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Effects Of Technological Progress And Productivity On Economic Growth In Uganda

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Abstract

The study focused on the effects of technological progress and productivity on economic growth in Uganda within the, 1971 – 2009 period. The study found out that growth in technological progress resulted in economic growth, whereas increase in either capital productivity or labor productivity gave rise to reduction in economic growth within the aforementioned period. Capital productivity or labor productivity could have caused reduction in economic growth because labor productivity growth might have caused workers to enjoy more leisure instead of working more or growth in capital productivity could have made capital more efficient and resulted in more idle capacity; thus causing depletion of output through reduction in the capital or labor used in production. Theoretical models developed were empirically tested after transforming them into the relevant econometric models. The relevant variables were simulated from annual disposable income, annual real GDP and annual investment expenditures using the celebrated Cobb-Douglas production function.

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1. Introduction

The study examines the effects of technological progress and productivity on economic growth in Uganda from 1971 to 2009. At a theoretical level the study is useful because it attempted to model actual levels of technology out of what economists most commonly take to be total factor productivity (TFP). Total factor productivity is defined as the difference between the proportional change in output and proportional change in a Divisa index of inputs (Carlaw and Lipsey, 2003). Besides the study argues that growth in either labor or capital productivity results in decline in economic growth.

The reason for these has been advanced by the study to be due to increase in consumption of leisure following a rise in either capital or labor productivity because workers tend to trade off leisure for work as their incomes increase.

2. Statement of the Problem

Generally most economists and in particular Casetti and Jones (1983, 1987), Casetti (1982b), Casetti (1984a, 1984b) and Hornstein and Krusell (1996) contend that increase in productivity results in output growth. Theoretical models derived from the (i) Cobb-Douglas production function, (ii) profit function and (iii) relationships between leisure, income, labour and capital tend to refute this belief. That may be because the worker tends to substitute leisure for income following the increase in productivity. Wages may also be fixed varying as productivity increases leading to depletion of output through leisure and loss of labour hour..

Secondly, Carway and Lipsey (2003) argue that total factor productivity (TFP) is often interpreted by many economists to measure technological progress and it promotes economic growth. The major problem identified by Hulten (2000) is that various factors of TFP are not measured directly, but lumped together as residual. They cannot be disaggregated within the pure TFP framework. Moreover TFP is an outcome not a cause of anything and cannot be used by policy makers to affect economic growth.

Carway and Lipsey (2003) argue further that TFP may be an indicator but is certainly not a policy instrument. To them TFP, is not a measure of technological change as specified in Solow's seminal 1956 and 1957 articles. Similarly, the study argues that TFP tends to overestimate or underestimate the technical progress. In fact there is growing literature pointing out that productivity change is not an index of technological progress (Gordon, 2000). Therefore, TFP is a misleading concept of productivity because: (a) critical examination of the Cobb-Douglas production function shows that the common TFP exceeds actual TFP by an amount equal to the growth in output, (b) most economists writing on total factor productivity might have not bothered to distinguish it from level of technology.

3. Objectives of the Study

- Simulation or generation of capital stock, labour stock, capital productivity, labour productivity, and level of technology series for Uganda for the period 1970 to 2009.
- Analyses of the influence of capital stock, labor stock and level of technology on economic growth for the country within the aforementioned period.
- Analyses of the effects of technological progress and productivity on economic growth in Uganda from 1970 to 2009.
- Test of whether the coefficient on the level of technical progress equals one.of the effects of technological progress.

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