The impact of public education expenditure on human capital, growth, and poverty in Tanzania and Zambia: a general equilibrium approach

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Abstract

The impact of public education expenditure on human capital, the supply of different labor skills, and its macroeconomic and distributional consequences is appraised within a multisector CGE model. The model is applied to and calibrated for two Heavily Indebted Poor Countries (HIPCs), Tanzania and Zambia. The simulation results suggest that education expenditure can raise economic growth. However, to maximize benefits from education expenditure, a sufficiently high level of physical investment is needed, as are measures that improve the match between the pattern of educational output and the structure of effective demand for labor. An important result of the simulation experiments is that a well-targeted pattern of education expenditure can be effective for poverty alleviation.
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1. Introduction

In most poor countries, education is considered a priority to reduce poverty, and several studies have emphasized its importance. Barro (1991), Chu and others

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(1995), and Tanzi and Chu (1998) argue that public expenditure allocations for education can improve economic growth while promoting equity. Gupta and Verhoeven (2001) and Gupta, Verhoeven, and Tiongson (1999) suggest that both the size and the efficiency of public education expenditure are important in improving socioeconomic performance. Promoting the education sector normally entails increasing public expenditure on education. A macroeconomic policymaker would question their economic consequences: by how much would the supply of different educational skill groups and corresponding wage levels change, what would be the impact on economic growth and poverty alleviation, and how important would the difference in initial economic structures be in determining these consequences? In order to answer these questions, a computable general equilibrium (CGE) model was specified and calibrated for both Tanzania and Zambia.

A novel feature of this model is that it specifies the mechanism through which public expenditure on education affects the production of human capital. In particular, education expenditure is viewed as providing additional human capital to those who are in the educational pipeline. As these individuals come out of the pipeline, they contribute to the stock of human capital of their respective households in the form of improved labor skills. In this context, the pattern of education expenditure influences the distribution of this additional stock among different socioeconomic household groups. This paper presents the simulation results of different education expenditure policies, to gain some insights into these issues.

In the next section, the economic structures of Tanzania and Zambia and the frameworks for their Poverty Reduction Strategy Papers (PRSPs) are reviewed (Tanzania, 2000). In the third section, the education-focused CGE model and its calibration are presented and explained. In the fourth section, three alternative counterfactual scenarios are simulated, and their respective impacts on the macroeconomic conditions, the labor market, income distribution, and poverty alleviation are analyzed. The final section offers conclusions.

2. Economic structure and the PRSPs of Tanzania and Zambia

The model was calibrated on early or mid-1990s data (i.e., the Tanzanian 1992 Social Accounting Matrix (SAM) and the Zambian 1995 SAM). We believe that those SAMs reflect relatively well the present structures of the two economies, which are summarized in Table 1. The GDP growth rate has been higher and the inflation rate has been lower in Tanzania than in Zambia. During the mid-1990s, GDP growth in Zambia was barely equal to its population growth. The better growth performance of Tanzania was partly due to a higher investment ratio in past years. In recent years, however, the trend for this ratio has been declining in Tanzania, while in Zambia it has increased.

Tanzania's production structure is heavily dependent on agriculture, while its industry relies mostly on processing agricultural products and light consumer goods. On the other hand, Zambia's structure is dominated by copper and other mining