CHAPTER-4
TEST OF STATIONARITY

4.1 Stationarity Test

The first step in our empirical work is to determine whether the real government revenue and real government expenditures are stationary. The Augmented Dicky and Fuller (1979) and Phillips and Perron (1988) Unit root tests with (i) intercept and with (ii) intercept and trend have been adopted to examine the stationarity of both variables. The results of the Augmented Dicky and Fuller test and Phillips and Perron unit root test are being reported through table 4.1. The lag length used to compute the Augmented Dicky-Fuller test statistics is based on the Schwartz information criterion (SIC) and for Phillips-Perron test statistics lag length is determined by applying Newey-West using Bartlett Kernel. Results of unit root tests confirm that the series of real government expenditures and real government revenues for all chosen countries like Indonesia, Malaysia, Singapore and Thailand are non-stationarity at level during the period concerned. However, the 1st difference data on real government expenditures and real government revenues for all concerned countries are stationary by both the Augmented Dicky and Fuller and Phillips and Perron unit root test. Thus both the series are I(1) by nature.

Table 4.1

Results of the Dicky-Fuller Tests and Phillips-Perron Unit Root Tests

Country	Variable	ADF Statistics (Intercept only)	ADF Statistics (Intercept & Trend)	PP Statistics (Intercept only)	PP Statistics (Intercept & Trend)	Nature of Association	Degree of Integration
Indonesia	$\ln E_t$	-2.45**(0)	-3.10**(2)	-2.85**(7)	-2.37**(4)	Non-Stationary	I(1)
	$\Delta \ln E_t$	-9.38*(0)	-9.19*(0)	-9.55*(6)	--9.60*(9)	Stationary	I(0)
	$\ln R_t$	-2.77**(0)	-4.21**(0)	-3.20*(5)	-4.45*(4)	Non-Stationary	I(1)
	$\Delta \ln R_t$	-9.26*(0)	-9.30*(0)	-9.26*(0)	-9.09*(3)	Stationary	I(0)
Malaysia	$\ln E_t$	-1.59(0)	-2.05(1)	-1.47(1)	-2.25(1)	Non-Stationary	I(1)
	$\Delta \ln E_t$	-4.93*(0)	-4.81*(0)	-4.90*(4)	-4.77*(4)	Stationary	I(0)
	$\ln R_t$	-1.46(0)	-2.42(0)	-1.51(4)	-2.42(0)	Non-Stationary	I(1)
	$\Delta \ln R_t$	-6.75*(0)	-6.63*(0)	-6.73*(3)	-6.63*(3)	Stationary	I(0)
Singapore	$\ln E_t$	-1.79(0)	-1.57(0)	-2.19(11)	-1.40(5)	Non-Stationary	I(1)
	$\Delta \ln E_t$	-6.22*(0)	-6.48*(0)	-6.24*(4)	-9.60*(11)	Stationary	I(0)
	$\ln R_t$	-1.67(1)	-2.14(1)	-1.75(2)	-1.98(3)	Non-Stationary	I(1)
	$\Delta \ln R_t$	-4.59*(0)	-4.73*(0)	-4.66*(2)	-4.74*(2)	Stationary	I(0)
Thailand	$\ln E_t$	-0.01(0)	-2.56(1)	-0.005(2)	-2.84(3)	Non-Stationary	I(1)
	$\Delta \ln E_t$	-7.04*(0)	-6.97*(0)	-7.03*(2)	-6.96*(2)	Stationary	I(0)
	$\ln R_t$	-0.71(0)	-2.03(1)	-0.76(2)	-1.85(3)	Non-Stationary	I(1)
	$\Delta \ln R_t$	-5.43*(0)	-5.40*(0)	-5.42*(1)	-5.39*(1)	Stationary	I(0)

Notes: ln represents natural logarithm. Δ is the first difference operator. ADF & PP represent Augmented Dicky - Fuller and Phillips - Perron t-statistics. Values in parentheses are lag length used in the estimation of the unit root test statistics. Critical values are obtained from Mackinnon (1996).

* denotes significance at 1% and 5%. I(0) is the degree of integration of order zero i.e stationary and I(1) is the degree of integration of order one i.e non-stationary series attaining stationarity upon 1st differencing.

** denotes insignificance at 1% level.