**Problem Set 4 Date:**

**Problems on Autocorrelation**

Consider the following data on index of real consumption per hour (y) and index of output (x) of U.S. business sector for the years 1960 to 2005.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Year** | **y** | **x** | **Year** | **y** | **x** |
| 1960  1961  1962  1963  1964  1965  1966  1967  1968  1969  1970  1971  1972  1973  1974  1975  1976  1977  1978  1979  1980  1981  1982 | 60.8  62.5  64.6  66.1  67.7  69.1  71.7  73.5  76.2  77.3  78.8  80.2  82.6  84.3  83.3  84.1  86.4  87.6  89.1  89.3  89.1  89.3  90.4 | 48.9  50.6  52.9  55.0  56.8  58.8  61.2  62.5  64.7  65.0  66.3  69.0  71.2  73.4  72.3  74.8  77.1  78.5  79.3  79.3  79.2  80.8  80.1 | 1983  1984  1985  1986  1987  1988  1989  1990  1991  1992  1993  1994  1995  1996  1997  1998  1999  2000  2001  2002  2003  2004  2005 | 90.3  90.7  92.0  94.9  95.2  96.5  95.0  96.2  97.4  100.0  99.7  99.0  98.7  99.4  100.5  105.2  108.0  112.0  113.5  115.7  117.7  119.0  120.2 | 83.0  85.2  87.1  89.7  90.1  91.5  92.4  94.4  95.9  100.0  100.4  101.3  101.5  104.5  106.5  109.5  112.8  116.1  119.1  124.0  128.7  132.7  135.7 |

Considering a 2 variable linear model, detect whether autocorrelation is present by

(a) Graphical method.

(b) Runs test.

(c) Durbin-Watson test.

Depending on the above tests, apply suitable remedial measures and estimate the parameters of the model.