

## **The Dynamic Linkages between Economic Growth and Sectoral Growth: Empirical Evidence from Sri Lanka**

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### **Introduction**

The Sri Lankan economy has been undergoing a structural change over the last few decades. Agriculture, Industry and Services sectors play an important role in Sri Lanka's economic growth. The contribution of the agricultural sector to national GDP has been fast declining while industrial and service sectors are dominating and have been showing remarkable improvements. Experiences of the developed economies have shown that the sectoral growth process is highly unbalanced (Sastry et al., 2003). Most early development strategies, advocated by Rosenstein-Rodan, Nurkse, and Hirshman among others, emphasized industrial development as the main source of economic growth (Schiff and Valdez, 1998). The role of agriculture in generating economic growth was shown to be minimal with the experience of the newly industrialized countries and others. The services sector was identified as an emerging sector. Based on this, the key sector would stimulate greater economic activity in other sectors and thus have a large multiplier effect on growth and development. Therefore a proper understanding of sectoral growth is necessary for designing appropriate long run strategies to achieve a sustainable growth rate in real GDP.

While most of the literature mainly focuses on the determinants of aggregate growth, the sectoral growth literature mainly builds on the dual economic model originating in Lewis (1954) and Hirshman (1958). The dual economic model seeks to explain economic growth by emphasizing the role of sectors.

Based on this theoretical context, there is no in-depth study on the inter relationship between sectoral growth and economic growth in Sri Lanka. Thus, this study attempts to examine the relationship among sectors and economic growth in Sri Lanka.

### **Objective**

The main objective of this study is to examine the inter temporal dynamic linkages between sectoral growth and economic growth in Sri Lanka.

### **Methodology**

The data used in this study are annual observations spanning the sample period from 1960 to 2018 and data were extracted from Annual Reports of the Central Bank of Sri Lanka. The data of Log Real Gross Domestic Product (LRGDP) is used to proxy economic growth. LogGDP of Agriculture (LGDPA), LogGDP of Industry (LGDPIND) and LogGDP of Services (LGDP SER) are used as proxies for sectoral growth. Three models were estimated for each sector of the economy as given below:

$$\text{Model 1: } \text{LRGDP}_t = \alpha_{01} + \alpha_{11}\text{LGDP A}_t + U_{1t} \quad (1)$$

$$\text{Model 2: } \text{LRGDP}_t = \alpha_{02} + \alpha_{12}\text{LGDP SER}_t + U_{2t} \quad (2)$$

$$\text{Model 3: } \text{LRGDP}_t = \alpha_{03} + \alpha_{13}\text{LGDP IND}_t + U_{3t} \quad (3)$$

The first step of this analysis is to test the order of integration of each series using Augmented Dickey Fuller (ADF), Phillips Perron (PP) and Kwiatkowski Phillips Schmidt Shin (KPSS) unit root tests. Secondly, lag length selection criteria such as AIC, SIC, LR, FPE and HQIC are utilized to select the optimum lag length that can be included in the model. Thirdly, residual series of each cointegration regression model is tested for unit root using ADF approach. Fourthly, once we confirm the regression error residual as stationary, Engle Granger (1987) cointegration test is conducted to determine the long run relationship between the variables. Then, the Error Correction Model (ECM) is employed to identify the short run relationship as well as long-run adjustment among the variables.

## **Results and Discussion**

The results of ADF, PP and KPSS tests confirmed that all the variables are integrated of order one. Since all the variables are integrated at the same order, the data set is appropriate for further analysis. According to the regression error residual stationary test, all residuals of cointegration model is stationary at 5% level of significance. Thus, the Engle-Granger (EG) co-integration test using fully modified OLS estimation provides evidence of long run relationship between sectors and economic growth. Thus, Long run relationship among the variables are shown in equation format below:

$$\text{LRGDP}_t = 5.277 + 0.389\text{LGDP}_t \quad (4)$$

(0.000) (0.000)

$$\text{LRGDP}_t = 1.089 + 0.976\text{LGDPSE}_t \quad (5)$$

(0.000) (0.000)

$$\text{LRGDP}_t = 1.967 + 0.952\text{LRGDPIN}_t \quad (6)$$

(0.000) (0.000)

The above equations 4, 5 and 6 reveal that as expected by theory and some of the existing empirical literature (e.g., Akita et al 2008; Alhowaish et al 2012; and Singariya et al 2016) LGDPA, LGDPIN and LGDPSE have a positive and statistically significant impact on the LRGDP at 1% significant level. As shown in equation 4, a one percent increase in GDPA, would increase RGDP by 0.38 percent. According to equation 5, due to a one percent increase in GDPIN, RGDP would be increase by 0.95 percent. Equation 6 shows that, due to one percent increase in GDPSE, RGDP would be increase by 0.97 percent in the long run.

$$\Delta\text{LRGDP}_t = 0.0042 + 0.403\Delta\text{LGDP}_t - 0.172\hat{U}_{t-1} \quad (7)$$

(0.061) (0.000) (0.000)

$$\Delta\text{LRGDP}_t = 0.004 + 0.945\Delta\text{LGDPSE}_t - 0.175\hat{U}_{t-1} \quad (8)$$

(0.700) (0.000) (0.047)

$$\Delta\text{LRGDP}_t = 0.048 + 0.636\Delta\text{LGDPIN}_t - 0.035\hat{U}_{t-1} \quad (9)$$

(0.000) (0.000) (0.002)

Equations 7, 8 and 9 also show that there are positive and significant relationship between all three sectors and economic growth in the short run. Negative and significant error correction coefficients of each model are -0.172, -0.175, -0.035 respectively. They reveal that disequilibrium is corrected by each year 17.2%, 17.5%, 3.5% respectively. They indicate that real GDP moves towards long run steady state of RGDP.

## Conclusion

The purpose of this study was to empirically investigate the relationship between sectoral growth and economic growth of Sri Lankan economy over the period 1960 to 2018. The study provides evidence to confirm the long run equilibrium relationship between sectors and economic growth. Positive significant relationships hold for all sectors in the short run. The study results indicate that industrial and service sectors contribute to economic growth relatively more than the agriculture sector. Thus, the government should assisting in developing these two sectors to have sustainable economic growth. However, a large number of households' livelihood depends on agriculture sector. Thus, the government should promote and assist the agriculture sector in order to have balanced and sustainable economic growth.

## References

- Hirshman A. O. (1958). *Strategy of Economic Development*. New Haven, Conn. Yale University Press.
- Linden, M. and Mahmood, T. (2007). Long run relationships between sector shares and economic growth. A panel data analysis of the Schengen region. DP-50, Department of Economics, University of Joensuu.
- Sastry, D.V. S. Singh, B. Bhattacharya, K. and Unnikrishnan, N. K. (2003). sectoral linkages and growth: Prospects reflection on the Indian Economy. *Economic and Political Weekly*. 14 (24), 2390-97.
- Schiff, M. and Valdez, A. (1998). Agriculture and the macroeconomy. *In: Gardner, B., Rausser, G. (Eds.), Handbook of Agricultural Economics. Elsevier Science, Amsterdam.*