IMAGE OR MIRROR IMAGE?
SOME THOUGHTS ON SUSTAINABILITY

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SUMMARY FINDINGS, CONCLUSIONS, RECOMMENDATIONS

The shortcomings and biases of traditional macroeconomic indicators are even more obvious if we analyse them from the point of view of sustainability. There are different goods and services behind monetary units measuring the economy. Some goods serve life while others can lead to death. Indicators measuring economic growth, e.g. GDP, completely conceal this difference. The growth of GDP is slowly becoming the only goal and in many cases this is not compatible with the idea of sustainability. Mainstream economics still assumes that all goods produced serve welfare. We have to consider the external effects of our activities, realising that negative externalities result in public bad and not public good, and that hidden positive externalities may result in social losses. In the case of negative externalities the growth of positive GDP is misleading, because society has to pay a high price for this positive image (with degradation of the natural and built environment, health problems, loss of biodiversity etc.). The main difference between traditional, growth oriented economic strategies and sustainability is how economic development is seen. Thus, in the case of sustainability, the aim is development instead of simple growth, quality instead of quantity, and the economy serves as a tool. In this context, how coherent and consistent various goals, programmes and strategies are in practice was also investigated. From the point of view of realising sustainable development, we consider the regional level important for several reasons, therefore, in the second part of our study we analyse the relationship of sustainability and convergence.

INTRODUCTION

"The Nobel Prize in Chemistry in 2001 was awarded to two American and a Japanese researcher for their work in the field of chiral synthesis. The word "chiral" originates from the Greek word "keir", meaning hand. Our left and right hands are mirror images of each other. Most of the molecules of living beings have similar characteristics of symmetry, that is, they are chiral molecules… The image and its mirror image have the same energy, all their characteristics are the same except for one: one of them turns polar light left, the other turns it right, with the same angle. Although the molecule and its mirror image differ in only one characteristic, still, only one of the two forms is dominant in nature. The biological effect of a medicine depends on whether we take the image or the mirror image into the body, it can be a matter of life and death." (12)

Csaba Szántay started his presentation at the University of Omniscience in the autumn of 2004 with these thoughts. In connection with this it was realised that we can experience a similar phenomenon during economic analysis when analysing various elements of the GDP. Behind monetary units (Forint, Dollar or Euro) serving to measure the performance of the economy there are different goods, some of which serve life while others may even lead to death. Still, indicators that measure quantity and growth, first of all Gross Domestic Product (GDP), completely neglect this difference, moreover, they suggest that all elements of GDP support welfare, life and sustainability. This way, the growth of GDP is becoming the goal in itself.

THE RELATIONSHIP OF TRADITIONAL MACROECONOMIC INDICATORS AND SUSTAINABILITY

Sustainability indicators (e.g. NEW, ISEW, GPI) that were created as an alternative to GDP, actually aim to distinguish the images and mirror images, that is good and bad. (14)

However, the calculations are still very elementary and too aggregated. At a higher level, the level of national economies, activities with different effects are so mixed that they can hardly be separated.

There are several biases in the GDP and GNP macro indicators, used in the economic statistical system of the UN:

- Firstly, national accounts do not reflect changes in the quality of the environment and natural resources. Gross Domestic Product provides information for politicians and economic decision-makers about the management of productive capital through tracking investments and amortisation. However, it does not give any information about changes occurring in natural capital.
- Secondly, goods and services provided by the environment are not included among the incomes in GDP, although they influence welfare levels. Services provided by the environment that reduce the economy's emission reduction costs also remain hidden (e.g. the self-cleaning capacity of environmental media). This is a problem partly because these environmental services directly influence the production of marketed goods and in this way GDP. At the same time, natural capital provides non-marketed services as well, and according to some standard estimates, the value of these services is higher than that of marketed ones.
- Thirdly, several expenditures for environmental protection increase GDP. The situation in this case is strange because GDP mostly takes account of those products or expenditures related to environmental protection that serve the so-called "end-of-pipe" and follow-up or curative environmental protection. In this way, production with environmental pollution together with environmental protection will increase the GDP twice. First, when we add the production of the polluting activity, and secondly, when we calculate the value of pollution reduction. Preventive, environmentally friendly, material and energy saving production will at the same time, reduce the GDP. In this case it is possible that GDP will decrease while welfare is growing. (14)

These measurement biases mean that the growth rate measured by GDP statistics overestimates the development of welfare. Its effect on decision-making is significant. It is hardly debatable that governments give priority to those interventions that enable economic growth. However, if we measure economic growth without taking into account its negative environmental effects, there will be a sharp contradiction between economic policy and social ex-

pectations. In order to judge the situation realistically, we should know what proportion of Gross Domestic Product is needed to cover the damages and losses caused by economic activity and substitute those environmental functions that used to be available without paying for them, e.g. the self-cleaning capacity of the environment. We should also have information about the level of irreversible degradation of renewable resources due to the production process. Can they be utilised in an economically satisfactory way or can they only be improved by ecological development projects? In regard to non-renewable resources we should know the consequences of production and the role of reutilisation (recycling) and the environmental damage caused by production. (14)

PUBLIC GOOD OR PUBLIC BAD

Mainstream economics still does not recognise and admit the "chiral characteristic" of the economy and assumes that all goods produced "turn" in the right direction, that is, serve welfare. *Pigou* highlighted this contradiction from the point of view of externalities[1] in his book Economics of Welfare in 1920. (10)

Quasi recognising the chiral characteristics of the economy, he draws our attention to the fact that if we carry on our activity unchanging and do not take into account the external effects, negative externalities will result in public bad instead of public good and the fact that positive externalities remain hidden will result in social losses.

Producers do not pay the negative external cost of polluting activities and the actual social cost of the supply will remain hidden. This is represented in Figure 1.

[1] Externality – external effect – is the accidental side-effect of a company's or person's legal activity on the profit or welfare level of another person or company ((6) p. 137.)

The demand for the product or service is represented by the demand curve (D). "PC" represents the private cost of production, while "SC" represents the social cost. This curve (SC) is above "PC" in cases of negative externalities because it also includes those costs and damages that are caused by the negative externalities.

If the market is not environmentally regulated, producers produce "Q_m" quantity, because in the case of a competitive market this represents the maximum producer surplus. However, if we take into account negative externalities, we can see that this situation is not socially effective, because the social optimum is at production level "Q^*" and not "Q_m".

We can draw several conclusions from this figure about the market distribution of goods that result in environmental pollution as an external economic effect. In a market which is not environmentally regulated:

- the quantity of polluting products produced is too high;
- the level of pollution is too high;
- the price of products responsible for environmental pollution is too low;
- while the costs are external, the market does not generate any motivation that serves cleaning, the application of environmentally friendly technologies or the production of cleaner products;
- the re-utilisation of pollutants is not encouraged, because it is simple and cheap to emit them into the environment.

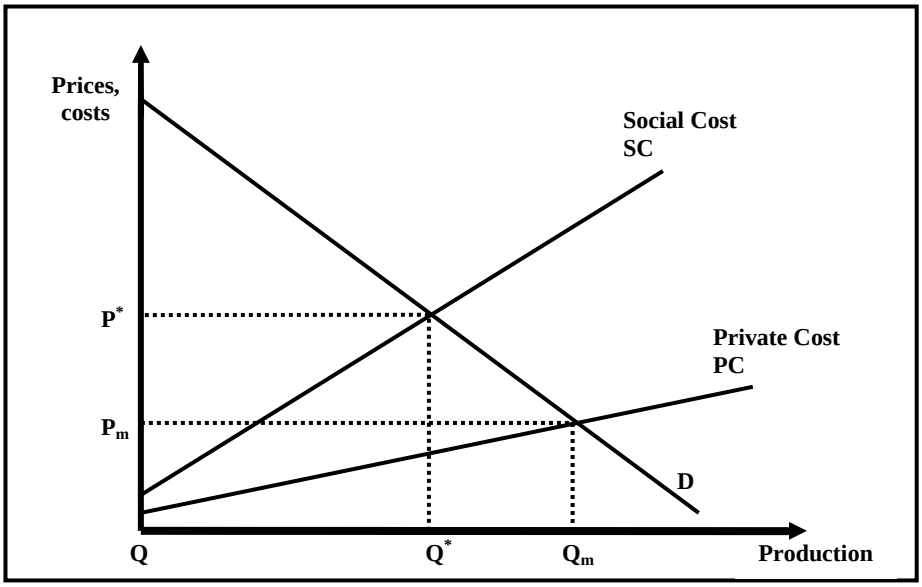
GDP calculates on the basis of the private costs of the supply, and each element is positive in this calculation, although some of them have to be paid for by society. From the point of view of "chiral characteristics", in the case of negative externalities the growth of GDP is only a "mirror image", as society has to pay a very high price for the positive image (with degradation of the natural

and built environment, health problems, loss of biodiversity, etc.).

Positive externalities similarly remain hidden. In the case of positive externalities we can draw the Figure 2.

Figure 1

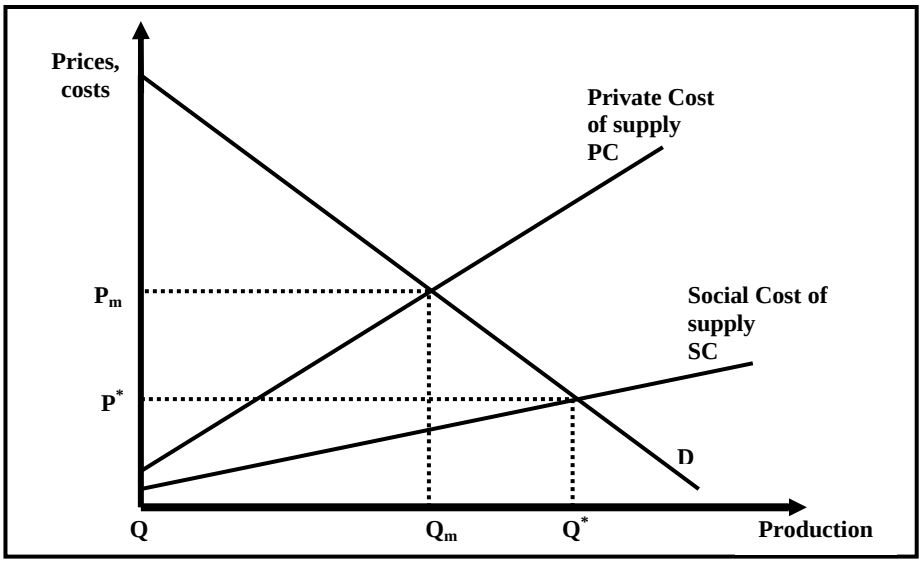
Market distribution with environmental pollution (negative externalities)



Source: (9) p. 171.

Figure 2

Market distribution in cases of positive externalities



Source: Own compilation

The classical example for positive externalities is the case of the beekeeper and the owner of an orchard, where the bees, while collecting honey, as an external effect pollinate the orchard, causing extra yield and profit for a third person, the owner of the orchard.

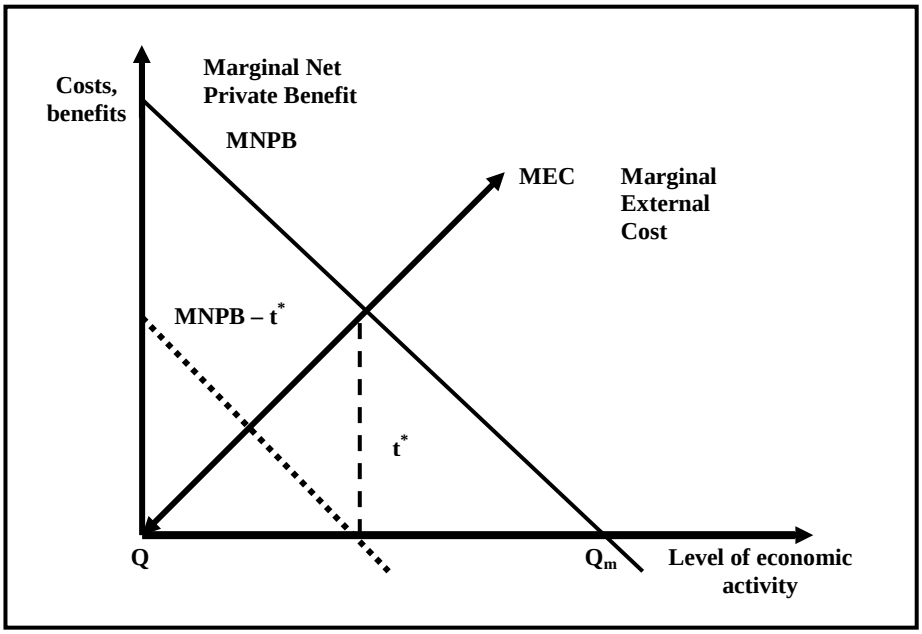
Positive external effects arise as cost reducing factors (e.g. the production growth and cost reduction caused by the pollination). However, this positive effect is not realised by the third actor in the case of a traditional market, sometimes he tries to prevent it and in this way, with a lower production level (Q_m), society loses some welfare effect.

Pigou discusses the internalisation of externalities. In the case of negative externalities this can be realised by pigovian taxation.

Now we shift from the macro level to the level of enterprises. The effect of taxation is represented in the following figure (Figure 3).

Figure 3

The optimal level of pigovian tax



Source: (9) p. 183.

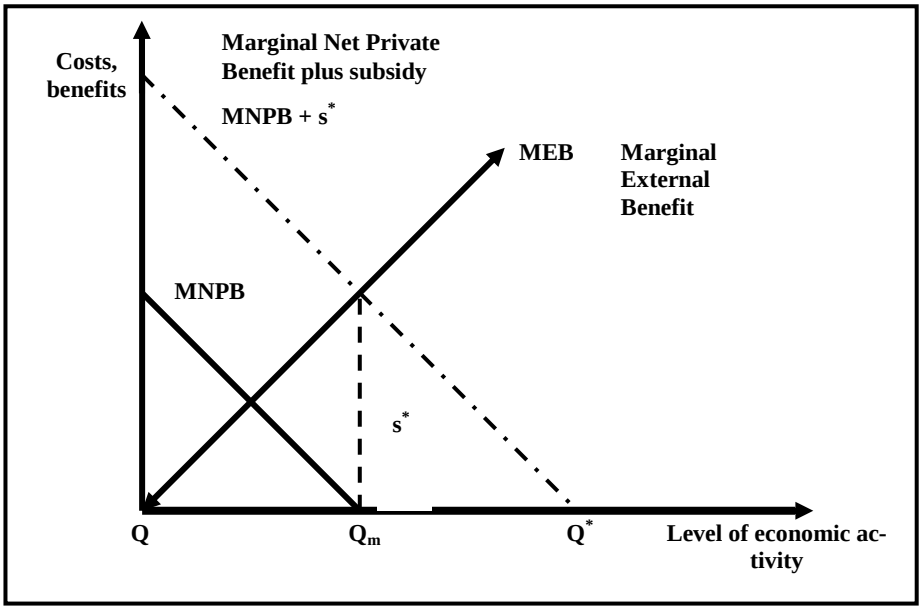
(In Figures 3 and 4 we represent marginal costs and benefits assuming that pollution costs are proportional with the level of economic activity.)

According to *Pigou*, if there is a tax equal to t* per unit imposed on the polluting activity, this motivates companies to reduce their activity from Q_m, which was economic for them, to the social optimum Q*. Optimal tax level equals the marginal external costs belonging to the actual pollution level.

While pigovian taxation is well-known and accepted in environmental policy, pigovian subsidy (pigovian subvention) is hardly ever applied. However, this is just as important in the case of positive externalities as the taxation of negative externalities. The optimal level of pigovian subsidy is demonstrated in Figure 4.

Figure 4

The optimal level of pigovian subsidy



Source: Own compilation

In Figure 4, s* means the optimal level of subsidy, which equals the level of positive externality. Because of the positive social effect, instead of marginal external cost (MEC) we can define marginal external benefit (MEB).

By supporting the positive external effect, society can gain the increased social benefit that is the sum of the marginal net private benefit (MNPB) and the subsidy (s*). The subsidy motivates the producers to increase their production from Q_m, which was economic for them, to the social optimum Q*.

If we analyse Figures 3 and 4 purely from the mathematical aspect, we can see that it is a neutral solution from the point of view of the national budget. Actually there is a double positive effect from the point of view of social costs and benefits. Pollution will be reduced due to the taxation and the role and effect of positive processes will grow due to the subsidy. On the whole, social benefit will (might) increase. As a result of the duplex regulation (taxes, subsidies), the economy may perceive a more realistic situation instead of the false mirror image.

Negative and positive external effects often occur together. In these cases taxes, charges and subsidies can be applied. For example highways, especially motorways, have both social benefits and local, regional damages. If we do not take them into account carefully, it might lead not only to significant economic losses but also serious social-political conflicts.

So far we have introduced only one possibility for the marketing of externalities, that is, pigovian taxation and subsidies. However, there are several other policy measures leading to forms of production and consumption that support long-term economic welfare and sustainable development.

It is very complicated to start the actual processes, because every single step may be and often is in conflict with stakeholders' interests. This is because the effect is often structural change and regional realignment.

In the following part, we write about why we consider the regional level especially important from the aspect of sustainability, and how the realisation of sustainability goals can serve regional convergence. The regional, local level is particularly important from the point of view of the processes described in the first part of the study too, because the actual content and effect of activities is much more realistic at this level than at national and global levels.

SUSTAINABILITY AND CONVERGENCE

Sustainability – which is a way of thinking, life, production and consumption – covers all dimensions of human existence, its relation to natural resources, the economy and society. Sustainability can be the solution – besides research and development processes – to global problems like the globalising economy and market competition, global warming, poverty and famine. United Nations' actions from Rio to Johannesburg and EU decisions seem to underpin this. Attempts at sustainability have, up till now, been conducted at the global level with meagre results.

The European Union can be considered a leader in enforcing the idea of sustainability, taking into account that all its main documents include, or at least mention, the requirement of realising sustainability, which is a basic prerequisite for its practical realisation. The question is how coherent (convergent and connected to one another) and consistent (not contradictory) are the various goals, programmes and strategies.

The competitiveness goals of the *Lisbon Strategy (2000)* were completed by the EU Sustainable Development Strategy formulated in Gothenburg (2001). The mid-term evaluation of the *Lisbon Strategy* (2004) confirmed that the EU has to become a competitive and dynamic knowledge-based society while realising qualitative and quantitative improvements in employment and better social cohesion as well as sustainability (5) (7).

Investigations so far have confirmed the importance of local level, sustainable settlements, central to which is the improvement or at least preservation of local inhabitants' living conditions, standard of living and environment, with the help of various solutions focusing on sustainability. These measures can affect various fields, for example sustainable agriculture and rural development, sustainability marketing and management, sustainable consumption, sustainable finances, sustainable tourism or training and education. The role of the local level has to be especially emphasised in Hungary, because of the relatively high ratio of rural areas and population compared to the EU average. (1) (13)

Approaching the issue from the dimension of sustainability we can say that according to the logic of sustainable development, the basic aim is to improve living conditions and standards. The main difference between the traditional, growth oriented economic strategy and sustainability is how economic development is seen. Thus, in the case of sustainability, the aim is development instead of simple growth, quality instead of quantity, and the economy serves as a tool.

THE ISSUE OF PRACTICAL IMPLEMENTATIONS

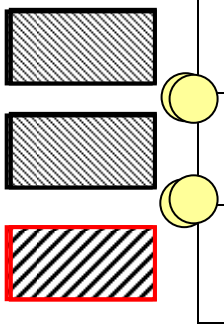
The three priorities of the EU programming period of 2007-2013 are convergence, regional competitiveness and

employment and European territorial cooperation. Convergence serves the support of growth and employment generation in less developed countries and regions. They would basically like to realise convergence by improving the competitiveness of the mentioned territories. Instead of the earlier three goals and four community initiatives, three priorities have been formed, with convergence and competitiveness receiving 78% of community contributions. (6) The question arises: what can be the common denominator for the three priorities?

Global, regional, national and local level programmes and concepts work in isolation. In order to reach convergence it would be necessary to have a common principle to organise the programmes of different areas without reducing their effectiveness. This common principle could be sustainability, meaning the conservation of natural capital while ensuring income levels and sustainable development.

Figure 5

Sustainability and convergence



	Natural environment	Society	Economy
Global			
Regional			
Local			

Employment, healthcare, environmental, agricultural and touristic programmes developed at regional level are often in a synergic relationship. (17) There are some multi-dimensional synergies; in this case the programmes influence each other's effectiveness in the case of multiple indicators. In practice, however, it is possible that better realisation of one programme will decrease the efficiency of another one.

Figure 5 illustrates the relationship of sustainability and convergence. The rectangles at the crossing points of levels and dimensions demonstrate the strategic conceptions, aims and programmes of convergence at different levels, for example competitiveness, employment, agricultural and rural development programmes, etc. It is important that these should form a consistent system, without any negative synergies. The grey circles illustrate linkages helping convergence. A holistic approach is naturally a basic condition, it is important to exclude imponderabilities[2] from the system, which would limit the required effect.

The local level is the basic unit from the point of view of convergence, because the basic goals of convergence, that is liveability, the living standard, competitiveness, employment and the development of the area, are determined

[2] Factors that cannot be measured but are present with their effects

here. Initially, *Local Agenda 21 (1996)*, rural development and the LEADER program (1991) were not developed in a coherent way, as elements of a system, without any common principle, but both initiatives were aimed at the local level, so the obtainable effect was initially limited.

LEADER was started as a community initiative to support the development of rural areas and it became a measure to realise sustainability and improve the standard of living in rural areas by the third programming period. Beside LA-21 and the LEADER program there are several sub-goals and sub-priorities in the programmes of certain countries. If all of these had been formulated in terms of sustainability, the achievement of bottom-up, voluntary, self-organised and self-supportive initiatives to realise liveable settlements would have been much further advanced, which would serve the European Union's attempts to sustain the population of rural areas, ensure living conditions and preserve the functions of the countryside.

The development level and potential of rural areas strongly influence regional development and potential competitiveness. Worsening living conditions in rural areas might threaten the economic development of some regions or the national economy. If rural areas are not able to perform all of their functions (economic, productive, ecological, social and cultural) sufficiently, this can undermine the socio-economic basis of the region or the whole country. Rural and spatial development often have common goals, it is sometimes difficult to separate the two categories. For spatial development, economic, technological and financial aspects are dominant while for rural development local communities, natural and cultural values and traditions come to the forefront. Sustainability is the link between the two areas. (1) (13)

It is especially important in Hungary in order to reach the level of more developed countries, that the basis of the convergence attempts of national development programmes should be sustainability, because this way the individual elements of the system can be harmonised and synergy can be realised. Harmonised with sustainability, convergence can be realised more efficiently, with figures that demonstrate and serve sustainability, primarily at a local but also at regional and global levels as well as in the dimensions of society, economy and the natural environment.

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