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THE ROLE OF ENERGY IN PRODUCTION FUNCTION AND EFFECT OF THE ECONOMY CRISIS (CASE STUDY: ECONOMY OF IRAN)
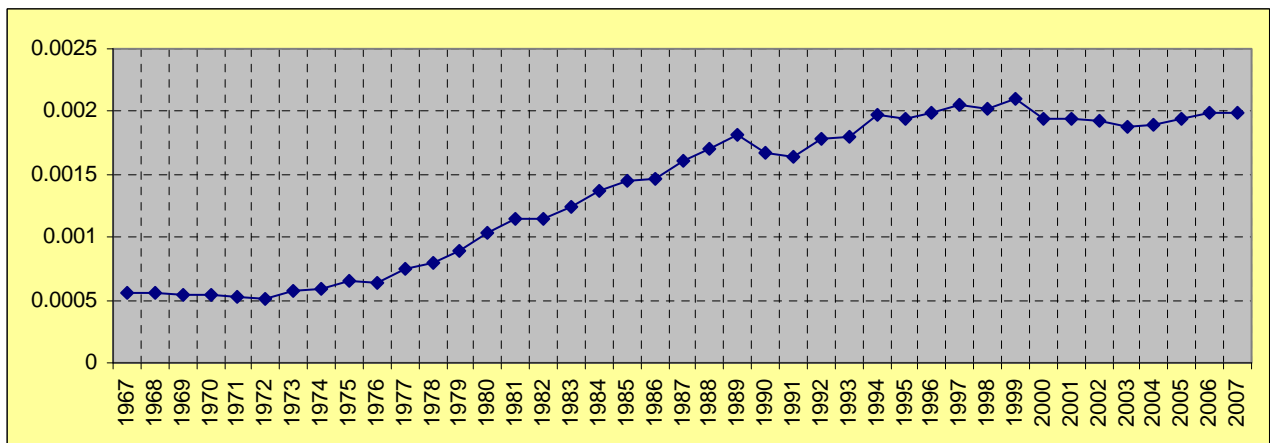
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This paper attempts to estimate production function for economy of Iran with three inputs: Energy, Labour and Capital in period of 1967-2007. Statistical analysis shows, energy intensity (energy consumption to GDP) in economy of Iran has increased but in this period rate of energy intensity has decreased. For the same period, estimation of short term CD (Cobb-Douglas) production function with error correction method for the selected ARDL model shows all of variables have a significant effect on GDP and the most effect is of capital and than energy and labour. But in the long run model the most effect is from labour and capital and energy are later.

But in the global economic crisis if the country's economy has a high dependence to countries economy crisis struck with a high financial relation or a high import in an input the effect of the crisis is more severe. Although Iran's economy based on the model have a high dependence on short term to capital and in the long term, to labour but seems the economic effect was lower due to low economy relation to other countries. About energy input because of its low coefficient in production function, crisis effect through this input will be low.
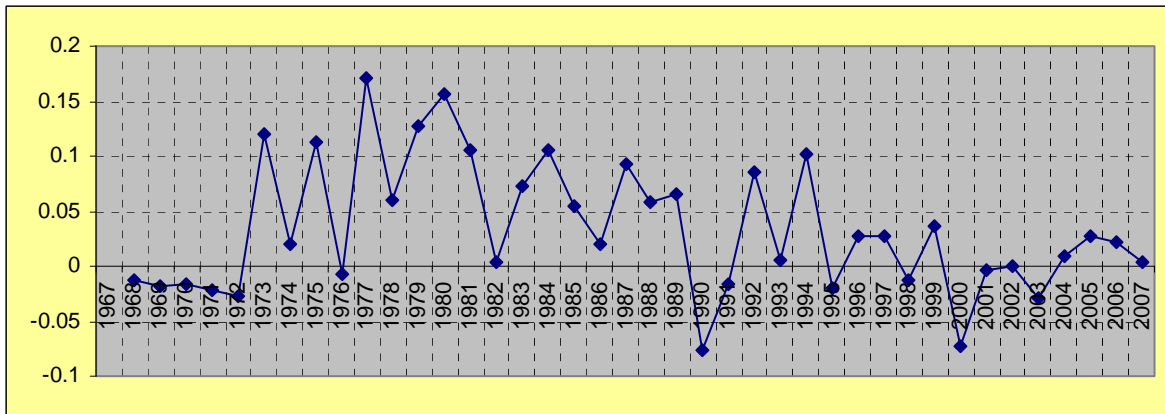
KEY WORDS: Froduction Function, Energy Elasticity, ARDL, ECM, Capital Elasticity, Energy Intensity and Efficiency, Economic Crisis

Figure(1): Trend of energy intensity in economy of IRAN

Figure(1): Growth Rate of energy intensity in economy of IRAN

Error Correction Representation for ARDL (0,4,2,0) selected based on Schwarz Bayesian Criterion; 37 observations used for estimation from 1971 to 2007

$$d \lg dp = 0.7378 * dlcap - 0.0216 * dlcap1 + 1.3137 * dlcap2 + 0.53648 * dlcap3$$

...................(2.32)...............(−0.064).............(4.13)...................(2.072)

$$+ 0.767 * dlen + 0.593 * dlen1 + 0.786 * dllab + 2.249$$

.....(5.6)..................(4.51).............(7.08)...........(2.35)

Estimated Long Run Coefficients using the ARDL Approach

ARDL (0,4,0,2) selected based on Schwarz Bayesian Criterion

$$\lg dp = 0.116 * lcap + 0.1456 * d + 0.145 * len + 0.786 * llab + 2.249$$

$.(t - statistic)..(5.6)..................(4.51).............(7.08)...........(2.35)$

$R - Squared.....0.86..............D.W.....2.03$