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I. Briefing

The Argentine “energy-crunch” (a term coined in FIEL)\(^1\) displayed itself in full blown during the second quarter of 2007 to dissipate remaining doubts about its existence, relevance and urgency. Structural/Trend problems (natural gas (NG) shortages), cyclical shortages (power generation capacity), seasonal behavior (high demand from low temperatures) and noisy shocks (pitfalls in electricity transmission and distribution) all were present during this quarter. Hardly any segment of the value-chain in the energy sector had a quiet life this season, as problems ranged from NG shortages (and delays in the agreement with upstream firms to set a path of supply ahead) and severe cuts to Chile, to a crisis in the procurement of major NG pipelines, to a major stress test in electricity generation, to substantial mandatory cuts of NG and electricity for industrial users and CNG users, to shortages in diesel oil for agribusiness and transport, and so on.

Discerning transitory from permanent or structural components is necessary to guide an objective analysis of major developments in the energy front in Argentina, to establish a status of the different constraints being faced and to suggest a line or strategy to proceed in the undoing of the Argentine energy crunch, an operation that will take time and effort. In Argentina there is an order or rank of problems that has the shortage of NG in a “NG-addictive” economy and the shortage of electricity generation capacity as the two main drivers of the energy-crunch. The fact that both NG and electricity generation markets became “short” in 2004 and 2006, respectively, and the interrelationship between NG and electricity creates a particular phenomenon that will not be solved-out in a short period. With lack of incentives for investment and supply decisions and absent mechanisms of effective and efficient demand management (in an environment of very low prices for significant segments of demand) the strategy of trouble-shooting adopted since 2004 is now showing clear signals of fatigue and lack of effectiveness.

However, while it is clear that a new approach to tackle the energy-crunch will require a return to economic pricing of energy (and to a better regulatory environment), the disequilibrium in balances that will persist for the next two to three years will require a visible dose of trouble-shooting and a major effort to implement prices closer to scarcity values. This will be a particular critical element in the perhaps forthcoming (and much welcomed) strategy, to deal with opposition and protest and, more important, to protect vulnerable groups to a shock in the price of energy.\(^2\)

The adaptation of prices to scarcity values is very relevant for the macroeconomic performance of the Argentine economy, as the required adjustment are significant and will surely have an impact, directly or indirectly, to goods and labor markets. These second round effects on prices and the likely impact of energy shortages on economic activity are still difficult to assess beyond back-of-the-envelop estimates, but will surely form part of future evaluations by analysts.

The identification of what are the main characteristics of the energy crunch is essential both to address short term events within a broader perspective and to evaluate the stress situation that happen in May and June. We start this report in our “focal point” section with an analysis of the major developments in the current crunch and then proceed to show the results of a decomposition exercise of the NG shortage. The final sections review the performance of the up stream and down stream sectors, as we do regularly.

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\(^2\) See www.fiel.org/tarifasocial
II. Focal Point: The Crunch That Came In From The Cold.

The quiet life of the fall season in Argentina came to an end rather abruptly around mid May, as a polar front came in and dropped temperatures well below the average of recent years. It is true that records show years of very low temperatures, but this record low seen in May (See Figure 1) unveiled the more fundamental structural problems behind the imbalances in the argentine energy sector.

The corresponding jump in both the demand for natural gas and electricity in the household sector immediately exacerbated the imbalance in NG and that in turn meant further problems for electricity generation. The shortage of NG is equivalent, under certain conditions, to a negative shock in electricity generation capacity as the switch to alternative fuels reduce both the productivity and reliability of the thermal park. So, with the demand of electricity soaring in very cold days, shortages of NG compound the problem.

Seeking NG directly or “indirectly”

In face of this situation the immediate response was an intensification of the trouble-shooting approach seeking first to increase gas availability directly or “indirectly” and then to proceed to manage the disequilibrium in both NG and electricity generation balances. Four main sources of this strategy were: 1) Further cuts of exports to Chile; 2) Additional imports from Bolivia; 3) High electricity imports from Brazil and 4) Additional hydro-electric generation.

The first victim was again exports to Chile, with unprecedented cuts. Comparing May/June 2007 with the same period in 2006 the cuts in total deliveries to Chile were on average no less than 10 million m3 day (see Figure 2), with much more than that in the most critical days. Residential users in Santiago de Chile were negatively affected for the first time since the cuts started in April 2004. Thus the Argentine authorities could not honor in some days the commitment not to go with cuts beyond the threshold (of about 1.5 million m3 per day) where Chilean residential users are rationed. The daily performance in May/June 2007 of exports through the Gas Andes pipeline (the more important connection to central Chile) shows the severity of the cuts to Chile. (See Figure 3).

The additional move was to increase NG imports from Bolivia at the maximum allowed by transport constraints (7.7 million m3 day). Even though this strategy faced problems from the availability of additional gas from Bolivia, it nevertheless was
used as much as possible during May and part of June. This mechanism allowed getting about 2 million m³ per day for some days.

Also in May 2007 imports of electricity were at a peak in historical terms, as the government made use of a previous cooperation agreement with Brazil which allowed substantial imports, between 700/1000 MW of capacity per day. Net imports were a bit lower than these figures (see Figure 4). This is an operation equivalent to saving from 2.5 to 4 million m³ per day of NG, and also helped at closing the lack of capacity generation given the high demand of electricity.

Last, but not least, hydro-generation was put at a maximum throughout the autumn, with a record in May, representing an increase of 16% in relation to May 2006 (a previous record for May). This represented about 500 thousand MWh generated in relation to May 2006 or an equivalent of about 3.5 million m³ of NG “released”. More impressively, when the comparison is made in relation to April 2004 (the benchmark for the starting of the energy crunch), the additional hydro-generation has been adding an equivalent of 14 million m³ per day of NG. (See Figure 5).

This gain came, nevertheless, at a cost for the use of accumulated reserves of water. Data on the level of water in dams in the southern part of the country show comparative low values and suggest that an intensive use of reservoirs have been used to cushion the shortage of NG.

Not enough to solve the NG shortage

The previous discussion suggest that about 18 million m³ per day of NG were rather drastically “obtained” directly or indirectly in May 2007 from managing exports and imports of NG, importing electricity and through more hydro-generation. With a stable supply of NG this could have been enough to make important cuts to non-residential users. Instead, electricity and NG demand conditions made the situation unsustainable without substantial cuts to non-residential users of NG.

In fact, data from the ENARGAS (see Figure 6) concerning cuts in the different Distribution Areas show a picture which, on average for May, similar to the levels observed in the shortage episode of 2004. This nevertheless shades the fact that the second half of the month, and the first part of June, were particularly severe.
As supply to households and commercial users was sustained and severe cuts to electricity generators were avoided, the candidates for the cuts were first the industrial and then the transport (CNG) sectors. The brunt of the shortage felt on the industrial users, with CNG users rationed only at some critical point in June. The resistance by taxi drivers in Buenos Aires city was one of the reasons to avoid cuts in this segment of demand.

Severe stress in power generation

Another way to show the shortage of natural gas is the evidence on the use of liquids (fuel and diesel oil) in power generation. As mentioned before, this is also an indirect measure of the stress that is going on in electricity production given the fact that the system becomes more costly and (above some threshold) less reliable running with fuels.

The use of liquids in thermal generation has been growing in a rapid and sustained way in the last years and reached record levels in May 2007 (See Figure 7)

Within this scenario, industrial users of electricity faced cuts that were particularly acknowledged in sectors such as automobile, metalworking, food processing and paper. Residential and commercial users suffered from lower voltage but were subject to only minor interruptions.

Thus for the first time important cuts in electricity came along with NG shortages. The cuts reflects the crunch in electricity generation capacity, after a “nap” of many years in capacity additions and soaring demand led to this situation. As for the NG shortage, this is more structural, given that even if electricity generation capacity had been available and had been NG-based (as the projects planned for 2008/09) more, no less, NG would have been required.