Public environmental spending and the economic growth in Romania

Florian Marcel Nuță [1]

[1]"Danubius" University of Galați, floriann@univ-danubius.ro

Abstract: The paper purpose is to determine if there is any correlation between the economic growth and the environmental protection. We seek to find the way that a strong economic development could positively influence the environment financing the expenditures needed to protect it from harmful human activities. The result is the simple correlation model where the GDP is chosen as independent variable (factor) and the environmental protection expenditures as dependent variable.

Key words: environmental spending, economic growth, GDP, environmental protection

1   Introduction

For many years now the environment is a top priority for all governments in both developed and developing countries but many times it is one of the first domains to suffer budgetary cuts when the country experience crisis or high public deficits (Moye, 2002).

There are many factors determining the public expenditures for environmental protection and environment related as: environmental regulation and fiscal changes determining more public resources, international environmental agreements and standards, stakeholders' pressure upon the decision makers, etc.

Beside all this there is the economic potential to accomplish the environmental needs and the possibility to collect sufficient revenues in the budget to distribute it afterwards.

Basically the matter can be reduced to national wealth redistribution for accomplish the state attributions including the environment protection. If so the decision makers are very interested to have a strong economy able to maintain a growth streak and enough budgetary revenues to cover the programed budgetary expenditures including ones for financing the environmental policy. Another issue regarding the environmental protection effort is that the expenditures volume is determined not strictly related to environment and its protection needs but to economic efficiency and budgetary aspects (Ehrlich, Padam, 2010).

2   Data and methodology

For determining the impact of economic growth upon the environmental protection we used GDP data for 1993 to 2009 and the same interval for the environmental expenditures. The approach was to determine not the environmental damage or cost for a unit of economic growth but if the economic growth can be responsible for environmental protection. In other words is the economic growth enough so we can sustain our environmental protection? Because many voices ask to put the poverty eradication and economic growth for third world countries before the environmental protection the question to be asked is what economic growth is enough to sustain the environmental protection and the responsible human development (Nuță, 2008).

COUNTRY CASE STUDIES

The economic growth is represented by GDP while the environmental protection expenditures volume is the image for the country environmental responsible activity. The GDP is the factor and the environmental budgetary allocation is the effect (Magnani, 2000). At a time we were tempted to determine the inverse correlation too but we thought that this is not relevant for the main model and will be investigated in later research. Also a differentiation between public and private environmental measures – pollution measures, eco-efficiency standards and goals, cost assessment and environmental regulations – should be a topic for future research (Lee, Chung, Koo, 2005).

3   The model

Correlation analysis made using the SPSS statistical program, measures the intensity of the links between the variables used and explain this relationship through the Pearson and the SIG. where Sig is less than 0.05 will reject the hypothesis of independence and will accept the hypothesis of dependence between the variables. The sign, plus or minus the Pearson coefficient will determine the type of the link (direct link if plus sign and the more powerful the value approaching 1 or reverse if the link is less and the more powerful the value approaching-1). "The cloud of points chart" is used to represent relationships between variables in our case, the link between environmental protection expenditure and gross domestic product of Romania in the year under consideration.
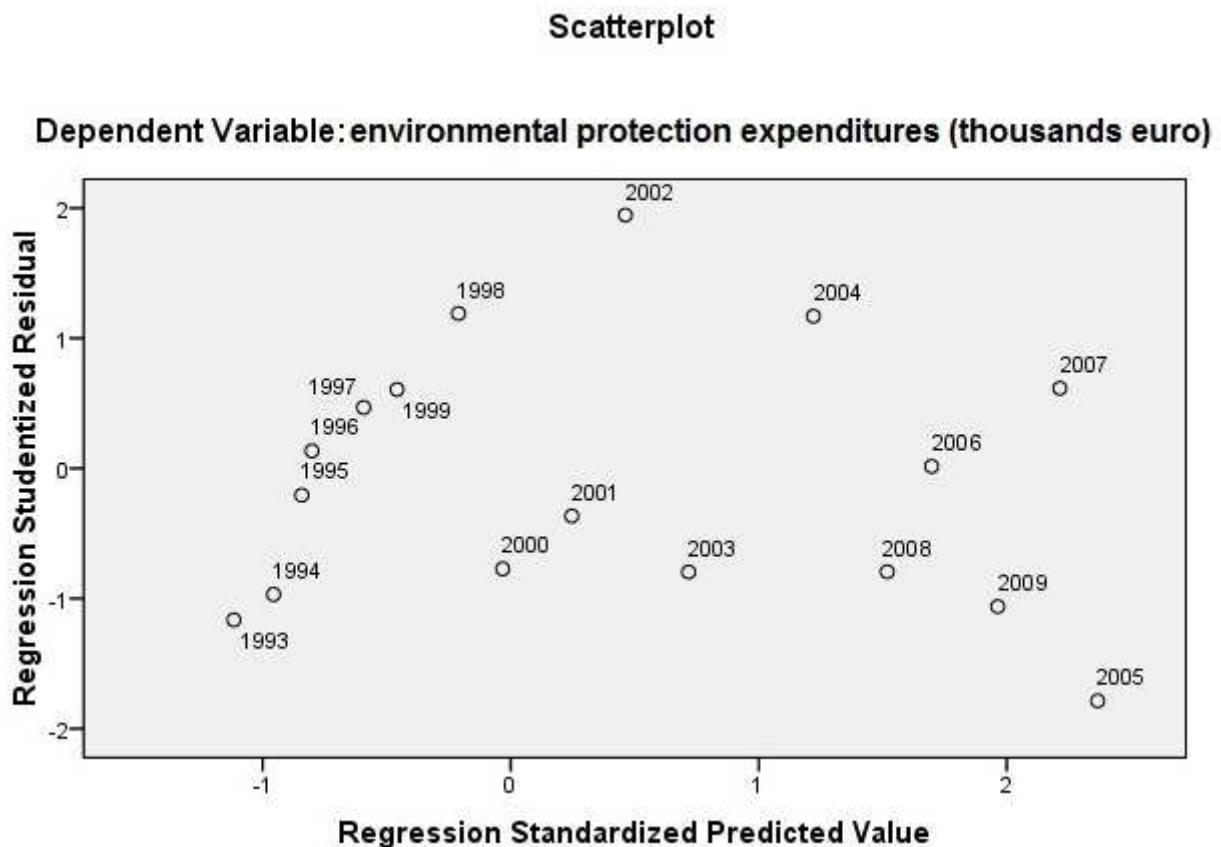

Scatterplot

Dependent Variable: environmental protection expenditures (thousands euro)

110

Fig. 1 – The scatterplot

COUNTRY CASE STUDIES

Correlations table is a table of correlation coefficients matrix in which values are distributed symmetrically on both sides of the diagonal correlation coefficients equal to 1, corresponding to the correlation of each variable with itself. In this case, Pearson correlation coefficient equal to 0.714 suggests that there is a direct correlation between variables, strong, the coefficient is close to 1. Correlation coefficient significance testing is performed using the t test and corresponding Sig value equal to 0.006 reveals that achieved a significant factor, being 1% less chance of mistake to say that the two variables is a significant correlation.

Table 1 – Correlations

Correlations

		environ. protect. expendit. (thou. €)	GDP
Pearson Correlation	environmental protection expendit. (thousands euro)	1.000	.714
	GDP	.714	1.000
Sig. (1-tailed)	environmental protection expendit. (thousands euro)		.003
	GDP	.003	
N	environmental protection expendit. (thousands euro)	13	13
	GDP	13	13

Observe the Model Summary and tables of Coefficients that the value of Sig = 0.006 (< 0.05), R = 0.715 and R = 0.51 Square. According to these results, it rejects the hypothesis H0, which do not code admitted the existence of a link between environmental protection expenditure and GDP and supports the hypothesis which argues that H1 between expenditure on environmental protection and GDP there is a direct link.

Table 2 – Model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.714[a]	.510	.465	95260.37465

a. Predictors: (Constant), pib

b. Dependent Variable: cheltuieli protectia mediului in mii euro

The table presents coefficients standardized and standardized coefficients of regression model estimated standard errors of it and t test statistics values and values corresponding Sig.

COUNTRY CASE STUDIES

Table 3 - Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	139269.674	73643.171		1.891	.085	-22817.852	301357.200
	pib	.006	.002	.714	3.382	.006	.002	.009

a. Dependent Variable: cheltuieli protectia mediului in mii euro

According to this table, the equation / model relationship between the variables studied in the scheme Y = a + bx is the following:

$$Y=139269.67+0.006X$$

This means that on average, effect variable, Y (environmental costs) increase by 0.006 to increase by a unit of independent variable X (GDP).

4   Conclusion

The main conclusion for our paper is that there is a direct correlation between the economic growth – represented by the GDP – and the environmental responsibility – evaluated by the environmental public expenditures for the case of Romania. Although the model could be valid for other national economies as well, we cannot be sure for it was not tested.

Also there could be some non-economic variables that can affect the model validity as the political decision taken without taking account of strictly economic and environmental needs.

The model is the first step in a more large approach for determining the way economic growth can be a support factor for the sustainable development and it can help us to assess the volume of national wealth that the decision maker is wheeling to sacrifice for the environmental health and a responsible human activity.

Our future research is focus on determining the level of economic growth from where the sustainable development is possible. At the enterprise level this issue is the marginal profit that permits the firm to be responsible and to invest in non-economic objectives.

112

5   Acknowledgement

6   References

Ehrlich, Ü., Pädam, S. (2010), *Public environmental expenditures in times of crisis in Estonia*. Mäeltsmees, Sulev; Reiljan, Janno (Toim.). Discussions on Estonian Economic Policy 18 : Eesti majanduspoliitilised väitlused 18: Estnische Gespräche über Wirtschaftspolitik 18 (29 - 33). Berlin: Berliner Wissenchafts-Verlag, Mattimar

Nuţă, A.C., (2008), *The incidence of public spending on economic growth*, EuroEconomica, Vol. 20, N° 1/2008

Lee, H.-H., Chung, R.K., Koo, C.M. (2005), *On the relationship between economic growth and environmental sustainability*, Eminent Environmental Economists Symposium, the 5th Ministerial Conference on Environment and Development in Asia and the Pacific, 26 March 2005, Seoul, Korea

COUNTRY CASE STUDIES

Magnani, E., (2000), *The environmental Kuznets Curve, environmental protection policy and income distribution*, Ecological Economics, 32 (2000) 431-443

Baldwin, R., (1995), *Does sustainability require growth?* In: Goldin, I., Winters, L.A. (Eds.), The Economics of Sustainable Development. Cambridge University Press, Cambridge

Grossman, G.M., (1995), *Pollution and growth: what do we know?* In: Goldin, I., Winters, L.A. (Eds.), The Economics of Sustainable Development, 19–46. Cambridge University Press, Cambridge

Pearce, D., Palmer, C., (2001) *Public and private spending for environmental protection: a cross-country policy analysis*. Fiscal studies, 22 (4).

Jouvet, P.-A., Michel, P., Pestieau, P., (2007*) Public and private environmental spending. A political economy approach*, EconomiX Working Papers 2007-31, University of Paris West - Nanterre la Défense, EconomiX
http://epp.eurostat.ec.europa.eu/

COUNTRY CASE STUDIES