

**A THEORETICAL MODEL FOR THE DETERMINATION OF THE ECONOMIC COSTS IN THE CONTEXT OF A FUNDAMENTAL DESIRE OF THE HUMAN KIND: THE SUSTAINABLE DEVELOPMENT**

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**Abstract**

*In this paper we propose a theoretical model for determining the economic costs. We will elaborate this model based on a concept of contemporary economists, namely sustainable development.*

*For our model will consider the effects of the entropy law, as well as the possibility for the economic agents to benefit or be victims of the outcomes of market failures, besides the concept of sustainable development.*

*The model of economic cost determination proposed is a theoretical one, because the economic reality of the countries generates specificities specific to the various activities that have to be taken into account through some adjustments made.*

*That is why we aim, as an objective of future researches, the development of concrete tools and techniques to determine economic costs.*

**Keywords:** economic costs, the law of entropy, sustainable development, market failures

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**1. Introduction**

In this paper we propose a theoretical model for determining the economic costs. We will elaborate this model based on a concept of contemporary economists, namely sustainable development (Pezzey, John C. V.; Toman, Michael A., 2002).

Specialists define sustainable development as a form of economic growth that meets society's needs in terms of well-being in the short, medium and

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long term. It is based on the consideration that development must meet present needs without jeopardizing those of future generations.

The need for the sustainable development of the society has been highlighted since 1992 at the Rio de Janeiro Earth Summit (United Nations Conference on Environment and Development, 1992) and reiterated at the World Summit on Sustainable Development in Johannesburg in 2002 (Earthsummit, 2002).

For our model will consider the effects of the entropy law (van Gool, W.; Bruggink, J.J.C., 1985), as well as the possibility for the economic agents to benefit or be victims of the outcomes of market failures (Joseph E. Stiglitz, 1989), besides the concept of sustainable development.

The Law of Entropy states that by operating, any system consumes both to produce and to "keep alive" (to continue to exist). This is one of the premises from which we will also start in developing the theoretical model for determining the economic costs.

## **2. Our Model**

Considering the idea stated above, we can say that any economic process involves inputs of resources higher than the outputs, some of which are consumed in order to operate the system under normal conditions. However, the economic entity is not interested in including all these resources in the cost of the products obtained, nor would it be normal to do so because, as an independent legal entity, it must only provide the necessary funds to secure those resources for which the acquisition implies payments. However, the economic practice shows very clearly that not all the resources consumed by the enterprise are obtained as a result of the advanced contraptions. A part of resources, often important, is used by the economic entities free of charge, and is not included, therefore, in their production cost. The costs of some of these resources are often borne, as we will see, from people other than their consumers. On the other hand, economic entities must include, also, in the cost of the results obtained as a result of their activity the value of the slaughtered opportunities for them to exist.

However, the society as a whole does not have to include in the economic cost of an activity the value of all the resources consumed for its development because a part of these resources is regenerated at a faster pace than their consumption. In this sense, the analysis of the entropy law through the concept of economic costs has the effect of achieving a "elixir" of sustainable

development. The equation of the process of obtaining the value according to the law of entropy is:

Equation (1)

capital + labor + natural potential = capital + labor + plus value + waste

The natural potential in the presented equation will be entirely part of the economic cost of an activity carried out only if it includes only non-renewable resources or renewable resources whose regeneration capacity is lower than the rate at which they are consumed.

The natural resources can be categorized from the point of view of how they are recovered in:

- non-recoverable (non-renewable) resources, the value of which is fully embedded in the economic costs;
- recoverable (renewable) resources which, in turn, contain both renewable resources which recover faster than the rate at which they are consumed and non-renewable resources.

The amount of the first ones must be partly incorporated into economic costs.

The concepts of sustainable development and reduced economic costs become, as a result of the above, different ways of expressing the same economic reality as the sustainable development can not be achieved without reduced economic costs, while low economic costs can not lead to sustainable development. In this sense, the main objective pursued for sustainable economic development must be, in our opinion, to reduce the consumption of irrecoverable resources (because in this way the value of the resulting waste will decrease considerably), while replacing them with rapidly recoverable/renewable resources or, in other words, the reducing of the economic costs.

The economic cost of an activity differs greatly from the cost supported by producer of the same activity and the difference between the two concepts also arises because the latter has limited addressability, being largely beneficial to the producer and to a small extent to the society as a whole, while the former is not of interest for the owners of the economic entity, but is extremely important for the sustainable development of mankind.

Nevertheless, almost all the costing models developed so far are centered on determining the costs for the manufacturer. This situation can be partly explained by the technical difficulties implied in determining economic costs.

But it is largely generated, in our opinion, by the conceptual confusions that give rise to incorrect definitions of the economic costs. We recall Paul Heyne's (1991) often quoted definition that "the real cost of any action is the value of the alternative chance to be sacrificed for the purpose of undertaking that action." The American professor does not define here the real cost of an activity but the cost of it for its producer. The (real) economic cost can not be defined from the (subjective) perspective of one or other of the market participants and the chances they have sacrificed, but should be viewed "through the eyes of the market" as a whole. In this sense, the notions of externalities and public goods are of a paramount importance for understanding the concept.

Resources consumed to perform an activity can be grouped either by their ability to recover them in recoverable and non-recoverable or by the way they were acquired in resources the value of which is borne by the person carrying out the activity and resources the value of which is not borne by that person.

Starting from the idea that the economic cost of an activity includes the amount of resources consumed as a result of carrying out that activity, regardless of whether it is borne by the producer or by the society as a whole, we will try to develop a theoretical model to determine it.

Within the resources borne by society as a whole, we also take into account the externalities and public goods used or generated by the activity carried out. Thus, the economic cost will comprise, in addition to the costs of the resources acquired as a result of the contraptions made also parts of the value of the public goods and the positive externalities consumed or parts the costs of the negative ones generated.

We say "parts" because, if transaction costs are greater than the effects obtained by internalizing externalities, this is not efficient and therefore it is not desirable to include them in economic costs. Also, the public goods and the positive externalities should not be included in the cost if we are talking about renewable goods whose regeneration speed exceeds the rate at which they are consumed. We do not therefore support the idea that the polluter has to pay for any amount of pollutant produced. The economic cost must reflect the consumption of resources, or if the environment has the capacity to absorb the effects of pollution without being affected, no consumption of natural resources is involved. The same treatment must be applied to the public goods to include a part of them in the economic costs. Their value must affect economic costs only to the extent that the speed at which they are consumed exceeds their regeneration capacity and the costs involved in internalizing

consumption of public goods are lower than the effects obtained through this action.

Looking at the theory of market failure and the theory of entropy, we find that they can be connected because they present a series of points of tangency. Thus, the elements of natural potential, not included by other theories of value in the value equation, are to a large extent represented either by public goods or by externalities. By replacing the natural potential with the two components in the value equation we obtain:

Equation (2)

capital + labor + public goods + externalities = capital + labor + plus value + waste

By reducing the common factors on both sides of the equation above we obtain the following equality:

Equation (3)

public goods + externalities = plus value + waste

As a result of the reasoning presented, it follows that the added value obtained as a result of the economic activity is "created" as a result of the attraction in the economic processes of the public goods and of the externalities. However, in our opinion, the above equilibrium is preserved only if the resources used in the form of public goods and externalities are consumed at the same rate as the resulting waste is regenerated. This situation, however, is often only a theoretical construction generated to reflect a situation of equilibrium. However, in the real world, we face on the market the situation when public goods and externalities are consumed more quickly than regenerating the resulting waste or the reverse situation.

Therefore, the equation of value proposed in the theory of the entropic value is, in our opinion, only a particular case, the actual market situation being rather schematized in the form of two inequalities:

Equation (4)

capital + labor + public goods + externalities > capital + labor + plus value + waste

or

Equation (5)

capital + labor + public goods + externalities < capital + labor + plus value + waste

The second inequality occurs when the waste regeneration capacity is higher than the speed at which the externalities and public goods entered into the system are consumed in the form of natural potential and is the ideal case in which sustainable economic development is assured.

However, the economic costs will only include a part of the value of the public goods and externalities attracted to economic activities. Starting from the costs for the producer, they will have to be adjusted by deducting the value of the chances sacrificed by the producer and by including the value of public goods and externalities whose transaction costs are lower than the results obtained by internalizing them with the condition that the waste resulted are non-renewable or their regeneration rate is less than that with which externalities and public goods are consumed. In the latter situation, the economic cost will have to be affected only by the expression value of the difference between the speed of rotation of the consumption of public goods and the externalities and the speed of the waste regeneration.

The way of forming the economic cost starting from the costs for the producer can be schematized as follows:

**Figure 1. The way the economic cost forms**

<b>COST FOR THE MANUFACTURER</b>
- Default costs
+ Externalities and public goods
+ Trading costs for externalities and public goods
- The amount of renewable waste before the start of the next productive process
<b>= ECONOMIC COST</b>

Source: Own source

### **3. Conclusions**

The model of economic cost determination proposed is of course a theoretical one, because the economic reality of the countries generates specificities specific to the various activities that have to be taken into account through some adjustments made.

That is why we aim, as an objective of future researches, the development of concrete tools and techniques to determine economic costs.

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