

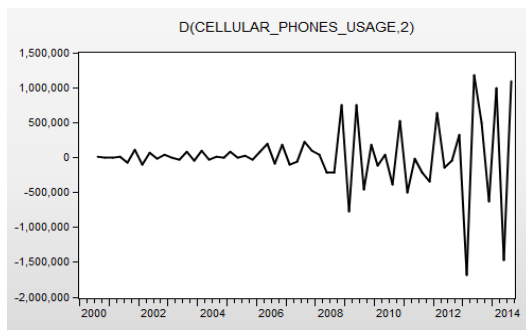
Figure 2 and 3 implies the variation of the quarterly cellular phones' usage and fixed telephone lines usage in Sri Lanka. In Figure 2 there can be observed consequent upward non linear trend. In Figure 3 it can be seen an upward non linear trend upto year 2012 quarter 4 and then from year 2013 quarter 1 the fixed telephone usage starts to decrease gradually. Therefore, both series seems to be non stationary.

In order to convert the non-stationary series into stationary series, the differencing technique was performed.

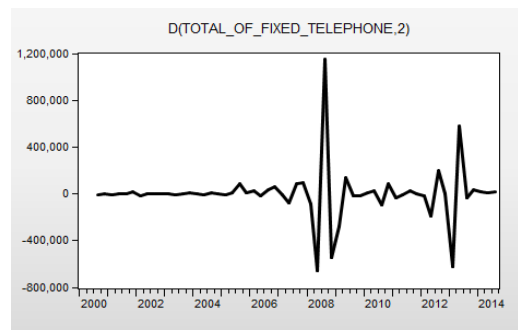
In this study, we have to take the second difference to make these series stationary and here we have portrayed both graphical and statistical results.

### Checking Stationarity

*Figure 4: Time Series plot of quarterly cellular phones usage after differencing 2 times*



*Figure 5: Time Series plot of quarterly fixed telephone lines usage after differencing 2 times*



Since there is no trend seems to be in the above Figure 4 and 5 they seem to be stationary.

For KPSS test the hypothesis is given below,

$H_0$ : the series is stationary

$H_1$ : the series is not stationary

According to the results of Kwiatkowski-Phillips-Schmidt-Shin Test for Cellular phones, Test Statistic = 0.04170 < critical value = 0.463. Do Not Reject the null hypothesis. Therefore, the series is, stationary at 5% level of significance. As per the results of Kwiatkowski-Phillips-Schmidt-Shin Test for fixed telephone lines, Test Statistic = 0.044787 < critical value = 0.463. Do Not Reject the null hypothesis. Therefore, the series is stationary at 5% level of significance.

For ADF and PP tests the hypothesis is given below,

$H_0$ : The series is not stationary

$H_1$ : The series is stationary