(k,c)}$, thus

$$\bar{V}_p^{(k,c)} \cup \bar{V}_s^{(k,c)} = \bar{V} \quad \text{e} \quad \bar{V}_p^{(k,c)} \cap \bar{V}_s^{(k,c)} = \emptyset$$

After the check of the system principles presence in the operational life of the entity it is possible to build the evaluation index. To this end a binary mask is adopted in order to filter the compliance to the principles assigning 1 in the positive case and 0 in the negative one. The mask/filter is a vectorial function that performs a check on the compliance with respect to the principles needed for the system \bar{V} in order to obtain the certification c .

Indicating with $\bar{F}^{(k,c)}$ the function that works on vectors and returns a binary vector with the same length, the resulting binary vector, $\bar{F}^{(k,c)}(\bar{V})$, is provided by the disjointed union of the two components (partitions).

$$\bar{F}^{(k,c)}(\bar{V}) = \bar{F}^{(k,c)}(\bar{V}_p^{(k,c)}) \cup \bar{F}^{(k,c)}(\bar{V}_s^{(k,c)})$$

The function $\bar{F}^{(k,c)}$ works on the elements of the respective components in the following manner.

$$\bar{F}^{(k,c)}(\bar{V}_p^{(k,c)}) = \begin{cases} \bar{F}^{(k,c)}(v_{jj}) = 0 & v_{jj} \notin \bar{V} \\ \bar{F}^{(k,c)}(v_{jj}) = 1 & v_{jj} \in \bar{V} \end{cases}$$

$$\bar{F}^{(k,c)}(\bar{V}_s^{(k,c)}) = \begin{cases} \bar{F}^{(k,c)}(v_j) = 0 & v_j \notin \bar{V} \\ \bar{F}^{(k,c)}(v_j) = 1 & v_j \in \bar{V} \end{cases}$$

The weighted vector is

$$\bar{E}^{(k,c)} = \bar{\alpha}^{(k,c)} \cdot \bar{F}^{(k,c)}(\bar{V}) = \left\{ \alpha_i^{(k,c)} \cdot \bar{F}^{(k,c)}(v_i) \right\}_{i=1,2,\dots,N}$$

If the eventual null elements or null coefficient that nullify the other elements of the mask are laminated this vector has a length less or equal to \bar{V} , thus

$$|\bar{V}| = N \text{ e } |\bar{E}^{(k,c)}| \leq N.$$

For setting up of the partial index, in particular of primary principles, it is necessary to maintain the null elements in the vector $\bar{E}^{(k,c)}$, thus

$$|\bar{E}^{(k,c)}| = N.$$

The two weighted vectors, respectively of primary and secondary present principles, are indicated with $\bar{E}_p^{(k,c)}$ e $\bar{E}_s^{(k,c)}$, thus

$$\begin{aligned} \bar{E}^{(k,c)} &= \bar{E}_p^{(k,c)} \cup \bar{E}_s^{(k,c)} \\ &= \left\{ \alpha_{jj}^{(k,c)} \cdot \bar{F}^{(k,c)}(v_{jj}) \right\}_{jj} \cup \left\{ \alpha_j^{(k,c)} \cdot \bar{F}^{(k,c)}(v_j) \right\}_j \end{aligned}$$

$$jj \neq j, \quad j, jj \in \{1, 2, \dots, N\}$$

According to the Definition1 the partial index of the primary principles will be obtained through the multiplying link

$$\eta_p^{(k,c)} = \prod_{jj} \alpha_{jj}^{(k,c)} \bar{F}^{(k,c)}(v_{jj})$$

A similar construction of the of the partial primary index implies that the presence of only one null element nullifies $\eta_p^{(k,c)}$. In the same way, the partial index of secondary principle will be obtained through the additive link

$$\eta_s^{(k,c)} = \sum_j \alpha_j^{(k,c)} \bar{F}^{(k,c)}(v_j)$$

Differently from the previous case, this construction implies that the presence of one or more null elements, meaning a failure in complying the secondary principles, does not nullify the secondary partial index $\eta_s^{(k,c)}$.

Under these circumstances the k entity's global sustainability index, for the certification c , will be provided by

$$\eta^{(k,c)} = \beta^{(k,c)} \eta_p^{(k,c)} + \gamma^{(k,c)} \eta_s^{(k,c)}$$

If $\eta_p^{(k,c)} = 0$ and this can happen if at least one of the primary principles in not complied, the entity can obtain the maximum rating of B or less (CCC, CC, C, D e DD), depending from the contribution (value)f the partial secondary index.

If $\eta_p^{(k,c)} \neq 0$ and this can happen if and only if the entity is complying to all the primary principles, it will be possible to obtain a rating of A or higher (AA and AAA), depending from the coefficient of primary principled and the contribution (value) of the secondary partial index.

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