

Quasi Fiscal Activities and Investments in Energy Sector (Case of Georgia)

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Key words: quasi fiscal activities, energy, government, subsidies, actual and market prices

Methodologies of QFA calculation

In the working paper Petri, Tsyvinski and Taube (2002) discuss methodological and measurement issues in order to estimate energy sector QFAs, which usually depend on the quality of data, which itself in many former soviet union countries still remains as a problem. The lack of data transparency, in some cases, may be driven from the perspective of rent seeking. Methodologically, energy quasi fiscal activities related to the payment of arrears are somewhat easier to measure if data about payment for enterprises and other end users is available. Arrears that are directed towards energy sector companies may theoretically be considered as QFAs, because toleration to them equals implicit subsidy to consumers of energy.

Martin Petri et al. (2002) discuss two methodologies of how to measure energy sector quasi fiscal activities. These methodologies are applied in the case studies of Ukraine and Azerbaijan. In the case of Ukraine, data availability was limited and they used quite simple method that depends on appropriate energy prices together with consumption volume (End Product Approach). In the paper, there is provided the method of End Product Approach by the following way:

Let: V = the quantity of energy product sold
 $P(m)$ = the cost recovery output price
 $P(a)$ = the actual price
 c = the collection ratio

1. Arrears at actual prices = $V * P(a) * (1-c)$
 = Value at actual prices minus collections
2. Mispricing of output = $V * (P(m) - P(a))$
 = Value at market prices minus value at actual prices
3. Total QFAs = $V * P(a) * (1-c) + V * (P(m) - P(a))$
 = Arrears at actual prices plus mispricing of products
 = $V * P(m) - V * P(a) * c$
 = Value at market prices minus actual collections

According to formula, quasi fiscal activities consist of two parts: mispricing of output and arrears at actual prices. In the second part of the formula, if actual price is close to the market price (or cost recovery price), the QFA from mispricing of output tends to zero. In the first part of the formula, arrears at actual price, tends to zero as collection rate increases to one. To sum up, in the final expression, it is easily seen that if collection rate increases, total QFA decreases. Moreover, if $P(a)$ approaches to $P(m)$, total QFAs decreases, because actual price tends to reflect market (or cost-recovery) price.

Literature Review

Martin Petri and Gunther Taube (2003), is based on (1996) International Monetary fund (IMF) working paper "Energy sector quasi-fiscal activities in the countries of the Former Soviet Union". It presents descriptive analysis of quasi-fiscal activities of the energy sector in FSU countries. They analyze QFAs that arise from low energy

prices and arrear toleration. Among former Soviet Union countries, Azerbaijan has the largest energy QFA which was around 20 percent of GDP in 1999-2000.

According to the data from IMF staff estimates, the

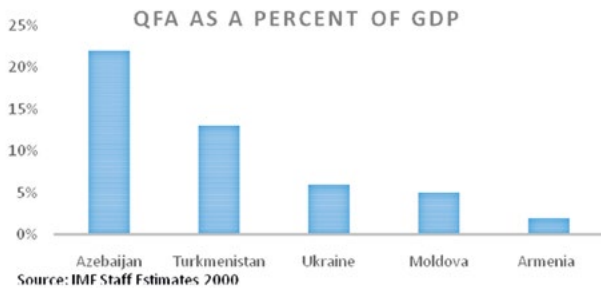


Fig. 1. QFA as a Percent of GDP

authors infer that quasi fiscal activities in energy have been reduced in some energy importing countries (e.g. Ukraine, Georgia, Armenia), but significantly increased in energy abundant countries (e.g. Russia, Azerbaijan), mainly because of higher international energy resource prices. Because Russia and Azerbaijan are energy abundant countries, the prices they set for energy goods are very low compared to competitive prices. QFAs in the energy sector, more precisely, below cost-recovery prices and low enforcement of payments (arrears), can lead to overconsumption and insufficient investments. By reducing prices, consumers are implicitly subsidized by producers, but these subsidies represent implicit tax for producers. Thus, inappropriate low prices can be regarded as an implicit tax for producers and an implicit subsidy for consumers. Thus resources are transferred from the producers to the consumers of energy. Consequently, if the tariff is set below the cost-recovery levels, the energy distributing company will face a lack of resources for investments.

Low prices and inefficient consumption of energy resources were important drivers of QFAs in FSU countries. After breakup of the Soviet Union, prices were set below cost-recovery or international levels, and per capita energy consumption remained at high level according to international standards, especially if consumption is seen relative to per capita levels. This suggest that energy consumption prices are inappropriate.

In figure 2, GDP and total primary energy consumption¹ are measured in USD. It is easily seen that consumption of energy in FSU countries is quite high compared to Western Europe. According to Martin Petri and Gunther Taube

1 1 ft³ of natural gas yields ≈ 1000 BTU; 1000 BTU/hr ≈ 0.293071039 kW

RATIO OF TOTAL PRIMARY ENERGY CONSUMPTION (IN THOUSANDS OF BTUS) TO GDP FOR 1999 YEAR



Sources: U.S. Energy Information Administration; World Development Indicators (2001), World Bank. * Includes: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom

Fig. 2. Ratio of Total Primary Energy Consumption (in thousands of BTUs) to GDP for 1999 year

(2003), the main reason of this problem is the fact that FSU countries' citizens were used to consuming energy goods at low prices during Soviet Union times. Prices were low because Soviet Union was one whole system with low transmission costs and without borders, also there were not free market conditions. Because of low per capita income, inappropriate infrastructure and less efficiency in the consumption of energy sources the governments of the FSU countries' ran quasi fiscal activities in terms of low energy prices and toleration of arrears in order to satisfy their citizens' demand for low prices. Thus, they made implicit subsidies for consumers that, in turn, led to implicit tax for energy producers.

Case study of Georgia

Measuring QFAs in the energy sector of Georgia gives opportunity to analyze the dynamics of investments made by private enterprises. Observing the amount of investments in energy market over the given period is important to find out if QFAs' burden decreases² (But also there might be the case of profit distribution policies). In the case of Georgia there is used end-product approach to calculate QFAs in electricity and gas sector, because of limited availability of data. In order to analyze situation in gas sector, Kaztransgaz Tbilisi was chosen as a representative of a given sector.³ It has to be noted that there are nearly 45 small distributing private companies operating on the gas market of Georgia, but availability of data from these companies was limited by the reason of inconsistent

2 QFAs cause decrease in revenues of operating companies, as far as, it includes mispricing and toleration of arrears.

3 „Kaztransgaz“ serves approximately 400 000 households.

accounting system. In the case of electricity, there is chosen Energo-pro and Telasi⁴ as representatives of electricity sector. Moreover, there is also one operating distributing company Kakheti that distributes electricity in the Kakheti region, but the data could not be provided by them because this company is on the way of bankruptcy. Kakheti has got inefficient management in terms of collection of bill payments from households. Furthermore, this company has not provided counters for households and nowadays the bill payment is fixed for all households in the Kakheti region. It is noteworthy that prices of gas and electricity are regulated by GNERC (Georgian National Energy and Water Supply Regulatory Commission). Tariffs that are charged to households by GNERC are cost-recovery and it tries to catch prices as lower as it is possible, because Georgia represents FSU country and majority of citizens demand low tariffs from government on energy goods. Moreover, price for gas is very low compared to commercial prices, because Georgia gets free gas from pipeline connecting Russia and Armenia (nearly 10% of transmitted volume).

In the electricity sector prices are set step wisely.⁵ Moreover, tariffs for these three steps are different from 2010 to 2014 years. In the Figure 6 there is provided the dynamics of electricity tariffs for this period for Telasi and Energo Pro Georgia.

The actual price for calculating quasi fiscal activities in energy sector for Telasi and Energo pro Georgia is taken volume weighted average tariff of three steps⁶. Market price is also calculated by volume weighted average price. It takes into account the tariffs that are measured by given companies before discussing it by GNERC (See Appendix II). For electricity case, QFAs are calculated according to simple sensitivity analysis including mid-point between upper and lower bound prices. Upper bound price (market price) is defined as the price that is measured by electricity companies before discussing tariffs by GNERC. On the other hand, lower bound price (actual price) is defined

4 „Energo-pro“ serves 942 958 households in the west part of Georgia and „Telasi“ serves 418 312 households.

5 For Telasi, tariff for step1 (0 kw/h -101 kw/h) is 8.034 Georgian Tetri, for step2 (101 kw/h – 301 kw/h) tariff is 10.560 Georgian Tetri and for step3 (301 kw/h – and higher) tariff is 14.998 Georgian Tetri (Without value added tax). For Energo Pro Georgia, tariff for step1 (0 kw/h -101 kw/h) is 7.630 Georgian Tetri, for step2 (101 kw/h – 301 kw/h) tariff is 11.000 Georgian Tetri and for step3 (301 kw/h – and higher) tariff is 14.830 Georgian Tetri (Without value added tax).

6 Tariffs are calculated by GNERC for three different steps.

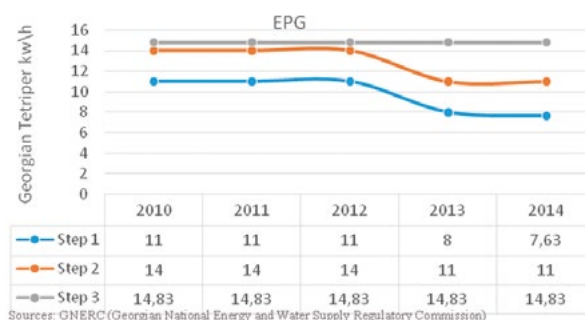
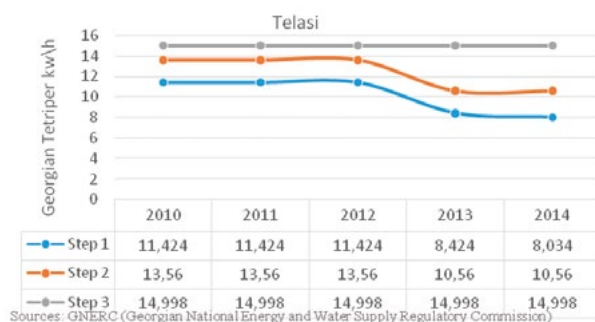


Fig. 6. Georgian Tetris per kw/h from „Telasi“ and „Energo Pro Georgia“



as the price that is set by GNERC. According to this analyzes we observe how QFAs decrease when market price approaches to zero. If tariff set by GNERC is appropriate and market price equals to actual price, QFAs do not tend to zero in 2010–2014 years, as far as QFAs include toleration of arrears and mispricing of output for both sectors.⁷ In gas sector actual price is the tariff that is set by GNERC for Kaztransgas Tbilisi for households and market price is chosen according to the tariff that is deregulated for commercial sector.⁸

In this work QFAs are calculated separately for electricity and gas sectors in terms of mispricing and toleration of arrears (See Appendix I and II). Thus it makes possible to observe which sector has got higher share in QFAs. In electricity sector QFAs are calculated separately for Telasi and Energo pro Georgia.

According to the Figure 7, QFAs caused by “Telasi“ are increasing in 2013 and 2014 years. The main reason for this trend is that tariff for step1 and step2 decreased in these years. Consequently, actual price fell farther below the market price. Decreases in tariff for those steps are caused by change of government in 2013 year. New gov-

7 Mispricing of output equals to zero if price is appropriate but as far as collection ratio does not equal to one during 2010–2014 years, QFAs do not tend to zero.

8 42.898 Georgian Tetris per cubic meter in 2010–2013 years and 38.661 Georgian Tetris per cubic meter in 2014 year. Deregulated tariff for commercial sector is 71.652 Georgian Tetris per cubic meter (Without value added tax).

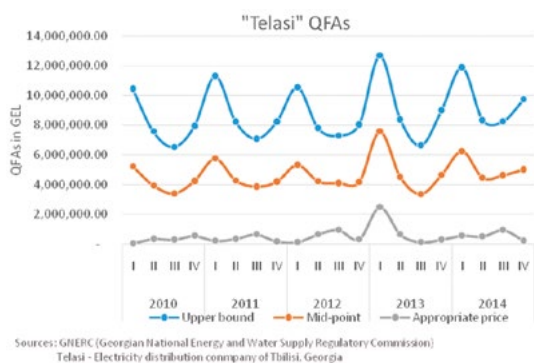


Fig. 7. Telasi QFAs

ernment promised citizens to decrease energy prices. Thus new government triggered increase of QFAs. It is noteworthy, that in the first and fourth quarters QFAs are higher compared to the second and third quarters. That is because in these periods citizens use more electricity for heating. As far as tariff was lower in 2013 and 2014 years citizens consumed more electricity and QFAs increased significantly. Moreover, mispricing has got higher share in total quasi fiscal activities compared to toleration of arrears, because collection ratio is high for Telasi¹ (See Appendix II). In the Figure 7 it is easily seen that there exists QFA even when actual and market prices are equal. Thus there is the problem of collection process. Moreover, arrears at actual price increased in the first quarter of 2013 year. The main reasons of increased arrears are increased consumption of electricity and decreased collection ratio. In 2014 year, arrears at actual price decreases, mainly due to increased collection ratio.

The same pattern applies in the case of Energo Pro Georgia. In 2013-2014 years' consumption of electricity increases in the first and fourth quarters. Compared to 2010-2012 years, tariffs are lower that leads to a further decrease of actual price. Consequently, QFAs in terms of mispricing increase.

Furthermore, it has to be noted that with increase in the volume of consumed electricity, there was problem of arrears at actual price. In the QFAs that are caused by Energo Pro Georgia, toleration of arrears' share is increasing in 2013-2014 years. Generally, in total QFAs of Energo Pro Georgia the share of mispricing is higher than toleration of arrears, because of decrease in electricity tariff of step1 and step2 (by the same reason as in the case of Telasi).

1 Collection ratio varies from 0.9264 to 0.9994 for „Telasi“.

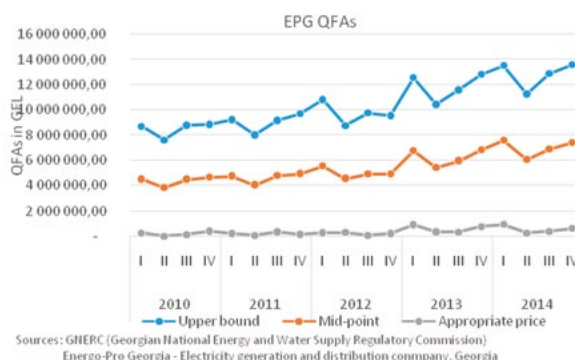


Fig. 8. QFAs of Energo Pro Georgia

In the gas sector, commercial tariff is not under regulation of GNERC and Kaztransgas decides by itself at what tariff to supply gas to private enterprises. Actual price² that is set for households' consumption is very low compared to the commercial tariff. This could be due to the market power of Kaztransgas Tbilisi. Consequently considering commercial price as the market price can overestimate QFAs of gas sector. It would be better to have data about costs of „Kaztransgas Tbilisi“, in order to find alternative measure for market price. However, by the reason of limited availability of data I used commercial price as a market price. Thus, as far as the gap between actual and market price is high, QFAs that are caused in gas sector is higher compared to electricity one.

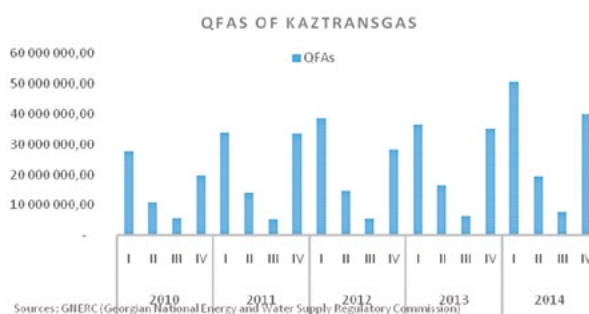


Fig. 9. QFAs of Kaztransgas

According to the Figure 9, it is seen that QFAs are almost the same during 200-2013 years. In 2014 there is increase in quasi fiscal activities of Kaztransgas compared to previous years. The reason of increased QFAs is that in 2014 tariff for households decreased from 42.729 Georgian Tetris to 38.661 Georgian tetri per cubic meter. Thus the gap between actual price and market price increased that led to higher QFAs in gas sector. Furthermore the share of gas sector in total quasi fiscal activities is higher compared

2 Tariff that is set by GNERC.

to electricity sector in first and fourth quarters during 2010-2014 years mainly by the reason of seasonality.³

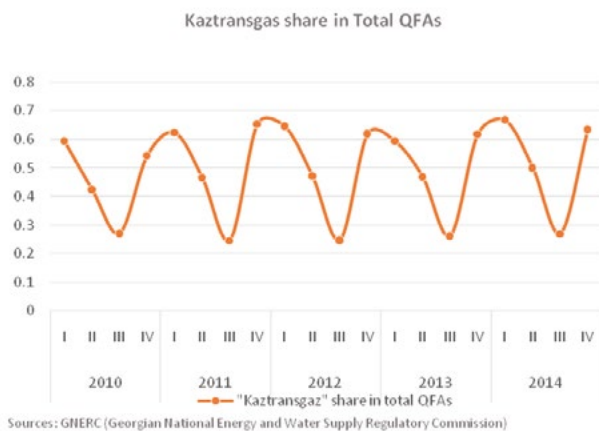


Fig. 10. Kaztransgas share in Total QFAs

In the Figure 10 there is the dynamics of the share of gas sector QFAs in the total QFAs.

Besides, it is important to analyze the portion of total quasi fiscal activities in the GDP. Low share of QFAs in the GDP implies that gap between actual and market prices is small and also collection ratio is close to one. The opposite logic applies to the case when the share of QFAs is high in the GDP of a given country. In the Figure 11 there is provided the share of QFAs in the GDP of Georgia over 2010-2014 years.



Fig. 8. QFAs of Energo Pro Georgia

The above figure shows how the share of total QFAs in GDP changes over time. It is easily seen that QFAs share has got the seasonal fluctuation. The main reason for this type of seasonality is that in the first and fourth quarters households use more electricity and gas for heating compared to second and third quarters. Moreover, the share increased in 2014 year compared to previous years, because

3 Here QFAs of electricity sector are calculated using upper bound price as a cost-recovery market price.

there was decrease in the tariff of gas in 2014 year that caused increase in QFA of “Kaztransgaz“. As far as gas sector has got higher share in total QFAs of Georgia (mainly in first and fourth quarters), it influenced the total share of QFAs in GDP and in 2014 year’s first quarter the share is the highest, compared to 2010-2013 years. Taking into account that Georgia represents FSU country, the share of QFAs in GDP is not high compared to other energy importing FSU countries where QFAs were calculated according to end product approach.⁴

After observing the dynamics of total QFAs and its share in GDP it is important to analyze how investments are affected. In the Figure 11 there are represented investments made by Telasi, Energo Pro Georgia and Kaztransgas during 2010-2014 years.



Fig. 12. Investments of „Telasi“, „Energo Pro Georgia“ and „Kaztransgaz“

According to the Figure 12, investments decreased in 2013 year and slightly increased in 2014 year. As far as there was decrease in the tariff of electricity sector, both companies QFAs increased and by the reduction of prices they lost revenues that in turn could be used for investments. Moreover there should be noted that decrease in investments is caused by the fact that they already had done enough investments (e.g. for improvement of efficiency in transmission) or by the reason of dividend distribution. In the gas sector decrease in investments could also be caused by increased amount of QFAs. From this figure it is visible, that electricity sector made higher investments compared to gas sector. The highest share has got “Energo pro Georgia“, because it invested money in order to increase efficiency in collection process.⁵

According to the dynamics of QFAs and investments the burden of QFAs over investments increased in 2013 and

4 In 2000 year QFAs as a percent of GDP in Ukraine was 6%, in Moldova was 5% and in Armenia was 2%.

5 „Energo Pro Georgia“ started to install individual counters to each household under its service. Source: <http://www.energo-pro.ge/ka/?s=investments>

2014 years. The major reason of increased burden was that GNERC decreased tariffs for electricity and gas sectors. Consequently, mispricing part of quasi fiscal activities increased because the gap between actual and market prices became larger.

Conclusion

This paper discussed the causes and implications of energy sector quasi fiscal activities. Moreover, there was discussed two methodologies the end product and financial balance approaches with the examples of Ukraine and Azerbaijan. The choice of market price for both methodologies is a critical issue. There exist several alternative measures as a market price (e.g. export, import, and cost-recovery) in order to measure the mispricing part of QFAs. The chosen benchmark price can have significant effect on the results. Thus, in order to get valid results one should undertake sensitivity analyses through alternative prices. Therefore, more research is needed in order to determine appropriate gas and electricity cost-recovery prices.

Due to the limited availability of data, end product approach was used in the case study of Georgia. Quasi fiscal activities in Georgia were lower compared to other energy importing FSU countries. According to Martin Petri et.al (2002), quasi fiscal activities are higher for energy exporting countries compared to energy importing countries due to high international prices.

After analyzing QFAs in the electricity and gas sector of Georgia, it turned out that the gas sector has the highest share in QFAs, due to the large gap between actual and market prices. According to the data, QFAs increased after 2012 because of tariff reductions in both sectors. As tariff reductions reduce revenues companies cannot invest money appropriately. Consequently, the burden of QFAs on investments increased in 2013–2014. Moreover, in order to reduce the QFAs of a given country, the energy price increase should be mixed with better enforcement of payment discipline. In the case of Georgia, the main problem concerning QFAs was a mispricing of output, because the

collection ratio for both sectors is close to one. In this case, a reduction of QFAs can be reached by approximating actual and market prices.

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The mainstream hypothesis in the literature is that the countries of the former Soviet Union use quasi-fiscal activities, in order to implicitly subsidize households. The aim of this paper is to test the hypothesis and analyze the quasi-fiscal subsidies and their effect on fiscal performance during 2010–2014, in case of Georgia. Using the end product approach I estimated the level of the quasi-fiscal activities and found that the level of QFAs in Georgia is significant. Moreover, in the paper it is shown that major subsidiaries are households, rather than private sector. Finally, sustainable fiscal adjustment is needed to eliminate the quasi-fiscal activities, which requires consolidation of accounting, financial control and reporting in the public sector with the policies that approximates actual and market prices.