

# VECTORS OF INNOVATION FOR BALANCING ECONOMIC GROWTH AND SUSTAINABLE DEVELOPMENT

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## Abstract

Economic growth and sustainable development are important issues for social prosperity. Sustainable development strives for moderate and responsible use within the economic activity of the limited resources of our planet, whereas economic growth does not limit the resource exploitation and energy, being mainly focused on productivity increase. From this perspective, both conceptual and operational conflicts occur between the two pillars of prosperity. This paper looks to these conflicts and proposes some streams of intervention such as economic growth and sustainability to operate in harmony. A structured framework for innovative problem solving called TRIZ-M is considered in this respect. Results of this research show that it is possible to induce smart measures in the economic system for directing businesses towards new paradigms where economic growth is possible without negative effects on sustainability.

## Keywords

Economic competitiveness, economic growth, sustainable development, innovation policy, prosperity.

## JEL Classification

O47, Q01

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## Introduction

Competitiveness is not only about economic performance of a nation, it is also about the environmental and social performance. The synergy between these three dimensions of performance is the path towards sustainable competitiveness (Herciua and Ogreana, 2014). According to the strategic document of the European Commission (EC) called Europe 2020 “A European strategy for smart, sustainable and inclusive growth” (European Commission 2010), European Union (EU) must act to be smart in innovation, education, training and lifelong learning, as well as digital society; sustainable in competitiveness, combating climate change and using energy more efficiently; inclusive in employment, skills and

fighting poverty. For achieving these goals EU countries must perform some steps forward (Herciua and Ogreana, 2014).

Commitment is not enough, because in a highly volatile and competitive market environment, speed of action is also essential (Yang and Meyer, 2015). Nowadays, in the capitalist economic model, economic growth is considered as a basis for welfare of societies. Using the concept of gross domestic product, economic growth is currently treated as an aggregated growth of production of goods and services in various sectors of the economy. For example, the main source of economic growth in agriculture is efficiency improvement (Bezat-Jarzębowska and Rembisz, 2013).

However, new definitions and new approaches to assess competitiveness of the EU countries have been recently discussed in the economic literature. The traditional approach of counties' competitiveness evaluation oriented on cost-based measures such as unit labor costs, REER or unit labor productivity is not sufficient. Today's Europe seeks for sustainable, smart, inclusive and environmentally friendly economic growth. From this perspective, the traditional cost-based approach of productivity assessment provides a limited perspective. For instance, potentiality of knowledge-based economy and firm-level perspective are not captured by the traditional approach (Rozmahela, et al., 2014). Regardless of whether cognitive competence causes national wealth or whether there is a reciprocal relationship, aid directed at improving the cognitive competence of a population should have an economic payoff (Hunt and Wittmann, 2008).

From the perspective of knowledge-based economy, there is a growing interest in the role and contribution of e-government towards reduction of corruption, economic prosperity and reduction of environmental degradation in the nation states. For example, while corruption will not be recognized as a global problem for the conservation of biodiversity, effective actions will not happen. Emerging studies have found that the level of corruption in a country is positively associated with environmental degradation (Krishnan, et al., 2014).

It is also important to note that social conflict and slow growth are specific characteristics of many developing economies. The importance for these economies of deeprooted institutions of property rights and conflict management that provide a foundation for individuals in the enforcement of their property claims is increasingly recognized. In this context, some researchers have found that maximization of economic efficiency may call for a reduction in growth in order to mitigate the problem of diversion, even though the economy's growth is inefficiently slow in the absence of taxation (Gonzalez, and Neary, 2008).

The development of an increasingly globalized economy adds new urgency to humanity's efforts in order to anticipate the challenges ahead and the opportunities for further prosperity. Calamities that once were regional in nature, such as endemic diseases, economic boom and bust cycles, or local social and political conflicts, now can rapidly spread to unravel the fabric of previously far-flung places. However, globalization can also help mobilizing distant resources to address local challenges. The uncertainty about possible outcomes of ever larger numbers of interactions among ever larger numbers of people, businesses and institutions, keeps increasing, and the prospects for true surprises keep rising (Ruth et al., 2011).

Recent contributions to ecological economics and related social sciences indicate that issues such as climate change, resource depletion and environmental degradation cannot be effectively addressed under conditions of continued economic growth. Indeed, in the absence of evidence for absolute decoupling of GDP growth, material resource use and carbon emissions, it is remarkable that most policy approaches do not question the priority placed on GDP growth (Fritz and Koch, 2014).

Since economic growth is intrinsically linked with an increased production of goods and services, and on its turn this is linked with resource depletion and environmental impacts such as global warming, the assumption of continued economic expansion in rich countries challenges the possibility to achieve prosperity without growth (Jackson, 2009). Thus, for developing sustainable products design engineers need to foresee diverse interrelations between a product's characteristics and its economic, social and environmental impacts (Buchert, et al., 2015).

In this context, the present paper treats the complicated aspect of balancing two contradictory dimensions related to prosperity of civilization: economic growth and sustainable development. In this respect, the paper includes a background section where the meaning of economic competitiveness is analyzed in relation with prosperity from a niche angle. It is shown that economic growth does not necessarily lead to social prosperity in any conditions. Further, in the next section of the paper the perverse effect of economic growth in relation to social prosperity is analyzed. Major conflicts are identified, too. They are afterwards tackled from an innovative perspective, revealing several lines of action towards ensuring economic growth with lower or low impact on sustainable development. Examples of policies in relation to this issue are also revealed. Paper ends with conclusions and insights on future researches.

## **Background**

Economic competitiveness is a major indicator for nations, regions and companies in terms of capability to operate in the global market with success. There is no unanimous definition of economic competitiveness (Huggins, 2003). For example, the Irish National Council of Competitiveness considers economic competitiveness as the ability of a nation to be successful on the international markets in order to improve the quality of life of the whole nation (NCC, 2014). The World Economic Forum sees economic competitiveness as the ability of a nation to get high and sustained rates of the GDP/CA (WEF, 2014). At Harvard Business School, the recent definition of economic competitiveness considers social aspects incorporated. Thus, a nation or a region is competitive in the limit in which companies that operate within that space are capable to compete with success in the regional and global economy improving in the same time wages and living standards of the ordinary people (HBS, 2013). There are several other similar definitions of economic competitiveness, but they are not mentioned here because literary do not bring new perspectives on this concept.

An important issue that is not captured by any definition of economic competitiveness is the ethics of governments and multinationals (MNCs) in the international politics. This aspect is graphically captured in Fig. no. 1. According to Fig. no. 1, several aspects generate barriers for economic development of a nation. They include the protectionism of national markets, health of national economic environment, national and international legislation, commercial wars, as well as the ethics of strong governments and MNCs on the

international politics. These barriers require extra-innovation for the firms operating in a given economic environment in order to ensure and maintain attractive levels of productivity and wages for workers.

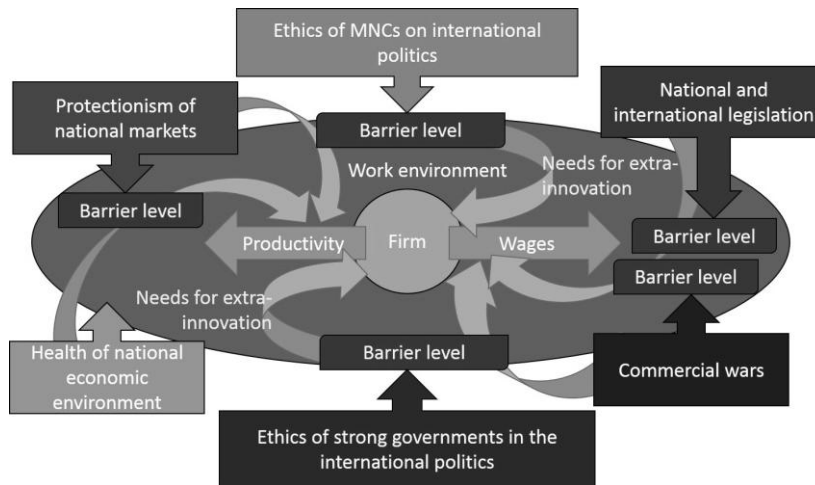


Fig. no. 1. Barriers in the equation of economic competitiveness (authors' contribution)

This paper proposes a more nuanced definition of economic competitiveness. It defines economic competitiveness of a nation as the measure of happiness, welfare, health and social statute of the ordinary people, together with the average ethical and moral level of its citizen, with the preservation, renewal, diversification and sustainable development of human, natural, financial and technological resources of that nation through the prism of development and sustainability of social entrepreneurship initiatives and commercial viability on short and medium term of the autochthon companies in the national, regional and international competition, constrained and/or distorted by egoistic interests of “zero sum result” type, corruption, imperialism, commitments of economic stability and political manipulation.

This definition highlights the fact that a high and growing GDP/CA does not necessarily mean an automatic increase of the population welfare. A robust and durable economic growth, which allows high rates of workforce productivity and employment, requires capabilities from the public and private socio-economic entities to sell, and especially to export, at a large scale products and services with high value added, as well as to attract external resources (human, financial, etc.) to sustain development. Is this possible such as all countries to win? In theory, this requires honest directions to increase GDP/CA, both from moral, social and ecological points of view, as well as optimal from economic point of view (i.e. to maximize effects in the given constrain space of action). Thus, to ensure social prosperity, extra-innovations are necessary in the equation of economic competitiveness. Association of economic growth with economic competitiveness has a dark side. There is a perverse effect of economic growth in relation with social prosperity; that is, economic growth seen from the classical perspective affects in a negative way sustainability both from social, ecological and economical perspectives, as long as it mostly operates with traditional resources that are energy intensive and quantitatively limited.

## Methodology

The methodology to approach the conflict between economic growth and sustainable development is formulated around the scheme from Fig. no. 2. On one side, classical paths for economic growth generate more complications in society, including negative effects on sustainable development. On the other side, the question is about the possibility to ensure social prosperity without economic growth.

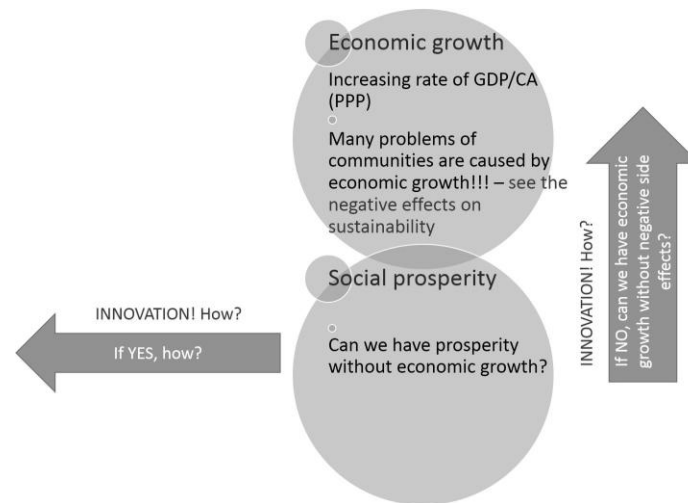


Fig. no. 2. Dilemma between sustainable economic growth and social prosperity

In this context, this paper introduces the TRIZ-M method as a tool for tackling this conflict in an innovative way (Brad and Brad, 2013). The method associates to a pair of conflicting problems a set from one to four vectors of innovation. These vectors describe generic directions where solutions make sense to be formulated. In order to find out more around this method please consult the web: [http://193.226.17.76:8080/sts291-mvc/tool\\_cmx.do?aProject=1&aSet=1&aAct=1&aTarget=1&aActivityName=1](http://193.226.17.76:8080/sts291-mvc/tool_cmx.do?aProject=1&aSet=1&aAct=1&aTarget=1&aActivityName=1) that introduces a software tool developed by the authors for easy application of TRIZ-M. In the framework of TRIZ-M, economic growth is associated with the improving parameter “amount of substance (e.g. money, know-how, output, etc.)”, and sustainable development is associated with the affected parameter “secondary (side) harmful effects on the system”.

The TRIZ-M pair leads to the following generic vectors of innovation: (a) increase the local quality; (b) transformation of system properties; (c) composite structures; (d) inert environment. Each generic vector of innovation has several guidelines. They are shown in Fig. no. 3. For example, the vector called “increase of local quality” is detailed into: transform a homogeneous structure into a heterogeneous structure or vice versa; make such as different parts of the system to perform different functions; each part of the system to be placed in the most favourable position for its operation. See the other details in Fig. no. 3.

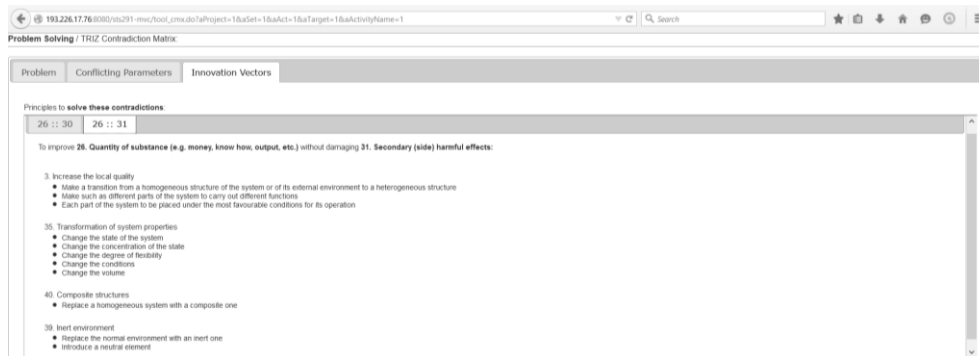


Fig. no. 3. The results of TRIZ-M application

The vectors of innovation and their guidelines are sources of inspiration for the policy makers to formulate solutions to the problem under considerations. This issue is treated in the next section of the paper.

### Balancing economic growth and sustainable development

Following the guidelines revealed in the methodology, several innovation policies are proposed in this paper to balance the contradictions between economic growth and sustainable development. The first group is referring to “local quality”. With respect to the line “change the external influence from uniform to non-uniform”, the following innovation policies are encouraged in this paper:

- Put more accent on projects that promote moral evolution
- Encourage reverse and inclusive technological innovation (e.g. affordable technologies for low-end consumers and disadvantaged communities)
- Lead moderate consumption by higher taxation
- Support economic initiatives that promote “common shared value” practices.

The line “change system structure from uniform to non-uniform” is interpreted in this paper by the following innovation policy: over-taxation on energy, raw material and transportation. For the line “make each part of the system to work in the most favourable conditions”, the proposed innovation policy is: optimized budgetary allocation and distribution based on criteria referring to prosperity. For the line “each part of the system to perform a self-sustainable useful function”, the recommended innovation policy is regional and zonal diversified smart specialization.

For the group “parameter change”, the following innovation policies are revealed: more focus on knowledge-based economy, more accent on intangible assets, incentives for resilient factories, development of circular economy, more focus on e-economy, on “green economy” and mostly on “blue economy”. The group referring to “preliminary actions” leads to possible innovation policies like: impose investment models based on life-cycle costs, increase connectivity in communication and know-how through open innovation practices, regional economic autonomy. The group “composite structures” leads to the following possible innovation policies: incentives for business models based on polycentric innovation, support for strategic aligned cluster initiatives, co-opetition models and

collaborative consumption of expensive infrastructure investments. Several others innovation policies can be formulated in the spirit of the fourth innovation vectors introduced by this paper.

## Conclusions

In the context of exponential growing of the population in some regions of the globe, of visible climate change and saturation of many traditional markets, to which can be added the brutal and immoral exploitation of natural resources, exponential increase of energy needs in a few concentrated parts of the world, globalization of the financial capital and businesses, increased discrepancies between poor and rich people, the call for rapid measures towards sustainable development is fully justified. However, the fear for a painful transition that could lead not only to economic problems but mainly to social problems, determines policy makers to approach sustainability in a very timorous way. This paper shows that this dilemma can be tackled in a creative way with reasonable positive results. Using a method for innovative conflict solving, this paper identifies the proper directions of intervention. An extensive set of nonconventional innovation policies are proposed to overpass the contradiction between economic growth and sustainable development. Results show that prosperity can be achieved by implementing new policies that are aligned with sustainability in its large sense (economic, social, and ecological). Researches can be extended on identifying other conflicting areas in the equation of economic growth and approaching them from an inventive perspective. Policies for balancing sustainable development with economic growth can be further refined to the level of actions and projects, both by means of public and private initiatives.

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