DRIVERS OF ELECTRICITY DISTRIBUTION COSTS AND TARIFFS IN UGANDA: THE ROLES OF REFORMS AND REGULATION

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Overview

Like many countries, Uganda embraced reforms in its electricity sector in 1999 in order to improve perfomance and efficiency and attract private investments. The government adopted a three step approach which involved unbundling (into generation, transmission, and distribution), privatization, and setting up an independent regulator. They implemented a single buyer model (at transimission) with independent power producers and a liberalized distribution system all under one independent regulator. Private investments have been attracted by providing attractive returns on investments with partial regulatory risk guarantees by the World Bank. For example, the distribution sectors is subject to a 20% rate-of-return collected through regulated prices, adjusted quarterly for changes in the macro economic conditions. Substantial progress in the sector shown by increased generation, expandended transmission lines, and improving access rates to electricity in rural areas has been achieved. However, despite reforms to regulate market failures associated with natural monopoly, electricity price is continuously upward trending –the biggest price margin (over 50%) is at distribution level. Regulatory literature identifies over use of capital inputs (A-J effect) as one of the major risk factors under rate-of-return regulation. In addition, regulatory captures is another common phenomenon in developing countries. Studies on Uganda's electricity sector mainly focused on the major developments in the sector and no studies analysing the cost structure of distribution utilities from an economic regulation perspective is available.

Thus, in this paper we investigate the main drivers of distribution costs and tariffs. We further examine the economic regulatory policy documentation for Uganda taking particular interest in the possible theoretical implications.

Methods

We use a cost function to examine the determinants of variations in the costs and performance of a distribution utility. An unbalanced panel dataset on nine regulated distribution utilities in Uganda observed quarterly since 2009 is analysed parametrically. While we use amount of delivered energy and number of customers as output variables, we adopt wage expenditure per worker and average purchase price per unit of electricity as input prices. We include three exogenous variables that include exchange rate, interest rates, and power losses.

Results

First, results show that all input prices and output variables have significant effect on the costs incurred by the utility. However, number of customers, delivered energy, cost of borrowing and exchange rate have a differential effect for low and high cost efficiency levels.

Second, results indicate that foreign exchange rates and interests significantly affect the utility's level of cost efficiency.

Third, the study finds a number of substantial performance achievements in the electricity distribution sector. They include, reduction in technical and economic losses, network expansion, and advancements in regulation (both institutional structure, policy, and practice) which enabled the implementation of a cost reflective tariff.

Conclusions

Results indicate that the costs of borrowing and exchange rates are significant drivers for cost efficiency. Other important drivers are input prices, delivered energy, and customer base. Hower, the study is ongoing.