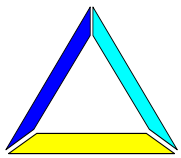
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Ukraine's gas sector: Time for reforms

Summary

Ukraine's gas market is heavily distorted by various types of cross-subsidization, from subsidization of domestic consumption by transit revenues to subsidization of certain consumers. All these subsidies cause substantial distortions, leading to problems such as rather high consumption levels, underinvestment in infrastructure and uncertain terms of future operations. In essence, all those problems seriously endanger the sustainability of Ukraine's economy and society. To overcome these problems we propose to restructure the current *de jure* monopoly of NAK Naftogaz, the vertically and horizontally integrated state-owned gas company, and instead to follow the "European model" by creating a transparent gas markets that allows for private initiative and competition wherever possible. To provide more specific recommendations, we discuss the optimal market organization for different segments of the gas market. In particular, we recommend that market forces should operate in extraction and retail segments, while an independent state institution should regulate tariff setting for transport and distribution networks.

Contents

1. **INTRODUCTION**
2. **IDEAL MODEL**
   - **2.1. Separation of Economic and Regulatory Activities**
   - **2.2. Regulates vs Competitive Sectors**
   - **2.3. Tariffs, Prices and Subsidies**
   - **2.4. Vertical and Horizontal Structure**
   - **2.5. State vs Private Property**
3. **SEQUENCING OF REFORMS**
   - **3.1. Separating Transit Operations and Domestic Consumption**
   - **3.2. Creating Framework for Competition and Private Operations**
4. **CONCLUSIONS**

1. INTRODUCTION

The gas market in Ukraine is heavily distorted by various types of cross-subsidization.[1] First, domestic consumption is subsidized by transit operations. Second, within domestic consumption households buy the gas at below cost-covering prices and are subsidized by the industry. Third, within non-household customers public utilities are also paying subsidized prices. Fourth, domestically extracted gas is mostly sold on domestic markets at prices that are low by international standards, further subsidizing the domestic market. These market distortions cause several major problems. On the demand side, domestic prices fail to give appropriate incentives to consumers, leading to persistently inefficient energy use. The magnitude of this problem is dramatic. To produce one Dollar of GDP, Ukraine's economy requires a primary energy input of 2.6kg of oil equivalent, one of the highest levels in the world.[2] For comparison, the global average is less than 0.3kg and even the average of all former Soviet Union (FSU) countries is below 1.5kg.[3] And, the long-lasting persistence of cross-subsidies has not only distorted gas demand. On the supply side, low payment discipline (hence, accumulation of arrears), low price levels and unpredictable government regulation have resulted in substantial underinvestment into infrastructure and extraction.

In line with the manifestation of cross-subsidies, Ukrainian policy-makers have created a *de jure* monopolized gas market, united under the roof of NAK Naftogas. This arrangement had its justification in the past, as it helped to increase transparency and to rule out possibilities for rent-seeking schemes during the troubled times of Ukraine's economic transformation in the 1990s. However, an energy market dominated by a large state-owned monopoly operating on politically rather than economically determined grounds is unlikely to provide the badly needed efficiency and sustainability of economic operations at reasonable consumer prices. Instead, as e.g. the experiences in Western Europe before the start of liberalization on energy markets in 1990 demonstrates, closed monopolistic structures typically lead to high monopoly prices (e.g. Germany, France), often even combined with low service quality (e.g. in Italy in the 1980s). On the contrary, the example of England in the 1980s demonstrates that creating a market structure, which allows for competition, can lead to efficient market operations in which relatively low prices and high service quality can be achieved at the same time. This

[1] Throughout the paper, 'cross subsidization' is understood as price discounts for privileged consumer groups, which are financed through markups on prices for other consumer groups.
[2] See e.g. International Energy Agency (2004): Key World Energy Statistics.
[3] In other words, if Ukraine manages to reduce its consumption of primary energy down to average levels across FSU countries, this would already reduce the necessary primary energy supply by about 40%. As gas accounts for 47% of total primary energy sources consumed in Ukraine, increased energy efficiency would also reduce domestic gas consumption significantly.

experience was so clear, that it has determined the liberalization-oriented energy policy of the European Unions from the early 1990s onwards.[4]

Given the heavily distorted current market structure including the monopoly position of NAK Naftogaz, adopting and implementing similar structural reforms of the gas sector appears to be beneficial for Ukraine as well. The main strategic goals for such a reform should be allowing for competition and stimulating private initiatives. In this paper, we describe the key points along which such reforms should be build, based on international best-practice experience.[5] Therefore, we will first describe a model of the 'ideal' gas sector in the next section, and finally describe the measures that should be taken to transform Ukraine's current gas sector towards this benchmark.

2. IDEAL MODEL

In this section, the 'ideal' model of the gas sector is presented. Provided these main traits of the sector are properly implemented by means of structural reforms, it will guarantee the country the best outcome from the standpoint of long-term economic efficiency. In this section the gas sector is subdivided into several sectors: extraction of natural gas, transportation of gas from the borders to distribution networks, operation of distribution networks, and retail sales to households and industrial consumers. This is done to allow for different strategies for various segments to achieve the optimal result.

2.1 Separation of Regulatory and Economic Activities

On energy markets in general and gas in particular, there is typically limited scope for competition because services rely in part on the use of networks that are under control of a limited number of actors.[6] Accordingly, pure market forces are not sufficient to balance the interests between suppliers and consumers. Hence, additional regulatory activities have to be performed. However, mixing regulatory and economic activities under one roof creates conflicts of interest, since long-term development of the overall market—the typical objective of a public regulator—does not always coincide with high profits of individual firms and network operators. On the other hand, if – due to political interference – the regulator is biased towards short-term consumer benefits and hence, firm-level profits are low, this can lead to underinvestment, capital deterioration and thus, unsustainable market development. Hence, to avoid such potential conflicts of interest, regulatory activities should be

[4] For more information on EU energy policy see e.g. http://europa.eu.int/comm/energy/index_en.html.

[5] Such reform agendas are not new, and the German Advisory Group also already communicated similar recommendations in the past, e.g. in the regular Infrastructure Monitoring for Ukraine (IMU). It is also consistent with recommendations of other international advisors and donors, as e.g. given in the 2004 Transition Report of the EBRD.

[6] As the availability of networks creates a strong barrier for competition, such industries are often referred to as 'natural monopolies'.

completely separated from industries operating on the markets as well as from interference by the government (e.g. aiming at implementing subsidies or raising fiscal income). Supported with such independence, the regulator should determine the framework of operations for the economic agents, but it should not intervene in the economic decision-making of individual firms (state or private) as such.

2.2 Regulated vs Competitive Sector Segments

Structural reforms in the sector should foresee different modes of operation for network segments, which impose a 'natural barrier' to competition, as compared to other segments of Ukraine's gas sector where competition is possible. More specifically, tariff setting for gas ***transport*** from the borders to distribution networks as well as for the ***distribution*** networks themselves – both typical bottlenecks for operations – should be regulated. For this purpose, the regulatory body must be endowed with the necessary power for setting up and enforcing a framework of operations, which sets the respective tariffs for network usage and guarantees undiscriminated third-party access to all networks. If such a framework is in place, and if consumers are free to choose their suppliers, competition across ***retailers*** is possible. Then, there is no general need for regulation of consumer prices (unless competition is still limited due to exogenous conditions such as relatively high costs of operations for gas sales to scattered households in remote areas, and hence, rather low profits). For the gas ***extraction*** segment, competition is possible if extraction licenses are issued on non-discriminating basis (e.g. through auctions) and if enterprises are free to sell their product domestically or abroad on their own conditions. This requires that domestic extraction companies should also have undiscriminated access to export routes. For gas ***transit,*** the principles of the Energy Charter Treaty[7] such as undiscriminating network access should be followed, while transit conditions are to be negotiated by stakeholders.

2.3 Tariffs, Prices and Subsidies

Tariffs differ from prices, since they are paid for the use of networks and are generally set by the regulator, while prices result from the interaction of demand and supply on a competitive market. For the case of the gas sector, the market and regulatory design must be such that end-user prices consist of unregulated prices for retail activities as well as tariffs for the usage of network segments. Without such a distinction, there is but a limited scope for competition.

Tariffs should be cost reflective and oriented on Long Run Marginal Cost (LRMC), which includes the cost of operation and investments. If tariffs deviate from LRMC this causes economic losses (if they are set above LMRC, service

[7] The Energy Charter Treaty (www.encharter.org) determines the international framework for operations of gas and oil transit lines. Ukraine has ratified the treaty in 1998.

providers receive monopoly rents, if they are below LMRC investments cannot be fully financed and thus sustainability of the service is under threat). Tariffs should also not allow for cross-subsidization between activities or customer groups to prevent such inefficiencies as are currently prevailing in Ukraine.

Prices are set by competition. Regulation of prices is used only in case of limited degree of competition in the respective market segment. In this case, regulators should only set maximum price levels (price caps), so that incentives to increase profits by reducing costs are maintained.

Subsidies to consumers in the form of universal discounts at the expense of the service provider, financed through underinvestment and proceeds from other activities, should not exist. Instead, in the ideal model of Ukriane's gas sector there should only be direct subsidies to low-income households, if this is necessary for social reasons. However, since such subsidies are justified on social grounds, they should be seen as a burden to the society as a whole and hence, be financed by the government rather than at the expense of a limited number of profitable industries that have to pay higher tariffs.

2.4 Vertical and Horizontal Structure

Given that competition should prevail in some activities while others should be regulated, the question arises of whether the different activities should be organized in one and the same, or in separate firms. For ***extraction*** and ***transit*** activities, the answer is quite simple: they can and should be operated as completely separate businesses. For ***distribution*** and ***retailing*** the degree of separation is not so obvious. On the one hand, separation is desirable in order to create room for competition in the retailing segment. Otherwise, if retailing and distribution are integrated in one and the same enterprise, this can crowd out competing retailers by denying access to distribution networks and thereby imposing a barrier to competition. On the other hand, the strongest concerns against separation of distribution and retailing are based on fears that regulated access fees will not generate revenues high enough to guarantee necessary investments in the distribution networks.[8] At this point, international experience on separation of distribution and retailing businesses is mixed. For example, attempts of EU Commission to achieve full separation (the so-called "*unbundling directive*"[9]) have faced fierce resistance and have not been fully implemented. Nevertheless, what has become clear is that network access and tariff setting for network usage require regulation to allow for

[8] Indeed, if regulators are focusing on marginal costs only, substantial (and fixed) investment costs might not be sufficiently covered. In the extreme case, this can also lead to under-investments, as it happened with power transmission lines in North America. However, the problem can of course be dealt with, e.g. by adding some fixed cost component for investments to the network tariffs, or by basing all calculations on LRMC that explicitly consider investment costs (as we propose for the gas sector).

[9] http://europa.eu.int/comm/energy/gas/legislation/old_legislation_en.htm

competition, and that this regulation in practice also requires some unbundling of distribution and retailing.

For the case of our ideal model of Ukraine's gas sector this means that the exact decree to which separation of retail and distribution activities has to happen cannot be generally determined up front. Instead, it should be decided depending on initial experiences and developments once first elements of competition are implemented. This in turn will also require substantial involvement of the regulatory body, which therefore has to be as independent as possible.

2.5 State vs Private Property

The importance of the gas sector for energy security and reliable functioning of the economy raises the question of the scope of private initiative and the extent of private participation in the sector. The basic question here is the apparent trade off between state control on the one hand, and efficiency improvements and better financing possibilities by private operators on the other. However, even if the state prefers to maintain full control in certain sectors it is still possible to find arrangements which allow for using private expertise in raising efficiency of operations and as well as its investment capacity. For instance, if ***transit*** capacities are to be retained in state control for strategic reasons, there still exist a number of possible options for public-private cooperation, such as *privatization of 49% of assets, management contracts, concessions, etc*. For ***distribution*** and ***transport networks*** as well as for ***retailers*** and ***extraction companies*** (at least) both, state and private ownership should be possible. In fact, the only criteria for the choice of ownership form should be its superiority in terms of efficiency. Typically, one would expect private ownership to take the lead. This, however, is possible only under conditions of sufficiently well regulated market that actually allow for competition. In other words, the regulatory climate is key requirement for private initiative to lead to the optimal outcome for the market. Otherwise, under conditions of insufficient competition and regulation, short-term profit making of private entities may even endanger the long-term sustainable development of the sector. In such a case, state ownership might prove to be superior. However, while this justifies concentrating initial reform attempts on creation of competition rather than on immediate privatization, it does not imply that state ownership should prevail once competition on the market has reached a sufficient level.

3. SEQUENCING OF REFORMS

Ukraine has revoked its initial reforms on the gas sector by the end 1990s, as the state opted for consolidation of sector resources under the roof of a state monopolist. While efficiency of public property usage in the sector grew, serious distortions such as non-payments, various subsidies, underinvestment

and an artificially high degree of monopolization of potentially competitive market segments remained. Against this background, full-scale structural reforms should be started without delay. Otherwise, it is likely that organizational inertia and inefficiencies, which are currently built into the Ukrainian gas market, will lead to "freezing" of the gas market structure and hence, a further continuation of losses for the Ukrainian economy.

However, as the previous discussion has already shown, the change in market and sectoral organization can and should not be undertaken in a one-shot reform move. Instead, a transition path should be defined that consists of the following steps, mentioned in the order in which they should be undertaken.

3.1 Separating Transit and Extraction

As mentioned above, proceeds from gas transit through Ukraine are used to subsidize domestic consumption, what in turn reduces available funds for maintenance and investments into infrastructure[10] while creating significant distortions in the tariff structure on domestic markets. To avoid these problems, transit operations should be fully and immediately separated from domestic markets. Instead, the transit operator should only seek to maximize profits from transit services while guaranteeing safe and sustainable operations in the long-term. To best achieve this objective, it is also advisable to change to monetary transit payments as soon as possible. If this is realized, transit revenues will permit to undertake necessary investments in the gas transit system. Moreover, gas transit tariffs will depend less on interventions by domestic policy makers. This in turn will allow for a more reliable integration of Ukraine's transit system into international operations of gas transit routes, which is necessary to avoid that gas transit flows bypass Ukraine on their way to Western Europe.[11]

As with gas transit, also gas extraction can and should be independently operated as soon as possible. To make this happen, all regulations that require the sale of gas extracted in Ukraine exclusively on domestic markets should be abolished, and licenses for extraction should be tendered on non-discriminating basis to domestic as well as to international firms.

[10] According to various estimates, the necessary maintenance investment into Ukraine's transit system alone requires about USD 500 m to USD 2 bn — most realistically around USD 600 m — over a period of about 5 years (see e.g. German Advisory Group: The Ukrainian-Russian Gas Consortium (Kishinev, October 2002) - A Comment – Policypaper S17).

[11] The increasing importance of integration of the transit system into international operations has been repeatedly stressed by the German Advisory Group (see e.g. Policy Advisory Paper S33: Is the Ukrainian-Russian Gas Consortium in the Economic Interest of Ukraine?).

3.2 Creating a Framework for Competition and Private Operations

As we argue above, competition and private initiative are most capable to bring about an efficient allocation of resources. However, for this to happen it requires the abolition of all policy-induced market distortions as well as a reliable and competition-oriented regulatory climate. Hence, the following steps need to be implemented without delay:[12]

A. Consumer tariff setting should be reformed to create cost-reflective tariffs for all customer groups without price discounts to private households, public utilities or any other consumer group.

B. The still existing practice of cross-subsidization needs to be abolished altogether. Instead, the current universal support to all households through low price levels should be replaced by targeted subsidies to poor households, financed out of public budgets.

C. Contract enforcement in the sector must be further encouraged, most effectively through bankruptcy procedures.

D. The *de jure* monopolization of the market needs to be abolished. Instead, it is necessary to provide the legal and institutional framework for an independent regulation of the gas sector.[13] The main responsibility of this regulator is to allow for entry of private market participants through guaranteeing third party access to transport and distribution networks. On the contrary, formation of consumer prices should be left to the market wherever possible and should be a concern of the regulator only in segments where costs are rather high and thus, the level of competition remains low (e.g. for gas delivery to private households).

While recommendations A, B and C should be implemented within a short period of time, the creation of a legal and institutional foundation for competition-stimulating regulation should be done carefully and hence, planned over a longer period. With respect to the vertical structure of the remaining part of NAK Naftogaz – after gas transit and extraction have been separated – we recommend to not fully separate operation of infrastructure and retail activities from the very beginning. Instead, initial regulation should only require the sufficient separation of both activities within one and the same enterprise, so that the regulator can determine cost structures for tariff setting for network access. This would create the necessary conditions for initiating competition,

[12] These necessary reform steps are discussed in more length in German Advisory Group: Towards Higher Standards of Living: an Economic Agenda for Ukraine (Kiev, 2005).

[13] At present, a separate institution, the NERC, already regulates the setting of final gas prices by NAK Naftogaz (based on the 'cost-plus' rule). This institution can in principle also be assigned with the new task of regulation. But, what needs to be changed and improved is the actual concept of regulation as well as the legal foundation of the regulator (to guarantee its independency). See again the previous footnote for reference to more detailed reform suggestions on this matter.

while the final decision on further separation of infrastructure operation and retail activities can postponed to a later point in time.

4. CONCLUSIONS

The discussion in this paper starts from the observation that Ukraine's gas sector suffers from price distortions due to numerous forms of subsidies, leading to notorious underinvestment and low levels of energy efficiency. To overcome this problem, we suggest to restructure the current *de jure* monopoly of NAK Naftogaz, and instead to follow the "European model" by creating a transparent gas market that allows for private initiative and competition wherever possible. To provide a more specific picture, we discuss the optimal market organization for different segments of the gas market. In particular, we recommend that market forces should operate in extraction and retail segments, while an independent state institution should regulate tariff setting for transport and distribution networks. In this way, competition across gas retailers would ensure efficient, cost-covering price levels while regulation of network tariffs and third party networks access ensures fair competition to all market participants. To realize such a market structure, we recommend a gradual reform starting from an initial separation of gas transit and gas extraction from NAK Naftogaz, while on the domestic market first measures should focus on reforming tariff setting, abolishing subsidies, strengthening contract enforcement and the creation of a legal and institutional framework for competition-stimulating regulation.

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