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REGULATORY BRIEF

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Financial Benchmarking of
Utility Service Providers in the
Electricity Sector of Ghana
(2010 – 2017)

OCTOBER 2022

Summary of a study conducted by
PURC on the Financial Benchmarking
of Regulated Utility Service Providers
in the Electricity Sector of Ghana

HIGHLIGHTS OF KEY FINDINGS

- Overall, the state generation and transmission utilities exhibited relatively average performance, with the state distribution company exhibiting a relatively lower performance within the study period.
- Large debt burdens coupled with limited borrowing capacity of USPs is undermining timely investments, which is critical to service delivery and reliability.
- Policy measures are required to ensure that a utility's performance does not endanger the performance of other entities in the value chain.
- Institution of measures such as an effective receivables management structure, which will recover past debts, mobilize current revenues due and improve payments are imperative.
- Simply increasing tariffs will not render USPs viable. Emphasis must be laid on debt recovery, operational efficiency, and a reduction in technical and commercial losses.

Introduction

A key component of effective public utility regulation is financial benchmarking, which is a useful tool for evaluating the overall performance of utility service providers (USPs). Despite being essential to ensuring that everyone has access to power, the financial performance of USPs is a weak link in the electricity supply chain. In Ghana, financial analysis and the performance of USPs has not received much attention, in spite of its importance. This study therefore examines the audited financial statements of three significant USPs (Volta River Authority, VRA; Ghana Grid Company Limited, GRIDCo; Electricity Company of Ghana, ECG) from 2010 to 2017. These companies represent respectively, the generation, transmission, and distribution segments of the power industry in Ghana.

The objective was to evaluate the financial performance of USPs and to inform stakeholders about their respective financial returns and operational efficiencies. This would help to effectively identify and address the factors that contribute to poor financial performances among USPs. The following research questions were addressed. Are the USPs profitable? Are USPs liquid? How does

a USP's financial performance compare over time? Finally, how does a utility's financial performance compare with its tariff charges?

Financial ratios of these companies were analysed to shed light on each USP's profitability, liquidity, operational effectiveness and leverage conditions. Furthermore, trend analysis of tariff charges and profit margins of the USPs were conducted to reveal the relationship between the two indicators.

It is envisaged that, through this study, the Commission would be able to comprehend relative financial strengths of the regulated utilities, which could inform important performance indicators critical to tariff formulation. The study provides in-depth information compared to that which is made available by raw financial statements to enable the Commission understand reasons for the USPs' financial challenges, the relative mismatch in revenue and expenditures, and how this impacts the sector's operations.

Key Findings

Profitability trends of USPs

Gross Profit Margin (GPM) and Net Profit Margin

VRA had significant fluctuations in Gross Profit. As shown in fig. 1, VRA had difficulty converting profit from sales and operations in the period under review, reporting the lowest profit margins along with net losses in the final three years of the period under review.

Gross Profit Margin (GPM) of the firm climbed to 27.38% in 2011 from 17.57% in 2010. In 2012, it significantly fell to 5.33% and sharply rose to 26.61% in 2013. GPM was below 7% from 2015 to 2017, with a low of -5.08% in 2016. The Net Profit Margin (NPM) of VRA presented major losses of -57.74% in 2015, -51.50% in 2016 and -16.35% in 2017 after peaking at 27.57% in 2014. Expenditure increased with no corresponding increase in revenue. For the eight-year period, the company generated an average of 12.96% (GPM). However, after all expenses including interest, administrative expenses, and depreciation were deducted, VRA had an average of -7.34% NPM, showing a cumulative net loss.

On the average, GRIDCo demonstrated good performance in Gross Profit, however, net profit deteriorated towards end of the period. The firm's GPM increased from 46.35% in 2010 to 51.36% in 2011. However, this decreased to 37.84% in 2012 before steadily rising to 50.57% in 2017. Over the period, GRIDCo increased its income while keeping direct costs under control. However, GRIDCo's NPM after reaching a period high of 34.52% in 2011, decreased to 23.74% in 2012, sharply declining to 3.94% in 2013 and reported losses for the remaining period, with the worst performance of -11.82% NPM occurring in 2017. Although the performance in gross profit was impressive, the transmission company could hardly control other expenditures including interest, administrative expenses and depreciation, dissipating all of its gross profit to incur net losses in the latter years.

ECG's gross profit was low and volatile from 2010 to 2017. GPM fell from 16.2% in 2010 to 10.3% in 2012 and increased from 10.5% in 2013 to 13.0% in 2014. Volatility was high in the latter years. GPM declined sharply to 7.60% in 2015 and thereafter, increased significantly by 11.70% to

reach a maximum of 19.30% in 2016. GPM later declined by 15.90% to a record 3.40% in 2017, the minimum GPM for the period. With the exception of 2011 when it recorded a NPM of 1%, ECG experienced losses in NPM throughout the 8-year period. Although the highest ever loss occurred in 2013, the most recent years also posted significant losses, with a NPM of 5.60% in 2016 and -4.80% in 2017. The average GPM and NPM were 11.60% and -3.20% respectively. Persistently, ECG's revenue was not able to cover the distribution cost, administrative expense, and finance cost.

Fig 1: Gross Profit and Net Profit Margins of the USPs



Return-on-Equity (RoE) and Return-on-Assets (RoA)

All three USPs operated with an RoE below the indicative range of 12% - 15%. GRIDCo's RoE in 2011 stood at 13.38%, while VRA's stood at 12.84% in 2017. The best RoE performance of ECG was 0.50% in 2011, reporting a negative RoE for the rest of the years. Prior to recording its highest RoE of 12.84% in 2017, VRA reported RoE losses of -12.15% in 2015 and -5.35% in 2016, in spite of showing signs of resurgence in 2013 and 2014. RoA for VRA has been low yielding a maximum return of 5.06% in 2017 and incurring a high loss of -3.91% in 2015. GRIDCo's RoE increased from 7.93% in 2010 to 13.38% in 2011 before declining sharply to 0.92% in 2013 and returning losses thereafter with the maximum loss of -3.61% occurring in 2017.

GRIDCo's RoA increased from 6.08% in 2010 to 9.48% in 2011, fell consistently to 0.60% in 2013 and thereafter returned losses with the maximum loss of -1.41% occurring in 2017. With the exception of 2011, when RoE was 0.50% and RoA was 0.30%, ECG returned losses to the investment of its shareholders and on its assets from 2010 and 2017. The RoE and RoA performances are presented in Fig. 2.

Average RoE for ECG was -2.4%, and RoA was -1.1% for the period under review. For a period of eight years, every one Ghana Cedi (GHS1) of shareholder investment yielded a loss of GHS -0.0240 and GHS 1 of asset returned a loss of GHS -0.011. This means ECG underutilized its assets and underperformed in asset turnover

Fig 2: Return on Equity and Asset Performance of the USPs



and financial leverage. For the same duration, VRA on average returned profits of GHS0.0163 on every GHS1 of its shareholder investment and GHS0.0146 on every GHS1 of asset held. On average, Shareholder investment in GRIDCo also earned a profit of GHS0.0269 for every GHS1 and every GHS1 of asset earned GHS0.0217. Thus, while ECG stayed a loss-making entity in eight years, VRA and GRIDCo returned some amount of profits on their assets and equity. However, the performance of VRA and GRIDCo in their latter years in particular, were worrying as GRIDCo presented losses in the four-year ending and VRA posted losses in two out of the four years.

Relationship between Tariffs and Profitability (Gross Profit Margin)

Although gross profit was expected to increase following an upward tariff adjustment, evidence from this study is mixed. As depicted in fig 3 below, there is no consistent relationship between tariff adjustment and gross profits of USPs. When tariffs are adjusted upwards, downwards or maintained, gross profit can either increase or decrease. Decreases in GPM after an upward adjustment in tariffs can be occasioned by irregular expenditures in component of the direct cost.

VRA's Bulk Generation Charge (BGC) Vs. GPM

While the BGC of VRA steadily increased from 2012 to 2017, GPM fluctuated. A negative relationship existed between BGC and GPM from 2011-2012 and 2015-2016, while a positive relationship existed between 2013 and 2014. When the BGC was reduced from Ghp11.91/kWh in 2010 to Ghp7.93/kWh in 2011, GPM increased from 17.57% to

27.38%. However, when the BGC increased to Ghp8.45/kWh in 2012, GPM fell precipitously to 5.33%. The relationship between BGC and GPM became positive when the BGC was increased in 2013. With BGC remaining constant at 2016 levels, GPM increased by 0.68% in 2017. A fall in the GPM after an increase BGC could be attributed to VRA's irregular direct expenditures as well as other ancillary activities carried out by the utility during those years.

GRIDCo's Transmission Service Charge (TSC) Vs. GPM

GRIDCo's TSC recorded a positive trend between 2010 and 2017, with a fluctuating positive GPM throughout the period. Although TSC increased by Ghp0.07/kWh in 2012, this was associated with a negative GPM, falling from 51.4% in 2010 to 37.8% in 2013. There was however, a positive relationship between TSC and GPM between 2013 and 2016. GPM decreased from 50.5% in 2016 to 44.8% in 2017 when TSC was maintained at 2016 levels.

ECG's Distribution service charge (DSC) Vs. GPM

Except for 2011, when DSC decreased, ECG experienced consistent increases in DSC from 2012 to 2017 with a fluctuating GPM. The GPM consistently decreased as the DSC increased in 2012, 2015, and 2017. The GPM fell sharply from 19.30% in 2016 to 3.40% in 2017, following a significant upward adjustment of DSC from 22.22% in 2016 to 30.72 % 2017.

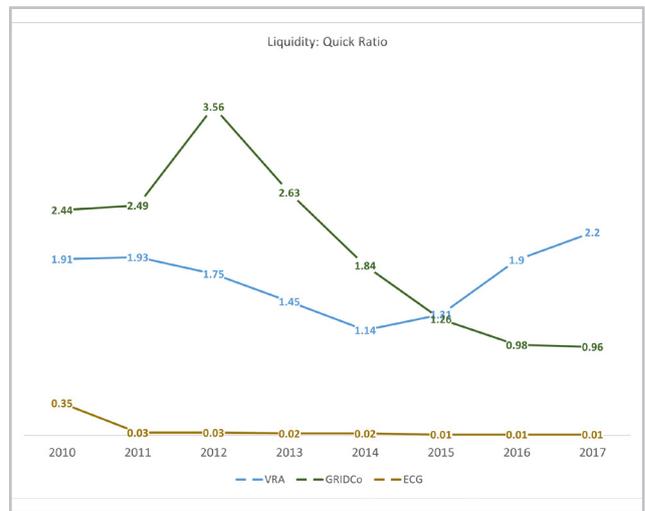
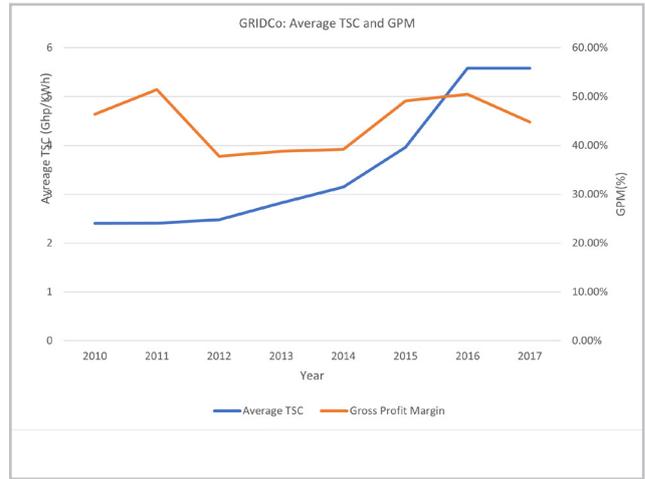
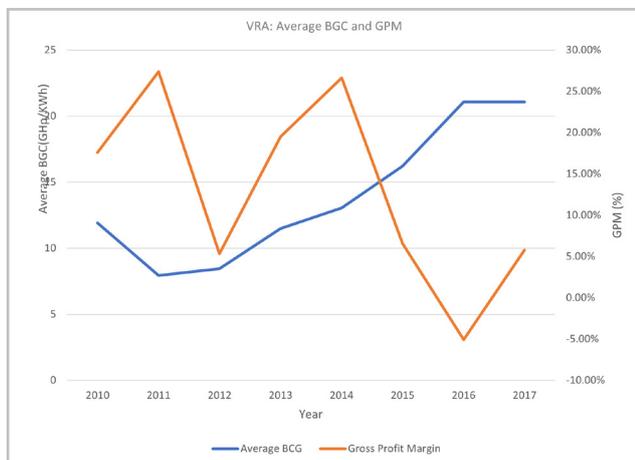


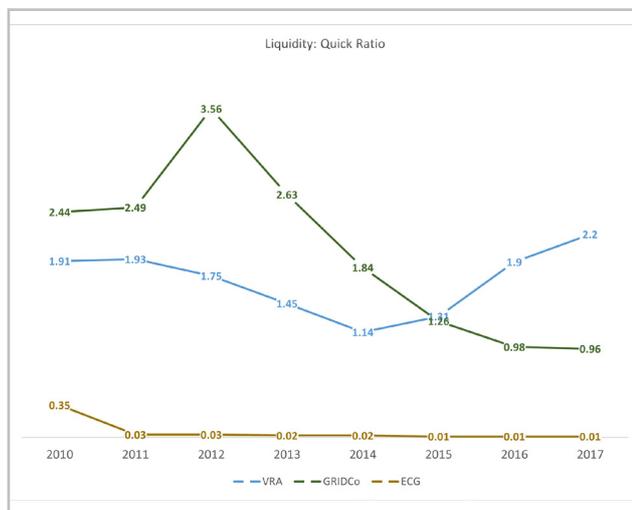
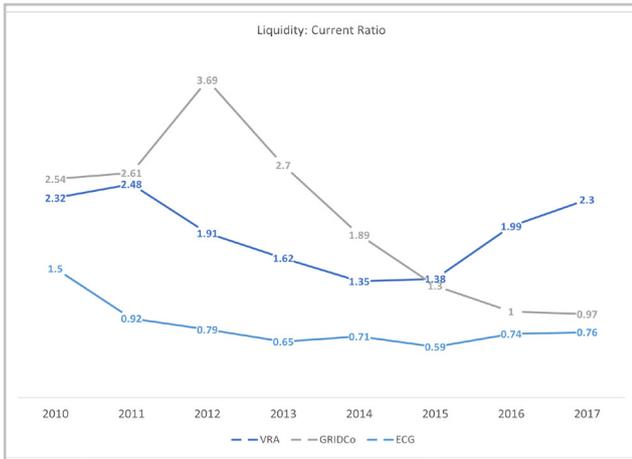
Fig 3: Relationship Between Tariffs and Gross Profit Margins



Liquidity trends

Overall, VRA and GRIDCo were liquid over the period, showing improved performances in the analysis of current and quick ratios, with ECG emerging as a distressed entity. Fig 4 presents a graphical picture of the situation, where both current and quick ratios were greater than one, with an average of 1.92 and 1.70 respectively. This shows that VRA's current assets and even, its most liquid assets, fully covered all of its current liabilities. GRIDCo, in 2016 and 2017 struggled to meet its short-term debt obligations with the firm's most liquid asset unable to cover its current liabilities. With the exception of 2016 and 2017, GRIDCo managed to cover its short-term debt obligations over an eight-year period with an average current and quick ratio of 2.09 and 2.02 respectively. However, ECG's current liabilities exceeded its current assets throughout the period and therefore was unable to meet its short-term obligations.

Fig 4: Liquidity Trends



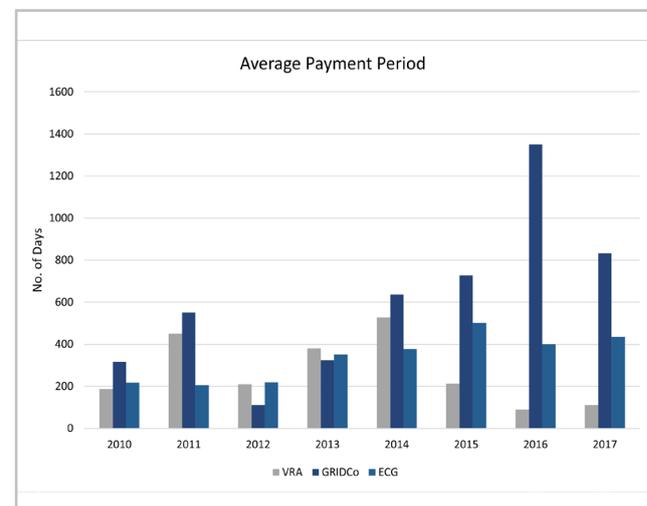
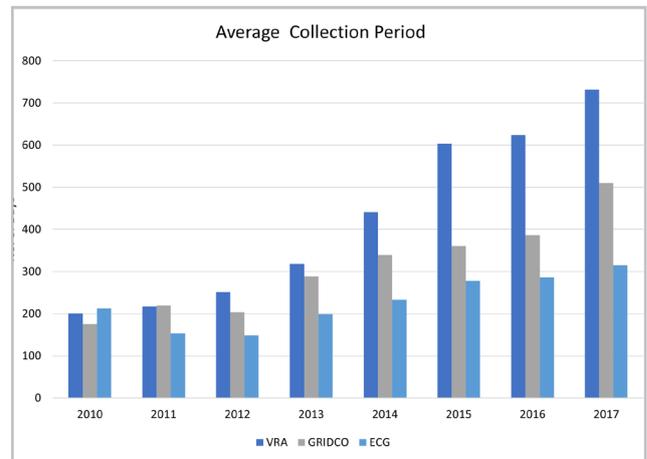
The weak liquidity ratios could be attributed to limited cash inflows as a result of non-payment of electricity bills, as well as aggressive investment policies which require significant cash outlays. Annually, ECG lost over USD180 million revenue because of non-payment of electricity bills, of which some government Ministries, Department and Agencies (MDAs) together owed about 80% with approximately USD1,300million of electricity bills due ECG in accumulated arrears.

Efficiency Trends

Analysis of efficiency trends were based on data collected on average collection and payment periods of the three USPs. VRA, GRIDCo, and ECG increasingly spent more days collecting revenue from sales, thereby reducing cash inflows and affecting availability of liquidity for operations. VRA recorded an average collection period of 424 days, with a minimum of 201 days in 2010 and a maximum of 732 days in 2017. Figure 5 indicates a deterioration in VRA’s revenue collection in the

latter years, as the firm used more than two years to collect revenue. The minimum and maximum collection periods for GRIDCo were 176 days in 2010 and 510 days in 2017, demonstrating a consistent decrease in cash over the period, thus taking GRIDCo, an average of 606 days to pay its creditors. The firm’s poor payment record to its creditors reflects the poor performance in revenue recovery. GRIDCo in 2016, took 1351 days to pay its creditors, however, this was reduced to 833 days in 2017 with ECG reporting an average of 228 days in revenue collection, taking ECG, not less than 7 months to receive payment from its debtors. The average collection period rose consistently to a maximum of 315 days in 2017 with ECG taking 338 days to pay its creditors. After steadily increasing to a period high of 501 days in 2015, the number of days it took ECG to pay its creditors began to decrease in 2016. In all, it was easy to spot the spill over effect of ECG’s revenue inefficiency on VRA and GRIDCo since these two USPs could only be paid when ECG received revenue from sales to final consumer.

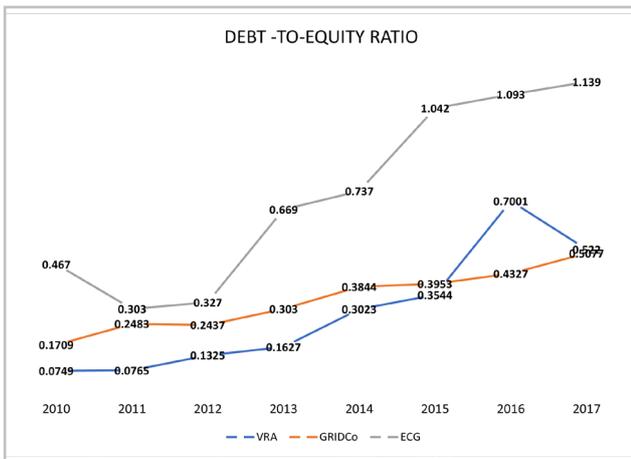
Fig. 5: Efficiency trends of the USPs



Leverage Trends

VRA and GRIDCo fund the majority of their operations with equity rather than debt, thus a low Debt-to-Equity (D/E) ratio between 2010 and 2017 was reported. This is visualised in Fig 6. ECG's operations were largely financed through debt between 2015 and 2017, with a D/E ratio of more than one. This had a negative impact on the utility's funding source and investment programs. While VRA and GRIDCo could easily attract additional capital, ECG had more difficulty attracting capital.

Fig. 6: Debt-to-Equity Ratio



Policy Implications

The study concludes that the state generation and transmission utilities in Ghana exhibited relatively average performance, with the state distribution company exhibiting a lower performance. The single biggest challenge for the electricity value chain therefore is to attain some level of financial viability covering the costs of power generation, transmission, and distribution. Large debt burdens coupled with limited borrowing capacity is undermining timely investments, which is critical to service delivery and reliability.

Although VRA, GRIDCo and ECG are a going concern, from the data, their viability seems to be deteriorating year after year. Thus, policy measures are required to ensure that ECG's performance does not endanger the performance of other entities in the value chain. This is because ECG's relatively weak financial performance is transmitted through the value chain to the transmission and generation companies, who depend on ECG to

collect tariff revenues and make payments to them. Thus, any policy pursued for financial viability, be it privatisation or an alternative, should be able to address the operational inefficiencies including technical and commercial losses, which reduce the revenues and thereby create liquidity problems for the distribution utility.

Rather than focusing only on immediate short-term management of financial and operational crisis, it is imperative for government, USPs and other stakeholders to develop and implement an overall strategy in addressing the sector's long-standing, deep-seated structural problems and long-term investment needs. A sector policy and strategy which includes financial restructuring of the USPs is paramount for financial viability and investment commitments. This is important in addressing the underlying structural and financial challenges.

Another point worth noting is for the utilities to institute measures such as an effective receivables management structure, which will recover past debts, receive current revenue and improve payment. Kazakhstan's Electricity Operating Company and the Power Grid Corporation of India, are examples of USPs in the world who have instituted such measures and successfully improved their collectibles and receivables and become profitable. ECG must accelerate the installation of prepaid meters to reduce theft and commercial losses, and to improve overall revenue collection.

Additionally, simply increasingly increasing tariffs will not render USPs viable. Emphasis must be laid on debt recovery and operational efficiency, technical and commercial loss reduction. There is no consistent evidence to say that raising tariffs will improve the financial performance of USPs. Across board, any of the USPs can experience either an increase or decrease in gross profit following a tariff increase. In an era when tariffs do not fully cover cost of power sold, policy direction for tariff increases may sound ideal. However, given that significant amount of power sold is in debt, emphasis must also be laid on debt recovery and operational efficiency and technical and commercial loss reduction to ensure financial viability. In 2017 for instance, system losses (technical and commercial loss) accounted for approximately 24% of power ECG purchased amounting to about USD400 million. Thus, alongside tariff increases, employing measures to reduce technical and commercial losses will accelerate efforts in improving the

financial viability in the industry. Additionally, tariff increases can be matched with key performance indicators, which USPs will be required to attain in order to seamlessly improve their operations and reduce their technical and commercial losses. Besides, the timing of tariff adjustments could be one of the reasons why an upward tariff adjustment reflects consistently with increased gross profit. The adjustment could be late on arrival and USPs might have already accumulated losses due to changes in economic environment. This suggests the need to effectively implement the quarterly tariff adjustments. For the avoidance of doubt, future studies can be conducted to tease out this causal relationship.

Finally, stakeholders need to work to ensure that

the Energy Sector Recovery Program becomes successful. As part of the program, there is a strategy for government to pay on behalf of MDAs, unpaid bills owed to ECG. With 80% unpaid bills owed by MDAs to ECG, this program will potentially enable ECG to recover about 80% of its bills, which currently goes unpaid by customers. The program also introduced the Cash Waterfall Mechanism which ensures that USPs are paid on a timely basis when payment for electricity bills are made. This will improve the collection and payment period and liquidity of the generation and transmission companies as well as promote financial viability in the industry. It is therefore recommended that this program be sustained for the financial performance of the power sector.



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