Home > Journal > Earth & Environmental Sciences > NR

Indexing   View Papers   Aims & Scope   Editorial Board   Guideline   Article Processing Charges

NR> Vol.2 No.3, September 2011

New vision on the Relationship between Income and Water Withdrawal in Industry Sector

Author(s)
Abdolnaser Hemati, Mohsen Mehrara, Ali Sayehmiri

ABSTRACT
This paper investigates the relationship between industrial water withdrawal (IWW) and income in selected world countries. The issue is addressed by means of a smooth transition regression (STR) model on cross section data of 132 countries in 2006. The results confirm the nonlinearity of the link between IWW and income. According to the results, the income elasticity of IWW is a bell-shaped curve. Therefore, the policies and management processes in water sector including water allocation between activities and reigns should take into account the development degree and also focus on income level, water scarcity and the economic, social and ecological structure in each country.

KEYWORDS

Cite this paper

References
[1]   P. H. Gleick and M. Palaniappan, " Peak Water Limits to Freshwater Withdrawal and Use," Proceedings of the National Academy of Sciences of the United States of Ameri- can, Vol. 107, No. 25, 2010, pp. 11155-11162.

[2]   K. B. Arrow, R. Bolin, P. Costanza, G. M. Grossman and A. B. Krueger, " Eco-nomic Growth and the Environment," Quarterly Journal of Economics, Vol. 110, No. 2, 1995, pp. 353-377. doi:10.2307/2118443

[3]   S. Dinda, " Environmental Kuznets Curve Hypothesis: A Survey," Ecological Economics, Vol. 49, No. 4, 2004, pp. 431-455. doi:10.1016/j.ecolecon.2004.02.011

[4]   A. Camas, P. Ferrao and P. Conceicao, " A New Environmental Kuznets Curve? Relationship between Direct Material Input and Income per Capita: Evidence from Industrialized Countries," Ecologic Economics, Vol. 46, No. 2, 2003, pp. 217-229.

[5]   M. A. Cole, " Trade, the Pollution Haven Hypothesis and Environmental Kuznets Curve: Examining the Linkages," Ecological Economics, Vol. 48, No.1, 2004, pp. 71-81. doi:10.1016/j.ecolecon.2003.09.007

[6]   B. Barbier, " Intro-duction to the Environmental Kuznets Curve Special Issue," Environmental Development Economics, Vol. 24, No. 2, 1997, pp. 369-81.

[7]   D. I. Stern, M. S. Common and E. B. Barbier, " Economic Growth and Environmental Degradation: The En-vironmental Kuznets Curve and Sustainable Development," World Development, Vol. 24, No. 7, 1996, pp. 1151-1160. doi:10.1016/0305-750X(96)00032-0

[8]   A. Y. Hoekstra, A. K. Chapagain, M. M. Aldaya and M. M. Mekonnen, " Water Foot-print Manual: State

of the Art," Water Footprint Network, En-schede, 2009.

[9] A. Y. Hoekstra and A. K. Chapagain, "Wa-ter Footprints of Nations: Water Use by People as a Function of Their Consumption Pattern," Water Resources Management, Vol. 21, No. 1, 2007, pp. 35-48. doi:10.1007/s11269-006-9039-x

[10] M. T. Tock, "Freshwater Use, Freshwater Scarcity, and Socioeconomic Development," Journal of Environment and Development, Vol. 7, No. 3, 1998, pp. 278-301. doi:10.1177/107049659800700304

[11] M. T. Tock, "The Dewatering of Economic Growth What Accounts for the De-clining Water-Use Intensity of Income?" Journal of Industrial Ecology, Vol. 4, No. 1, 2001, pp. 57-73.

[12] I. A. Shiklo-manov, "Appraisal and Assessment of World Water Resources," Water International, Vol. 25, No. 1, 2000, pp. 11-32. doi:10.1080/02508060008686794

[13] N. Shafik and S. Bandyopadhyay, "Economic Growth and Environmental Qual-ity: Time Series and Cross-Country Evidence," The World Bank, Washington, DC, 1992.

[14] K. E. Ehrhardt Martinez, J. C. Crenshaw and G. M. Jenkins, "Deforestation and the Environ-mental Kuznets Curve: A Cross-National Investigation of Inter-vening Mechanisms," Social Science Quarterly, Vol. 83, No. 1, 2002, pp. 226-243. doi:10.1111/1540-6237.00080

[15] R. J. Culas, "Deforestation and the Environmental Kuznets Curve: An Institutional Perspective," Ecological Economics, Vol. 61, 2007, pp. 429-437. doi:10.1016/j.ecolecon.2006.03.014

[16] R. E. Quant, "The Estimation of Parameters of a Linear Regression System Obeying Two Separate Regimes," Journal of the American Statistical Association, Vol. 53, 1958, pp. 873-880. doi:10.2307/2281957

[17] D. W. Bacon and D. G. Watts, "Es-timating the Transition between Two Intersecting Straight Lines," Biometrika, Vol. 58, 1971, pp. 525-534.

[18] S. M. Goldfield and R. Quant, "Nonlinear Methods in Econometrics," North-Holland Publ. Co., Amsterdam, 1972.

[19] D. S. Maddala, "Econometrics," McGraw-Hill, New York, 1977.

[20] C. W. Granger and T. Ter?svirta, "Modeling Nonlinear Economic Relationships," Oxford University Press, Oxford, 1993.

[21] T. Ter?svirta, "Specification, Estimation and Evaluation of Smooth Transition Autoregressive Models," Journal of the American Statistical Association, Vol. 89, 1994, pp. 208-218. doi:10.2307/2291217

[22] T. Ter?svirta, "Modeling Economic Relationships with Smooth Transition Regressions," Handbook of Applied Economic Statistics, Dekker, New York, 1998, pp. 507-552.

[23] P. H. Franses and D. Vandijk, "Non-Linear Time Series Models in Empirical Finance," Cambridge University Press, Cambridge. 2000.

[24] D. A. Dickey and W. A. Fuller, "Distribution of Estimators for Autoregressive Time Series with a Unit Root," Journal of the American Statistical Association, Vol. 74, No. 366, 1979, pp. 427-431. doi:10.2307/2286348

[25] K. S. Chan and H. Tong, "On Esti-mating Thresholds in Autoregressive Models," Journal of Time Series Analysis, Vol. 7, 1986, pp. 178-190. doi:10.1111/j.1467-9892.1986.tb00501.x

[26] N. Ocal and D. R. Osborn, "Business Cycle Nonlinearities in UK Consumption and Production," Journal of Applied Econometrics, Vol. 15, 2000, pp. 27-43. doi:10.1002/(SICI)1099-1255(200001/02)15:1<27::AID-JAE552>3.0.CO;2-F

[27] P. Saikkonen and H. Lütkepohl, "Testing for a Unit Root in a Time Series with a Level Shift at Unknown Time," Econometric Theory, Vol. 18, No. 2, 2002, pp. 313-348. doi:10.1017/S0266466602182053

[28] R. Luukkonen, P. Saikkonen and T. Ter?svirta, "Testing Linearity against Smooth Transition Autoregressive Models," Biometrika, Vol. 75, No. 3, 1988, pp. 491-499.