ASSETS RESTATEMENT MODEL FROM THE NATURAL CAPITAL MAINTENANCE PERSPECTIVE

Ph.D. **Gina Raluca GUŞE**
Ph.D. **Daniela Artemisa CALU**
Academy of Economic Studies

Ph.D. Student **Adriana CALU**
University of Bucharest
Ph.D. **Viorel AVRAM**
Academy of Economic Studies

Abstract:

The present research aims to propose a new approach to defining and measuring assets in terms of the negative effects and net benefits arising from their use and affecting the natural capital. In this regard, we provide a new definition and a reclassification of assets in three categories, depending on the nature of their environmental impact. The proposed categories are: natural assets, neutral assets and polluting assets. Given that natural assets can not be object to reliable measurements, we find as appropriate the current qualitative reporting techniques (Corporate Social Responsibility Reports – CSR). Balance sheet assets, reclassified as neutral assets and polluting assets will be restated based on an environmental factor. The proposed model may be used for financial and non-financial reporting of environmental issues, as well as an instrument for environmental audits and for the assessment of environmental risks.

Key words: neutral assets, polluting assets, environmental factor, environmental audit and risk, positive and negative externalities

JEL Classification: Q 56, M 40, M 41, M 42, O 13

Introduction

The starting point of our research is the previous work of the authors, resulting in an integrated conceptual framework that combines elements of traditional financial reporting and CSR reporting (Calu et al., 2010). The present research develops the issue regarding the definition, measurement and recognition of assets. The harmonization of financial and CSR reporting involves, as a prerequisite, removing any conceptual errors and confusions caused by the use of antagonistic terms from the two reporting models. For example, CSR reporting has

assigned the concept of natural capital to natural assets, in financial accounting terms (Calu et al., 2009).

The progress in other areas of economic science have restated and augmented the concept of value and have required new directions for accounting research, finally confronting two fundamental aspects (Guşe, 2010a):

- Expanding the scope of accounting measurements to include new items. This resulted in redefining the limits of accounting measurement in relation to the new areas of interest, such as social and environmental reporting, human capital, intangibles or natural capital;
- Finding appropriate measurement bases for achieving relevance and reliability in financial reporting. This resulted in a diversification of measurement models, in order to maintain a reasonable level of reliability for the measurement of heterogeneous elements.

Definitions and classifications of assets

The responsibility/accountability of managers for the invested capital must include, in our opinion, a combination of *balance sheet assets* and *natural assets*. In this context, the objective of any economic entity should be making a profit, while maintaining the economic capital in the form of balance sheet assets and natural assets. Therefore, *a natural asset, in the economic sense,* may be defined as *any natural asset, integrated in an economic activity, provided that there is an institutional and recognized right of ownership or use, individual or collective over the asset, and from which future economic benefits are expected, both form a financial perspective, as well as form a sustainability perspective* (Guşe, 2010b). Maintaining natural capital should be consistent with *maintaining ecological capital*, which takes into account natural resources that are not integrated into the economic circuit. From our point of view, the limits of the accounting model may be extended, while maintaining a reasonable level of reliability, only to include/cover natural assets.

The proposed approach consists of a reclassification of assets in three categories: natural assets, neutral assets and polluting assets. Given that natural assets can not be object to reliable monetary measurements, we find as appropriate to maintain the current reporting techniques (Corporate Social Responsibility Reports – CSR).

Model for the restatement of balance sheet assets depending on their environmental impact

In order to achieve a correlation between the reporting value of balance sheet assets and the environmental impact of their use, the carrying amounts may be restated using an environmental factor (Ef).

The environmental factor can be determined as a ratio between the environmental benefits generated by an asset and the environmental costs incurred through its use.

$$Ef = \frac{\text{Environmental benefits}}{\text{Environmental remediation costs}}$$

A problem with such a measurement model consist of the difficult task to measure environmental costs and benefits, which are, usually, dissociated from the source of their impact. For example, the benefits associated with the social environment can take the form of positive externalities, such as the enhancement of positive effects on the individual and the community (Guşe et al., 2010). Environmental costs, most often associated with negative effects on the natural environment, can be identified as negative externalities: costs to restore the environment to its pre-impact state, environmental taxes or costs to implement economic and regulatory instruments (environmental regulations and standards – ISO 14000, tradable emissions allowances).

One approach known in the literature (Negrei, 2002) to quantify environmental benefits is to assess the actual preference for a good or service in the form of the consent to pay. Environmental benefits are determined as the difference between the amount the consumer consents to pay for a "green" good or service and the market price of an equivalent, but polluting good or service.

Jones (2010) provides a systematization of conceptual approaches used in assessing social and environmental externalities, identifying three measurement approaches:

- A *damage cost* approach, considering the damages caused by the impacts;
- An *avoidance* approach, considering the costs of taking preventive action against environmental degradation;
- A *restorative* approach, considering the cost of restoring the environment to its pre-corporate impact state.

The method used to measure externalities in monetary terms is closely correlated with the specific features of an industry. Cost-based approaches are appropriate for intensive natural resource industries such as the energy industry and allow comparisons between investments alternatives on the base of the cost of damages induced on the natural environment. As a result, companies in energy and transport have most frequently requested the implementation of such measurement models to estimate the environmental impacts (mostly negative) and to formulate new strategies and policies to ensure sustainability (Bebbington et al., 2001, Ricci, 2003). Managerial initiatives in forestry or agriculture have lead to experimental studies aimed at estimating costs *and benefits* in the form of externalities, or at formulating policies and strategies for the preservation of the natural environment or at facilitating negotiations to obtain adequate financing in terms of frequency and amount.

The measurement of externalities is a difficult task because, in some cases, their impact is not fully comprehended (Mathews, 1984, in Guşe *et al.*, 2009). Even among economists who have laid the theoretical background for the concept of externalities, their measurement has been a controversial issue. Pigou (1920) supports an interventionist approach, where the *measurement* of externalities *is done indirectly* by the state through regulations and specific taxes, having the role to compensate the inability of the market system to spontaneously reflect the prices of services provided by ecosystems. Coase (1960) supports the possibility of *direct measurement*, by confronting demand and supply on specific markets for trading environmental goods and services. The common element is the recognition of the need for a monetary expression of services provided by ecosystems and damages produced by economic activities on the natural environment.

By providing a theoretical and methodological framework essential to exercise the option of measuring externalities, as well as by formulating selection criteria for selecting the appropriate method/methods, the accounting profession could contribute significantly to the accreditation of the idea that any measurement, even one with limited reliability, is preferable to the lack of any measurement (Costanza *et. al.*, 1997; Yangang Xing *et. al.,* 2007).

The model for the restatement of carrying amount of assets involves a systematization of assets, according to the value of the environmental factor. Therefore, the environmental restated amount of the asset is determined based on the following model:

Environmental restated amount of the asset = *Ef* x Carrying amount of the asset

where Ef may be:

- Ef > 1, for neutral assets/insignificant degree of pollution;
- Ef = 1, for polluting assets, with an average degree of pollution;
- Ef < 1, for polluting assets with a high degree of pollution.

In order to increase the understandability of the model, we present a proposed reclassification of the main assets having a different environmental impact, form industries which are representative in terms of public interest.

Table 1

Reclassification model for accounting assets/balance sheet assets depending on their environmental impact

Industry	**ASSETS**		
	High degree of pollution	**Average degree of pollution**	**Low/Insignificant degree of pollution**
Production and supply of electricity and heat	Gas Plant Power-Station	Wood Plant	Wind Turbine Thermal Solar Cells Photovoltaic Solar Cells Thermal Heating Pumps (geothermal) Water storage reservoir/Water dam Biomass
Automobiles	Automobiles (gas or diesel)	Hybrid automobiles	Electrical automobiles Hydrogen automobiles
Agriculture	Chemical fertilizers, pesticides	Animal farms	Organic farms
External effects (externalities)	**Net negative effects**		**Net benefits**
	Noxa		Wind energy Solar energy Geothermal energy Hydro Power Plant Organic products

In practical terms, applying the reclassification model leads to the following restated structure of traditional balance sheet assets:

Table 2

Restatement of balance sheet assets depending on the environmental impact of their use

Balance sheet assets	Environmental factor	Reclassification
Intangible assets:	Ef > 1	Neutral assets
Exception: • Development costs	Depending on the industry	Neutral assets or polluting assets
Tangible assets:	Ef < 1	Polluting assets with a high degree of pollution
Exception: • Assets in the form of non-polluting technologies	Ef > 1 or Ef = 1	Neutral assets or polluting assets with a average degree of pollution
Financial assets:	Ef > 1	Neutral assets
Inventories:	Ef < 1	Polluting assets with a high degree of pollution
Exception: • Assets resulted from the use of non-polluting technologies	Ef > 1 or Ef = 1	Neutral assets or polluting assets with a average degree of pollution
Receivables:	Ef > 1	Neutral assets
Short-term financial investments:	Ef > 1	Neutral assets
Cash:	Ef > 1	Neutral assets
Accrued expenses:	Ef > 1	Neutral assets

The effect of the proposed model would be similar to the restatement of assets in hyperinflationary economies or the revaluation of assets. Thus, in the case of assets with a low degree of pollution, the restated amount will include the benefits which are not quantifiable through the traditional accounting model, as a result of applying an Ef > 1. In the case of assets with an average degree of pollution, the original reporting value will be maintained, by applying a Ef = 1. In the case of assets which, during their useful life, generate environmental costs higher than environmental benefits, the coefficient/factor is Ef < 1, leading to a restated amount lower than the carrying amount.

As a result of the proposed reclassification, the additional model for the restatement of balance sheet assets involves replacing the *liquidity* criterion with the *impact* criterion and leads to the presentation of two main asset categories, namely:

- Polluting assets and
- Neutral assets (in this order).

In terms of accounting treatment, the restatement leads to changes in equity, through positive (in the case of neutral assets) or negative (in the case of polluting

assets) *environmental restatement reserves*. This type of reporting highlights the pollution risk of every reporting entity, in the case of negative environmental restatement reserves, or its contribution to maintaining the natural capital, in the case of positive restatement reserves.

We propose that the restatement of asset value based on the environmental factor to be recognized as follows:

Restated asset = Positive environmental restatement reserve, if Ef > 1

or

Negative environmental restatement reserve = Restated asset, if Ef < 1

Regarding disclosure, the effect of the restatements can be observed in assets, through a reclassification, and also in equity, through the new reporting item *Net restatement reserve*, which may take positive or negative values.

Table 3

Example of a restated balance sheet

<table>
<tr><td colspan="4">Accounting balance sheet</td><td>Fiscal policies</td><td>Lending policies</td></tr>
<tr><td>Assets</td><td>Amount</td><td>Liabilities</td><td>Amounts</td><td colspan="2" rowspan="5">Traditional policies, based on economic values</td></tr>
<tr><td>Non-current assets</td><td>50</td><td>Equity</td><td>60</td></tr>
<tr><td>Current assets</td><td>45</td><td>Provisions</td><td>2</td></tr>
<tr><td rowspan="2">Accrued expenses</td><td rowspan="2">5</td><td>Liabilities</td><td>28</td></tr>
<tr><td>Accrued revenues</td><td>10</td></tr>
<tr><td>Total</td><td>100</td><td>Total</td><td>100</td></tr>
<tr><td colspan="4">Restated balance sheet (case 1 – positive net effects)</td><td colspan="2">Incentives, through:</td></tr>
<tr><td>Assets</td><td>Amount</td><td>Liabilities</td><td>Amount</td><td rowspan="3">Government grants
Tax decrease</td><td rowspan="3">„Green” loans (preferential interests, incentives for „green” investments</td></tr>
<tr><td>Polluting assets</td><td>40</td><td>Liabilities</td><td>100</td></tr>
<tr><td>Neutral assets</td><td>70</td><td>Positive net restatement reserve</td><td>10</td></tr>
<tr><td>Total</td><td>110</td><td>Total</td><td>110</td></tr>
<tr><td colspan="4">Restated balance sheet (case 1 – negative net effects)</td><td colspan="2">Penalties, through:</td></tr>
<tr><td>Assets</td><td>Amount</td><td>Liabilities</td><td>Amount</td><td rowspan="3">Taxation of negative impacts
Tax increase</td><td rowspan="3">Normal lending conditions</td></tr>
<tr><td>Polluting assets</td><td>75</td><td>Liabilities</td><td>100</td></tr>
<tr><td>Neutral assets</td><td>20</td><td>Negative net restatement reserve</td><td>(5)</td></tr>
<tr><td>Total</td><td>95</td><td>Total</td><td>95</td></tr>
</table>

Conclusions

Conventional accounting does not recognize or assess the environmental impact of the use of assets, often expressing the idea that traditional accounting techniques are incompatible with the concept of sustainability (Davies, 2009; Jones, 2010). For an organization to inform stakeholders on the social and environmental impact of its activities, voluntary reporting is an *apparent* solution, usually narrative, which may include recognition of externalities. From the user's perspective, such information it is encumbered by all the drawbacks of a voluntary and unregulated approach, including selective disclosure and inconsistent information. In our opinion, the main limitation of voluntary reporting is the lack of legitimacy, caused by the fact that there is no requirement for inclusion in financial statements and, accordingly, no auditing requirement.

Previous research demonstrates, however, a direct proportional relationship between the environmental impact of a particular industry and its availability to provide environmental reports (Deegan and Gordon, 1996; Patten, 1992).

Starting from this idea, we find that the model proposed through this research can be used for financial and non-financial reporting of environmental issues, as well as an instrument for environmental audits and for the assessment of environmental risks. We support the need to implement this model, given that such a reporting model would motivate economic entities to move towards the use of neutral assets, at the expense of polluting assets. Also, the entity stakeholders (for example governments, banks etc.) are factors that may influence its reporting policies, in favour of the additional reporting proposed above. The motivation of such an attitude lies in the possibility to adopt fiscal and lending policies consistent with sustainability goals, as presented in Table 3. Finally, such a reporting model has important implications for the assessment of environmental risks and for environmental audits, because it can serve as a tool for auditors.

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