

We welcome the opportunity to comment on the market power mitigation measures being proposed for I-SEM. Market power is a concern for virtually all electricity markets as they are characterised by monopolistic or oligopolistic behaviour. In SEM/I-SEM there is one dominant player, but market power mitigation measures will be required whether this structure or one with a few players prevails.

In our response we have limited our input to those questions where we believe we can best contribute according to our expertise. However our submission can be taken as an outline of our thoughts on market power and competition in general, along with our ESRI Working Paper 497, dated March 2015.¹

4.8.1

Do you agree with the proposed definition of competitive behaviour and pricing in I-SEM?

According to Varian (1992)², this definition holds; we would add that in a competitive market each firm is price-taker (i.e. no individual firm can influence the price) and the market price is determined by the joint action of the firms.

Do you think that the suggested examples in which market power can be exercised in I-SEM captures the relevant issues?

Yes (assuming this section is not referring to the potential exercise of market power in the CRM or in procurement of DS3 services).

Do you agree that the potential for market power abuse in I-SEM appears to be weaker in the forward financial market compared to the physical markets?

Yes; theory tells us this much and it should certainly hold for the particular case of I-SEM as well (Allaz and Villa (1993)³, Green (1999)⁴, Wolak (2000)⁵, Mahenc and Salanie (2004)⁶). Based on this literature we can infer that market power in the forward market should not be considered in isolation from market power in the spot market (see Holmberg (2011)⁷, Chung *et al.*, (2004)⁸). However it should be noted that all this literature, and indeed any other literature of which we are aware, assumes the existence of a liquid forward market. Such a market does not currently exist in SEM and so this literature should be applied with caution to I-SEM. A potentially worse problem in the spot market should therefore not be seen as an argument for ignoring a potential problem in the forward market.

¹ Di Cosmo, V. and Lynch, M.Á., 'Competition and the Single Electricity Market: Which lessons for Ireland?', ESRI Working Paper Series #497, available online: <https://www.esri.ie/publications/competition-and-the-single-electricity-market-which-lessons-for-ireland/>

² Varian, H.R. (2010) *Microeconomic Analysis*, third edition, W.W. Norton, New York.

³ B. Allaz and JL Vila, (1993), 'Cournot competition, forward markets and efficiency', *Journal of Economic Theory* 59-116.

⁴ Green, R., (1999), 'The electricity contract market in England and Wales', *Journal of Industrial Economics*, Vol. 67, (1) 107-124

⁵ Wolak, F., (2000), 'An empirical analysis on the impact of hedge contracts on bidding behaviour in a competitive electricity market', *International Economic Journal*, 14 (2).

⁶ Mahenc, P. and Salanie, F., (2004), 'Softening competition through forward trading', *Journal of Economic Theory* 116 282-293

⁷ Holmberg, P., 'Strategic forward contracting in the wholesale electricity market', *The Energy Journal*, Vol. 32, (1) 169-202

⁸ Chung, TS, Zhang, SH, Wong, KP, Yu, CW and Chung, CY, (2004), 'Strategic forward contracting in electricity markets: modelling and analysis by equilibrium method'

International experience across Europe (e.g. in Spain) suggests that market power in both forward and spot markets can require direct intervention of the regulatory authority in forward markets (see de Frutos and Fabra (2012)⁹, Ausubel and Cramton (2010)¹⁰).

Do you agree with the implications for market power arising from interactions between the physical markets, CRM, FTRs and DS3 System Services as shown above?

Regarding the CRM, the potential for interactions depends crucially on the strike price chosen and so it is not possible to comment specifically on the Irish case given the information provided. All of the literature on reliability options assumes competitive behaviour in the physical markets (Vazquez *et al.*, (2002)¹¹, Cramton and Stoft (2008)¹²) and therefore the literature is not instructive on the issue of the interactions between physical markets and reliability options-based capacity remuneration mechanisms when the potential to exercise market power exists.

Regarding FTRs, as noted by the ROs there is an increased incentive to manipulate prices in either market if an agent owns an FTR. The competition effect associated with interconnection depends on the interconnector capacity and the linkages between the countries interconnected (in this case Ireland and Europe) as analyzed by Borenstein *et al.* (2000)¹³. Further studies are required to determine the effects of the FTRs associated with interconnection on competition.

Regarding DS3, it is impossible to say at this level of development of the DS3 services project what any potential interaction with the forward market could be. Extreme caution should be taken in making any decisions regarding the potential for market power exercise here, and/or mitigation of same, until the DS3 design is finalised.

8.12.1

Do you agree with the five key principles for assessing market power mitigation policies as outlined in this section 8.3? If you think there should be alternatives, please state the reasoning.

The five criteria proposed by the CER are all relevant and important. These are all desirable qualities for regulation to have in principle, but the most important criterion in order to evaluate the market power mitigation policy in our opinion is effectiveness. Any market mechanism which is effective will prove practical and targeted by definition; we therefore see these criteria more as constraints than objectives. Flexibility and transparency are objectives; however it should be noted that these objectives may conflict with the objective of effectiveness. For example, in a case where explicit collusion was a risk, more transparency could actually harm the effectiveness of competition policy.

⁹ De Frutos, Maria-Angeles and Fabra, Natalia, (2012), How to allocate forward contracts: The case of electricity markets, *European Economic Review*, 56, issue 3, p. 451-469

¹⁰ Ausubel, L. and Cramton, P., (2010), 'Virtual power plant auctions', *Utilities Policy*, (18) 201-208.

¹¹ Carlos Vázquez, Michel Rivier, and Ignacio J. Pérez-Arriaga, 'A capacity market that makes sense', *IEEE TRANSACTIONS ON POWER SYSTEMS*, vol. 17, no. 2, May 2002

¹² Cramton, P. and Stoft, S, 'Forward reliability markets: Less risk, less market power, more efficiency', *Utilities Policy*, Vol. 16 (3), 194-201 2008

¹³ Borenstein, S., J. Bushnell and S. Stoft (2000). 'The competitive effects of transmission capacity in a reregulated electricity industry', *Rand Journal of Economics*, vol. 21, (2), 294-325

In the same way, too much flexibility could undermine the credibility/stability of policy and thus damage incentives for investment.

For these reasons we hold that market power mitigation measures should be first of all effective.

In the following sections we focus on which measure(s) are most likely to be effective in mitigating market power, both in the spot and in the forward markets.

For the forward contracting obligation (FCO):

- 1) *What should be the measure and threshold that results in market participant being included or excluded in the FCO? i.e., what is its applicability?*

There is well-established research into the choice of players to whom the FCO should apply. De Frutos and Fabra (2012) show that when there is asymmetry between companies and the RA imposes forward obligations, the distribution of contracts across firms is important to avoid strategic behaviour. The authors highlight that "*in markets with large asymmetries [in terms of market power they may exert, or size, or structure of the costs] across firms, only the dominant firm should be forced to hold forward contracts; getting the contract volume right is less critical, as contracts in this case would at worst be ineffective*".

It is important to highlight that, in a market with only mild asymmetries between firms, imposing forward contracts may give rise to anti-competitive behaviour and increase rather than decrease spot prices. According to De Frutos and Fabra, the intuition behind this finding is that if forward contracts are imposed on firms with low market power, there can be a point at which the firms with low market power have sold their quantity forward, and the spot price will be determined by the firms that can set prices higher than the competitive price.

De Frutos and Fabra simulate the effects of forward contracts on all companies operating in the Spanish wholesale market. The results show that imposing forward obligations on the dominant player help to decrease the wholesale price. However, the opposite happens when forward obligations are imposed on companies with weaker market power. It would be instructive to perform this analysis for SEM/I-SEM, but the literature to date therefore suggests that imposing forward contracts on the dominant player only (if market shares are highly asymmetric) is not only sufficient but is actually important in ensuring competition.

Following De Frutos and Fabra, simulation techniques should be combined with proxies for competition (such as HHI, RSI, etc) to determine the impacts of market structure on wholesale prices with and without forward contract obligations. The competitive price should first be identified via a cost-minimising (i.e. perfectly competitive) market simulation. The analysis should then be repeated assuming (i) oligopolistic competition between firms and (ii) different scenarios on forward contract allocations in order to understand both the volumes of contracts and the allocation mechanism. The resulting prices should be compared to the competitive price. Appropriate sensitivities on inputs such as fuel prices, demand, etc, should be included (Lynch and Curtis (2015)¹⁴).

¹⁴ Lynch, MÁ and Curtis, J, (2015), 'The effect on wind generation on electricity prices and generation costs: a Monte Carlo analysis', Applied Economics.

This method, as shown by De Frutos and Fabra, is **effective**. The necessary software is available to the regulatory authorities (PLEXOS) and so this measure should prove **practical**. The analysis can be made publicly available, ensuring **transparency**. This method applies to all players and so is **flexible** as it will be applied no matter who the market participants are in a given year. One of the objectives of this method is to identify the players who can potentially exercise market power and so it is a tool in ensuring appropriate **targeting**.

2) *What should be the volume and product definition of forward contracting required from a market participant who falls under the FCO?*

As above, this question should be answered using detailed market simulation and analysis. Indeed, the preceding question regarding who to include in an FCO and this question regarding the volume and product definition of forward contracting required should be answered simultaneously rather than sequentially, as highlighted by De Frutos and Fabra.

Once the dominant player is identified as outlined above, the volume of the contract should be defined. Simulation scenarios should be considered in order to estimate the minimum scale of contracts required in order to shift the price towards the competitive outcome. However, it is important to highlight again that the market simulations should take into account the possibility that companies may behave strategically in the spot market. The literature highlights that a significant amount of forward contracts should be imposed on the dominant player in order to achieve effective competition in the spot market.¹⁵

This methodology is essentially the same as the methodology discussed above and so fulfils the **five key principles** as discussed on the previous page.

3) *How should the price be set for the volume contracted under the FCO?*

This is potentially problematic. All the literature discussed above is based in markets that include liquid forward markets. For this reason, the focus of the literature is on choosing the appropriate volumes as there is no need to specify prices as the forward market price will prevail. Without a developed forward market it is difficult to determine what the appropriate forward price is. However, the price of regulated forward contracts is crucial to determine (i) the profits of the dominant player and (ii) the final price that consumers will face in the retail market, and may also have an impact on the participation of other players in the forward, and consequently the spot, market.

4) *What type of access should buyers have to FCO volumes?*

This question is not completely clear to us. However, economic theory suggests that restricting the number of players in any market does not normally lead to superior outcomes. This is particularly the case when a high level of market concentration already exists (see Varian (1992)).

Which ex ante bidding/offer market power mitigation options for the DA and IA markets do you favour? Relate the preferred approach to the 5 key principles where possible

¹⁵ See De Frutos and Fabra (2012), Wolak (2012), "Regulating competition in wholesale electricity supply", in Rose, N. (Ed), Economic regulation and its reform: what have we learned?" and Mahenc and Salanie' (2004), "Softening competition through forward trading", Journal of economic theory, 116, 282-293.

The market power mitigation measures required will depend on the forward market conditions, level of concentration and level of integration with the EU market. In particular, in the absence of a liquid forward market, following all the literature mentioned above, regulation of the spot market will be advisable (Di Cosmo and Lynch, 2015). Moreover, data on the spot market should be publicly available as in SEM, as argued by Wolak (2012) in order to guarantee transparency and efficiency in the spot market.

Finally, it should be highlighted that any regulation of forward prices will be reflected in the retail market, which will become less connected with the spot market.

Moreover, a bidding code of practice can also be **effective**, as the BCoP in the SEM has underpinned competitive prices to date (Walsh and Malaguzzi Valeri, 2014¹⁶). Publication of the data can ensure **transparency**. The degree to which it is **practical** will depend on the final EUPHEMIA order types chosen and the ability to translate from the current BCoP to a EUPHEMIA-compatible BCoP.

Under what structural conditions or in combination with other market power mitigation measures should vertical ring-fencing of the incumbents be relaxed?

Aghion et.al. (2006) highlighted that there is a non linear relationship between competition and the propensity of firms to integrate vertically.¹⁷ Thus, if the vertical ring-fencing of the incumbent is relaxed, the probability of having less competition in the retail market increases. In order to allow vertical integration, retail competition must be monitored and new entrants should not be discouraged. The absence of the necessary incentives to keep the competition in the retail market high will result in higher consumer prices (see Farrell and Klemplerer, 2007)¹⁸.

According to Defeuilley (2009)¹⁹, consumers may stimulate competition between electricity suppliers providing that two criteria are fulfilled. First, new entrants must have access to the retail market. Second, this paper also shows that in retail markets, competition is strongly influenced by the characteristics of consumer behaviour such as their switching patterns. An accurate study on consumer switching behaviour should therefore be performed, and the correct incentives for the consumers to switch providers, thereby enhancing competition, should be promoted.

¹⁶Walsh, D and Malaguzzi Valeri, M., 'Gaming in the Irish Single Electricity Market and Potential Effects on Wholesale Prices', ESRI Working Paper 488.

¹⁷ Aghion, P, Griffith, R and Howitt, P. (2006), "Vertical integration and competition", American Economic Review, Papers and proceedings, 97-102.

¹⁸ J. Farrell, P. Klemperer, Chapter 31 Coordination and Lock-In: Competition with Switching Costs and Network Effects, In: M. Armstrong and R. Porter, Editor(s), Handbook of Industrial Organization, Elsevier, 2007, Volume 3, Pages 1967-2072

¹⁹ Defeuilley, C. (2009) "Retail competition in electricity markets", Energy Policy, Volume 37, Issue 2, 377-386