SEASONALITY: ENABLING FACTOR FOR LNG IN EU?

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EU LNG terminals are on average largely underutilized with record low scored in 2016 when the utilization rate was below 20% of the send-out capacity, according to GIE. However, the EU LNG market gained momentum in 2017 when a combination of factors such as low hydro and pricing dynamics made room for additional LNG deliveries throughout Europe.

Although 2017 recorded an overall surge of LNG consumption in EU, it marks a significant change for what concerns the trend of LNG deliveries with highest levels recorded in summer. In addition, in the case we compare the EU LNG deliveries in summer against the winter ones in the last 5 Gas Years, the result is even more interesting as Summer outpaced Winter since GY16-17.

Pricing dynamics is by far the key enabler for boosting LNG arrivals within the EU perimeter. As the geographical spread between the Atlantic and Pacific Basins progressively closed in summer months, players were keen to minimize shipping costs by optimizing the logistic chain.

Other factors are related to market fundamentals driving LNG to become more attractive. That is the case of Spain in 2017 when Algerian LT piped gas resulted less competitive than LNG spot quotations, thus leaving room for optimization.

This paper is trying to investigate whether such a seasonal trend may become an enabling factor for more LNG to land in Europe in medium term.
Introductory note
This paper is drafted with the purpose to investigate whether seasonality may have played an important role in recent years in attracting additional LNG volumes in Europe. According to the first evidences collected, the European LNG demand gained momentum in summer of years 2016 and 2017, when typically gas demand is low and operators imports extra volumes to refill stockpiles for the winter season. The underlying reason of this LNG import surge in Europe is basically a combination of factors that materialized in the summer season whose relevance and magnitude is the object of the paper.

The paper is essentially structured in 4 sections, (i) a brief description of the European LNG market providing a short insight on market fundamentals; (ii) an overview of the LNG global market in the period 2012-2015 spanning from the aftermath of the Fukushima accident until the complete drop of oil prices, (iii) an analysis of the factors that drove European LNG imports to increase in summers 2016 and 2017, (iv) eventually the conclusions of the paper.

The European LNG Market
Notwithstanding its large domestic resources, Europe is traditionally a net importer of gas primarily supplied via pipeline through three major sources: Russia, Norway and Algeria. The appearance of LNG deliveries dates back in early 70s when some countries such as Spain, France and Italy constructed onshore regasification terminals to enhance supply in peaking months and for diversification purposes.

Since then, the gas network commenced to expand significantly across Europe although LNG regasification capacity moderately developed partly because domestic demand was largely matched with national production and piped gas. However, some countries experienced a need of LNG across 80s and 90s due to geographical limitations such as the Iberian Peninsula that was basically disconnected from major European pipeline network because of the large mountain formation dividing it from France. Consequently, the security of supply was forcibly fostered by building new LNG receiving terminals. The bulk of new additions came in the first decade of the millennium when the European liberalization process\(^1\) opened the market by enabling new market participants to enter. As a result, competition started to arise by driving market players to seek alternative ways to secure gas

\(^1\) Originally enacted with 2 European Directives in 1998 (98/30/CE) and in 2003 (2003/55/CE).
supplies for feeding their market and mostly the mushrooming new Combined Cycle Gas Turbine (CCGT) power plants popping out throughout Europe.

![Fig.2: CCGT installed capacity evolution in Europe](image)

Currently, the overall European regasification capacity amounts to 154 million tons per annum (mtpa) or roughly 215 billion cubic meters (bcm) as reported in the Figure 3.

![Fig.3: European nameplate regasification capacity per Country](image)

Although the nameplate regasification capacity across Europe is quite significant (accounting almost 44% of the overall gas demand in 2017), LNG in Europe does remain a marginal source of supply competing with domestic gas production and significant import pipe gas. Consequently, LNG facilities are largely underutilized being in the range around 20-23%.
The reason why terminals are not running at a higher level is mainly twofold:

1. European Supplies are traditionally supplied by abundant domestic production and long-term pipe contracts mostly originated from Russia, Norway and Algeria. Thus, LNG accounts for the remaining part by representing around 10% of the total supply as depicted in Figure 5.

2. Firm long-term LNG contracts account roughly for 5-6% of the European gas demand (Figure 6). As a result, the long-term commitment to import LNG represents a very minor portion of the overall supply, whilst the bulk of the remaining LNG contracted volumes are basically “flexible” deliveries enabling buyers and/or sellers to seize geographical arbitrages by diverting volumes where prices are more attractive,
namely in Asia. Most of these flexible contracts are associated to North Western European (NWE) facilities as the markets in this area are well connected to domestic supplies and import pipelines from Norway and Russia. As a result, NWE markets are essentially physical gateways for different sources of gas fostering the formation of liquid trading hubs. Consequently, LNG is the marginal supply source that typically enters the market when price conditions are there, otherwise LNG is supposed to be rerouted to premium destinations. In such cases, European terminals are used as “destination of last resort”.

Section 2: Global LNG dynamics in 2012-15 with effects on European LNG consumption
LNG flows remained below 50 bcm throughout Europe in the period 2012-2015, with the exception of 2012, a year characterized by severe winter conditions, particularly in the month of February when a cold spell lasted almost 10 days severely hit all European markets thereby draining stockpiles and absorbing additional gas for peak shaving purposes.

Source: ICIS LNG EDGE, Cedigaz, BP Statistical Review

![LNG contracted quantity in Europe](image)

![European LNG Yearly Imports](image)
As noted in the previous section, much of the LNG contracted quantity in Europe is associated to flex contracts causing LNG to be potentially diverted in markets at premium when the economics conditions are there. As a consequence, price is one of the main drivers affecting the ability for Europe to attract additional volumes of LNG for the quantity associated to flex contracts. This can be better noted if we compare the pricing trend for the front month LNG Delivery Ex-Ship (DES) quotations for Europe (represented by Spanish quotes, the most relevant pricing benchmark for the European area), and the spot quotations for the Japanese market, the biggest LNG consumer in Asia.

Price dynamics put on evidence a significant premium in the period 2012-2013 of the Japanese market over the Spanish one that ranged around 4.4 $/MMBtu in 2012, 4.7 $/MMBtu in 2013 by lately dropping to 2.5 $/MMBtu in 2014 and 0.9 in $/MMBtu in 2015.

This trend can be divided in two phases, the first (i) characterized by the aftermath of the Fukushima’s accident that compelled some traditional Asian Importers, such as Japan and South Korea, to replace the halted nuclear production following a stress test exercise on existing infrastructures with additional LNG, the second (ii) affected by a major oil price drop occurred by mid-2014 whose effects reflected on global commodities.

The first phase spans from late 2011\(^2\) to 2014, a period when global LNG prices were mostly sustained by higher than usual demand in Asia Pacific and high oil prices level ranging on average above 100 $/bbl.

The combination of incremental LNG demand and high oil prices supported a significant spread between European markets and Asia, making the latter the most attractive destination market. Additionally, by considering that the majority of contracted volumes in Asia are oil indexed, if we assume a proxy of a typical long-term contract with a time lag of 9 months and a 13% ratio\(^3\) over oil, we can still appreciate a spread with European spot quotations.

\(^2\) Data for 2011 are not available, as a consequence the analysis starts from 2012.

\(^3\) To our knowledge, the ratio of 13% represents an average value recognized by the market for long-term deliveries in Asian markets.
Such a spread contributed to seize geographical opportunities by letting some LNG volumes to be lifted from Europe and be diverted to Asian markets as shown in Figure 11.

Interestingly, the number of reloads from Europe to Asia increased in 2014, a time when global demand eased and price differential between the two basins was slightly above 2$/MMBtu (see Figure 9). This is mostly visible if the number of reloads are split per season by giving evidence of Summer and Winter per each Gas Year (GY).

4 In order to display a full winter period typically spanning from October to March, the Gas Year (GY) has been used instead of the Calendar Year (CY).
In summer of GY13-14 intense reload activity is recorded in Europe when oil prices began to collapse (see Figure 8), and the LNG spread between the European and Asian markets remained sufficiently high to economically market cargo reloadings. Additionally, reduced consumption requirements in summer months may have enabled European market players to optimize their position by seizing the opportunity to deliver excess LNG volumes in premium markets.

As a result, LNG demand in the observed period decreased in Europe partly because of:
- Stable demand requirements in Europe and increasing LNG consumption in Asia bolstering LNG needs in the Pacifica Basin;
- Price spread with Asia sufficiently high to enable cargo reloadings.

**Section 3: Europe gained momentum in 2016-17**

The tendency observed in the period 2012-15 commenced to reverse in the subsequent years when LNG flows to Europe began to return especially in Summer 2016 and 2017.

While LNG deliveries in Summer 2016 equaled the Winter ones by climbing to around 24 bcm, it is in 2017 that we can detect a major increase that significantly outpaced Winter deliveries. One of the reasons of this trend is a substantial squeeze of price spread with Asia especially in Summer that reduced the ability of market players to economically place reloadings.
As an outcome, the number of reloads almost went to zero in Q2 and Q3 2017 by causing the opposite effect to increased LNG arrivals in the European continent. The differential between Summer and Winter deliveries was as much as 4 Bcm with the consequence that terminals utilization rate ticked up in Gas Year 2016-17.

Although price differential is deemed to have played a major role in attracting more LNG to Europe in 2016 and 2017, there are at least other two key factors to take into account. The first relates to a widespread draught across Europe occurred in 2017 that affected hydropower output partly replaced by thermoelectric generation. The second is associated to the LNG spot prices being fairly in absolute terms (ranging around 5-6 $/MMBtu), giving a chance to LNG to compete against traditional oil indexed contracts sourced via pipeline. This situation for instance triggered optimization strategies by market players who allegedly displaced piped gas from Algeria\(^5\) to import incremental LNG, as occurred in Spain in Summer 2017 (see Figure 14).

\(^5\) Algerian oil indexed deliveries are assumed with a 11% ratio on oil (Brent Dated) and a time lag of 6 months.
Conclusions
To summarize, the recent increase of LNG activity in Europe occurred during Summer months when typically:

- Price spread with Asia narrows below the reloading break-even price
- Gas demand requirements in Asia are traditionally low

As a consequence, seasonality is likely to enable Europe to become more attractive being the market of last resort, especially when LNG shall find a room in a period of low demand. In addition, other elements concurred to make Europe more appealing:

- Spot LNG prices were substantially low in absolute terms competing against other sources at the European gas hubs.
- Oil indexed piped gas resulted more expensive than spot LNG, creating a room for optimization.

Although the latter two contributed quite significantly to bring more LNG volumes in Europe, the first two are however considered as the ones most likely responsible to effectively trigger a dash of LNG flows to Europe.

The case of 2018 goes in this direction. On the eve of the winter season price spread with Asia began to narrow because of milder weather conditions that reduced demand for spot LNG volumes.
As a result, in Q4 reloading activity abruptly interrupted by rerouting LNG to Europe that experienced a new wave of LNG volumes setting new highs in terms of utilization rate.

However, this particular context was also fueled by other two important elements:

- Tightness in the shipping market pushed charter rates to roughly 200,000 $ a day for a Tri-Fuel-Diesel Engine (TFDE) by essentially limiting cross-trips between the Atlantic and Pacific Basins, de facto isolating each other.

- New liquefaction capacity entered into service especially in North America incrementing the availability of flexible LNG in both Basins.
Prospectively, these two elements are deemed to be relevant drivers boosting the ability of Europe to attract more LNG. The shipping order book displays a consistent number of new vessels expected to enter into service in the coming years, however the biggest issue is to whether the new additions would be sufficient to cover the incremental demand mostly arising in Asia.

In the meantime, new liquefaction capacity is expected to become operational in the Atlantic Basin in the next years potentially incrementing the available supply to Europe.
But the biggest issue is about price competitiveness of those flexible supplies pegged to Henry Hub (HH). Should European hub prices remain along the long run marginal costs of these new supplies, Europe would potentially create a room for incremental LNG supplies at the expense of traditional pipe gas.