The 14th Economic International Conference: Strategies and Development Policies of Territories: International, Country, Region, City, Location Challenges | May 10-11, 2018 | Stefan cel Mare University of Suceava, Romania

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<https://doi.org/10.18662/lumproc.70>

How to cite: Burciu, A., Kicsi, R., & Condratov, I. (2018). Environmental Issues on the Trade-Related Agenda. Evidences from Romania. In C. Năstase (ed.), *The 14th Economic International Conference: Strategies and Development Policies of Territories: International, Country, Region, City, Location Challenges | May 10-11, 2018 | Stefan cel Mare University of Suceava, Romania* (pp. 159-165). Iasi, Romania: LUMEN Proceedings. <https://doi.org/10.18662/lumproc.70>

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Environmental Issues on the Trade-Related Agenda. Evidences from Romania

Aurel BURCIU¹, Rozalia KICSI^{2*}, Iulian CONDRATOV³

Abstract

During the last decades, the problem of determination between trade, as one of the main driver of economic growth, and the quality of the environment has born dilemmas and debates which have exceeded the area of academic interest and have gained prevalence in international organizations and political circles. In our study, we aim to test the existence of a possible relations between the specialization of the Romanian economy and part of its environmental problems. Using the series of statistical data available for 1990-2014, firstly we have tested the hypothetical inverse relationship between national income and emissions of pollutants (SO₂), or what we know as the Environmental Kuznets Curve. In the case of Romania, the results have confirmed the existence of such an inverted curve. Secondly, using the Merchandise Trade Specialization Index, we have questioned the possible influence of Romanian specialization in the production and consumption through trade on the pollution level. We draw the conclusion that far from being a kind of "creative destruction", Romanian deindustrialization after 1990 is rather a form of premature deindustrialization. In such a context, this evolution cannot be attributed exclusively to the economic growth, but it must be analyzed from a wider perspective, as a result of a complex of determinants.

Keywords:

environmental Kuznest curve, trade specialization, economic growth, tertiarization, deindustrialization.

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<https://doi.org/10.18662/lumproc.70>

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Selection and peer-review under responsibility of the Organizing Committee of the conference

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1. Introduction

Trade, through its demonstrated virtues as one of the driving forces of economic development, influences the quality of the environment, particularly in the context of the current state of the deepening the economic linkages at the global level. During the past decades the dilemma concerning the nature of determination between trade, more precisely the liberalization of trade, and the problems risen by environmental degradation has generated quite stormy debates not only in the academic field but also in the international organizations. Obviously, trade and economic growth influence environment and human health, but it is estimated that these problems will vary from one country to another, depending mostly on its level of economic development, but they are also under the force of other determinants. The main objective of our study is to identify a hypothetical correlation between economic growth and the specialization of an economy (the case of Romania), on the one hand, and part of the environmental problems, on the other hand. Using the series of statistical data available for the period 1990-2014, we have tested a hypothetical negative relationship between national income and emissions of pollutants (in particular SO_2), or what it is known in the literature as the Environmental Kuznets Curve. The results attest the existence of such a tendency in the case of Romania; in other words, there is a significant negative relationship between national income and the emissions of SO_2 ; also it should be noted that the emissions of such pollutants have fallen as the tertiarization of the economy has become. Far from being a form of "creative destruction" through which all the developed economies that are currently in a post-industrial era have passed, deindustrialization of the Romanian economy, visibly after 1990, is, we believe, rather a form of premature deindustrialization which is much likely a characteristic of developing economies. In such a context, we conclude that this evolution cannot be attributed exclusively to the economic growth, but it must be analyzed from a wider perspective, as a result of a complex of determinants.

2. A Brief Literature Review

Trade has an ancient history; from the early stages of the exchange, mainly in the form of barter, up to modern forms of *e-commerce*, centuries of transformations, influences, and doctrinaire disputes have elapsed. Maybe only war has such a vast and rich history as the one of the trade; as a matter of fact, over time, these two "forces" have sporadically interfered and have

put their stamp, in their own way, on the design of the reality we live today. The diversity of human and natural potential, both qualitatively and quantitatively, technological and innovation potential from one country to another have made the trade an objective necessity. The market liberalization and the boosting of the trade flows, in part due to the Uruguay Round, have opened up new opportunities for growth but at the same time have generated some new challenges. One of these is born from the dilemma regarding the nature of the relationship between globalization (and implicitly the liberalization of trade as a main driving force of it) and the quality of the environment. The need to ensure a sustainable development and a preservation of the environment has been recognized within the GATT since the 70s [23].

Still, there is quite a strong belief that environmental issues differ from one country to another, depending on its level of economic development and the structure of its economy and last but not the least, on the policies and strategies developed. Some of these problems may have their roots in the lower level of economic development, but many such problems are accelerated by the increasing of economic activity [22]. As the World Bank [22] report shows, there could be identified three patterns of the relationship between the growth of economic activity and environmental issues, namely:

- A positive synergy, meaning that some of the environmental problems tend to diminish as the incomes increase; the explanation is related to the fact that these increased incomes shall provide the resources to solve some of the problems (especially those linked to the human development).
- Some problems may be initially worse, but then as incomes increase, they improve; this trend does not appear automatically, but following the implementation of appropriate measures.
- A "negative" synergy, meaning that some environmental indicators are ever worse as the incomes increase; the more obvious examples in this respect are the emissions of carbon dioxide, nitrogen oxides and municipal waste.

Grossman & Krueger [10], and Grossman & Krueger [9] have continued to test the hypothetical empirical relationship between national income and environmental issues argued by the World Bank Report [22].

Analyzing the possible effects of trade liberalization on Mexico within the NAFTA, Grossmann & Krueger [10] also emphasize that generally the reduction of barriers to trade affect the environment as a result of the extension of the scale of the economic activity, and by altering the structure of the economic activity and changing the techniques of production. The

main conclusion of their study is that, on the one hand, the economic growth tends to diminish the problems related to the environment as the income per capita exceed a critical level of about 4000 - 5000 USD and, on the other hand, the liberalization of trade could improve the specialization in sectors which carry a lower potential for environmental damages.

According to Grossman & Krueger [9], Stern & Common [17], Dasgupta, Laplante, Wang & Wheeler [5], Stern [15] etc., empirical evidences suggest the existence of an inverted U - shaped relationship between the level of environmental degradation and the national income. In a growing body of the literature, this hypothetical negative relationship between economic growth and the degree of environmental pollution has become known as the Environmental Kuznets Curve [18], [11], [16], [7]. Regarding the consequences of international trade on the environment, via other channels than that of incomes, they may be negative or positive [8]. As the negative effect, Frankel[7] mentions the "race to the bottom" hypothesis according to which the more open economies, under the pressure of the fear about a potential loss of their competitiveness in the world market, shall adopt more relaxed environmental regulations, while less open economies are more restrictive in this respect. The positive effects are linked to the "gains from trade" hypothesis that awards globalization with a complex of virtues such as that of encouraging innovation and transfer of technology, imposing more roughly environmental standards and last but not least creating the premises for the exertion of the power of consumers and the adoption of corporate codes of conduct. Also, Frankel [7] propounds the idea that trade liberalization could encourage some countries to become "pollution havens", i.e. to specialize in dirtier activities and to export their products in countries with the more restrictive environmental standards. Yet empirical evidences have not revealed significant consequences of trade on environmental degradation, but on the contrary, as Frankel suggests, trade and economic growth provide the countries with appropriate tools and solutions to environmental issues [7].

The idea that the environmental regulations can erode the competitiveness has also been advanced and evaluated by Porter & van der Linde [12], [13]. The core message launched by Porter & van der Linde [13] is that the "win - lose" approach with regard to the relationship between the competitiveness and the environmental issues is inaccurately defined by a static perspective especially that the paradigm of competitiveness has exceeded this framework of analysis. The modern paradigm places the competitiveness in a dynamic framework significantly influenced by the ability to innovate. In this register, analyzing the case of the Dutch flower industry, which provides almost 65% of world exports of cut flowers,

although Netherlands isn't naturally endowed for such a pattern of specialization, Porter & van der Linde [12] conclude that the appropriate designed environmental standards can prime innovations that will lead to the cutting of production costs or to the improving the value of the products, which will compensates for the costs of adaptation to the restrictions regarding environmental issues.

Most often, in the practice of international trade the environmental regulations seem to antagonize with regulations for trade liberalization in many directions such as [1], [2]: national measures restricting imports in order to protect the environment and the health of consumers, unilateral national measures restricting imports in order to protect the environment or human health outside the national jurisdiction, national measures restricting the exports as a result of the fact that the products affect the environment or human health, international agreements which include measures restricting the international trade, subsidies at national level in order to encourage the exports or the use of technologies with lower potential for environmental damage, etc.

3. Methodology and Results

Using the series of available data for Romania (during 1990-2014 period) we have tested the relationship between the emissions of SO_2 and national income per capita, as well as the relationship between the emissions of SO_2 and the tertiarization of the Romanian economy (evaluated by the contribution of the tertiary sector to the GDP). The basic hypothesis is inspired by the empirical evidences that have led to the so-called Environmental Kuznets Curve.

In order to substantiate the conclusions, we have analyzed, on the one hand, the trends in the industrial production in Romania and, on the other hand, the specialization of Romanian economy in production and consumption through trade using the *Merchandise Trade Specialization Index* which compares the net flow of goods (net export) with the total flow of goods.

The undertaken research has confirmed the hypothesis; the emissions of SO_2 in Romania have registered the highest value at the beginning of the 90s, the critical level being reached at a GNI per capita of about 4500 USD-5500 USD (as we can see in figure 1). Also, as the contribution of the tertiary sector to the GDP has improved it is noticed a downward tendency of the emissions of SO_2 .

Data source: Adapted after data proven by European Environment Agency [6] (<https://www.eea.europa.eu/data-and-maps>) and World Bank (data.worldbank.org) [21]

Figure 1. The analysis of SO₂ emissions in Romania relating to GNI per capita and to the contribution of services to GDP (1990-2014)

The tests carried out in SPSS also confirm the existence of a significant negative relationship between the emissions of SO₂ and GNI per capita, on the one hand, and, on the other hand, between the emissions of SO₂ and the upward tendency of tertiarization in Romania (Table 1).

Table 1. The results of the correlation analysis between the emissions of SO₂ and GNI per capita, and between the emissions of SO₂ and the contribution of services to GDP

		SOxemission	GNI_per_capita	Services_to_GDP
SOxemission	Pearson Correlation	1	-,858**	-,808**
	Sig. (2-tailed)		,000	,000
	N	25	25	25
GNI_per_capita	Pearson Correlation	-,858**	1	,724**
	Sig. (2-tailed)	,000		,000
	N	25	25	25
Services_to_GDP	Pearson Correlation	-,808**	,724**	1
	Sig. (2-tailed)	,000	,000	
	N	25	25	25

**. Correlation is significant at the 0.01 level (2-tailed).

As we can see in figure 2, after the period of industrialization inspired by Soviet model, the importance of the industry as a value-added creating sector in Romania has decreased.

Source: Own elaboration using data from

<http://unctadstat.unctad.org/wds/TableViewer/chartView.aspx> [20]

Figure 2. The contribution of the three sectors to GDP in Romania (%)

Regarding the specialization of Romania in production and consumption of goods through trade, although the empirical evidences (illustrated in figure 3) reveals a trend toward an attenuation of the importance of industries with a higher pollutant potential (labor-intensive and resource-intensive as well as low-skill and technology-intensive) in the foreign trade of our country, Romania is oriented mostly toward the labor-intensive and resource-intensive industries (leather; manufactures of leather; saddlery & harness; textile yarn; cotton fabrics woven; lime, cement, construction materials; manufactures mineral, etc.).

Source: Own elaboration using data from
<http://unctadstat.unctad.org/wds/TableViewer/chartView.aspx>

Figure 3. The evolution of the Merchandise Trade Specialization Index in Romania

Far from being an evidence that Romania has entered into a new stage of development, that of a post-industrial economy, this experience can be rather labelled as a "premature deindustrialization" in the meaning described by Dasgupta & Singh [4], Rodrik [14], Tregenna [19], Chivu et. al. [3].

4. Conclusions

Although the undertaken research has confirmed the hypothesis that has fueled the Environmental Kuznets Curve, revealing the existence of a significant negative relationship between the emissions of pollutants and the level of development of an economy (including here the trend toward tertiarization of economy, too), we are convinced that there are many variables with significant impact on the results and conclusions. So, the increasing of the GNI per capita does not necessarily reflect a strong dynamics of Romanian economy; to a certain extent this evolution may be influenced by the decline in population number during the period for which the analysis has been carried out. The trend of tertiarization is obvious, but transports continue to count the greatest share in exports of services (although this share decreased compared to the level recorded in 1990). This

propensity to tertiarization is manifested in all developed countries (and in more and more countries with developing economies), but Romanian "deindustrialization", although apparently is consistent with the global trend, is still far from being a kind of "creative destruction". One of the consequences of this process is quite manifest in the specialization of the Romanian economy in the production and consumption through trade; empirical evidences attest modest performances of the medium-skill and technology intensive and high-skill and technology-intensive sectors, which means a dependency on the foreign market for such products. Moreover, through the requirements raised by the accession to the EU, Romania has assumed a series of commitments with regard to the protection of the environment.

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