Benchmarking Methods in Georgian Energy Sector

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Abstract

The purpose of the study is to compare the approaches taken by a variety of energy regulators to implement benchmarking for distribution network companies. The findings shall serve as baseline for development of the incentive based methodology. **Research methods:** Based on the practical significance of the research problem we used systemic, historical and logical generalization methods of research in the performance of the work. Scientific abstraction, analysis and synthesis methods are also used. **Results:** To evaluate the effectiveness of Georgian companies we can't use the comparative analysis's methods that are used by the EU Regulators, because the market is monopolized and the companies don't have a similar structure and financial conditions. **Conclusions:** As a result, in Georgia it's much better to use the Activity Based Costing (ABC) method for a short-term analysis and international comparative analysis for the long-term period.

Keywords: Energy Sector, Benchmarking Methods, Activity Based Costing, Energy Regulator

Introduction

The energy sector is the most prioritized one in the economic field. The associated agreement's (between Georgia and European Union) obligations contain important changes in different areas, especially in the energy sector and needs to be harmonized with European legal bases. Therefore, nowadays electricity sector has many challenges.

Energy sector is regulated by Georgian National Energy and Water Supply Regulatory Commission (GNERC). Based on "Tariff Setting Methodology for Electricity Distribution, Pass Through and Consumption Tariffs" and "Tariff Setting Methodology for Electricity Generation, Transmission, Dispatch and Market Operator Services" approved under the Resolution №14 of the Commission of July 30, 2014 "On Approving Electricity Tariff Setting Methodologies", internationally recognized "incentive-based" (marginal price regulation) and "cost-plus" regulation principles are applied. Such approach fosters efficiency and stabile

functioning of utilities, as well as reimbursement of reasonable expenditures and fair income [The Resolution №14, 2014].

The regulator should set regulated tariffs for the regulated companies so that the regulated tariffs allow the companies to earn a revenue that covers the "justified costs" of their operations that are the necessary and unavoidable costs to provide the regulated service at a predefined level of quality.

Financial analysis provides an important input for price determination and control. It has a twofold role in price regulation [Kiss A., June 2006]:

- It is the foundation of creating realistic prices that ensure a fair return to utilities and guarantees continuous and safe energy supply.
- It serves as a control of existing prices in order to sustain realistic tariff levels that do not harm customers' interests.

The system of accounts has to be understood by the regulators to be able to assess the financial health of the utility and collect data required for rate development. Data requirement for rate design, such as accurate measures of revenues, operating costs, depreciation and investments in plant and equipment, should be readily available from the financial statements of public utilities.

Every Regulator Commission always tries to explore each issues about regulated companies' operational and capital expenditures, that's why they need to use benchmarking.

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The choice for a benchmarking approach, its specification and further implementation is closely related to the regulatory system in place. Benchmarking usually plays a different role within the several regulatory schemes. While it may be used only as a source of information within the classical rate of return regulation (cost-plus), it plays a very important role for incentive regulation mechanisms. In contrast to the cost-plus regulation, where prices or revenues are completely linked with actual costs, the link in the incentive approach is established via the so-called efficiency, or X-factor. The company specific efficiency which is used for establishing the company specific or individual X-factor, is usually determined via benchmarking analysis [Fried, H.O., 2008].

In a regulatory perspective, benchmarking can be understood as a tool which is used to simulate market forces for natural monopolies. We can divide methods into two groups: Unidimensional methods – partial performance indicators and multidimensional methods – overall performance indicators [Bogetoft, P., 2008].

Unidimensional methods involve partial performance indicators and key figures which might be used to address the performance of certain areas of interest and activities of companies. The focus might be placed on financial, commercial, operating or also the quality performance of a utility.

Multidimensional techniques which are accounting for interdependencies between measures and indicators are focusing on the overall performance of one entity in relation to other entities. These methods are: Data Envelopment Analysis (DEA), Stochastic Data Envelopment Analysis (SDEA), Corrected/Modified Ordinary Least Squares CRS&VRS regression (MOLS), Stochastic Frontier Analysis (SFA) [Aigner, D.J., 1977]. Each model has advantages and disadvantages and that the use depends on certain prerequisites of the model. The following issues have to be considered: sample size, data quality, ease of implementation, transparency, acceptance by stakeholders and influence by companies on the results [Banker, R.D., 1984].

The execution of a benchmarking analysis involves the following relevant steps: data collection (frequent collection of financial and technical data), validation of the data, specification of the benchmarking sample, selection and specification of benchmarking models, conduction of the analysis, determination of company specific (relative) efficiency values, communication and explanation of results [Banker, R.D., 1984].

Benchmarking techniques are widely used in the energy sector to determine company-specific efficiency values (basis for individual X-factors) [Glachant J.M., 2010]. Table N1 provide an overview about some key elements of benchmarking models used by various European regulators.

Table N1: Overview about benchmarking model specifications used in Europe

County	Benchmarking-models	Parameters (structural)
Austria	• DEA, MOLS • Weighting of efficiency values	• Area weighted network connection density • Peak Load
Germany	• DEA and SFA • With/without standardized CAPEX • Best-Of evaluation – the best EV is used	• Network assets – cable and lines in km, number of transformer stations • Renewable generation – installed generation capacity of renewables
Norway	• DEA • Super-efficiencies – EV > 100% possible • Structural/environmental factors are addressed in a second stage	• Input: OPEX, CAPEX, Quality • 1 Stage – DEA • MWh, customers, network length, forests, snow, wind, holiday residences • 2 Stage – Regression • Islands, HV transmission, small hydro

The Netherlands	• Focus on incentive mechanisms • Simple Benchmark with composite output measures • Correction (if applicable) by regional „fixed effects“	• Composite output (different consumption baskets) • Regional effects – water crossings, regional taxes • Connection density not recognized
UK	• Focus on OPEX • Benchmarking used for control and not primarily for setting targets • Separate analysis of processes	Maintenance and repair • Tree-cutting • Troubleshooting, • Network design, etc.

Nowadays in Georgia Efficiency factor (X-factor) is defined by the Tariff setting methodology. It is rate of increase of productivity and operational efficiency of utility, which includes the general efficiency factor (X gen.) and individual efficiency factor (X ind). General efficiency factor (X gen.) - rate of increase of the concrete sector's efficiency and Individual efficiency factor (X ind) - rate of increase of the concrete utility's efficiency [The Resolution, 2014];

For the first Regulatory period which is lasting from January 1, 2015 till January 1, 2018 general efficiency factor (X gen) equals to the 2%, and individual efficiency factor (X ind) is equals to 0.

In Georgia electricity market can be provisionally divided into retail and wholesale markets. Wholesale market participants are electricity generators, direct customers, exporters, importers and distribution licensees, also service providers, transmission system operator, market operator, transmission and distribution licensees. Main service providers at the retail market are electricity distribution licensees (both related to the network and supply services). Electricity can be also supplied by small power plants at the retail market. As regards to final customer segment, retail market is comprised of household and non-household customers. So called eligible customers shall be permanently distinguished from above-mentioned category as far as they are free to choose wholesale supplier (generation unit or importer) due to competitive prices, rather than purchasing electricity for fixed household tariffs [GNERC, annual report, 2016].

The process of Georgian electricity market analysis (to modify the electricity market model into competitive market model) showed that the market in Georgia is high concentrated and the main manufacturer has got monopoly market power [www.gnerc.org]. The most important thing is setting fair tariffs. That's why it is necessary to use benchmarking. But there are some problems to use international benchmarking in Georgia. The companies don't have the same financial conditions and they aren't

comparable because of market is monopolized. In Georgia electricity distribution (supply) market is highly concentrated (HHI = 4900) with 60.2% market share of "Energo-Pro Georgia" JSC, 35.4% - "Telasi" JSC and 4.4% - "Kakheti Energo Distribution" JSC [www.esco.org].

Results

Based on the current situation in Georgia to assess the efficiency of the companies I consider the following criteria:

• For analyzing operating expenses in short term it is the best to use activity based costing method (ABC);

• Long-term - international comparative analysis method.

For regulators, ABC makes cost of the regulated activities / services more transparent. ABC may have the following risks: Micro-management versus strategic management; Sometimes cancelling activity or service does not mean cancelling costs; to be choosy in which cost reduction cases to engage; Schematic planning versus realistic thinking; Costs of implementation versus benefits; Implementation of ABC is expensive in terms financial and need time.

For businesses with ABC, a company can soundly estimate the cost elements of entire products, activities and services. That may help inform a company's decision to either: Identify those products/services; Or identify and eliminate production or service processes that are ineffective and allocate processing concepts that lead to the very same product at a better yield; ABC leading to more accurate pricing decisions; It provides businesses with better information to make effective decisions; supports performance management techniques; increases understanding of overheads and cost drivers.

The whole ABC approach should be understood as a continuum. Processes and allocation rules might be redefined and the whole process contains: assessment of legal framework with respect to ABC application; assessment of available technical and managerial/economic data; data collection; comparative evaluation of cost levels and key figures definition of services; processes and allocation rules; identification of relevant cost drivers.

Conclusion

In Georgia it's much better to use the Activity Based Costing (ABC) method for a short-term analysis and international comparative analysis for the long-term period. Here are some further recommendations regarding ABC implementation: current technical data is not completely sufficient and should by extended by needed components; prior to decision to go for ABC – albeit ABC is desirable model for variety of reasons, for transparency,

causal reflection, efficiency pressure, fairness of prices, etc. – it might be costly in resources, and it worth implementing when benefits that ABC provides overcome expenses ABC causes.

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