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ECONOMIC CONSULTING

Review of Market Power Principles for the I-SEM

Prepared for Viridian

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Viridian asked NERA to review the Discussion Paper of 8 May 2015 on Market Power Mitigation in the I-SEM. Our conclusions are summarised below.

Defining the Relevant Market (Chapter 2)

Previous cases within Europe provide a lot of experience in defining electricity markets for the purpose of competition policy. The Discussion Paper has only begun to scratch the surface of this question, but two points stand out.

First, the Discussion Paper devotes relatively little attention to product definition. Within the I-SEM, products are defined by the characteristics of the electricity supplied, not by the technology supplying it. However, electricity cannot be stored, so markets are defined for short time periods. Market power may arise only at certain times and in certain conditions. However, if those conditions are repeated often, they would collectively form a relevant market that merited further analysis. Given the experience of the I-SEM and other electricity markets, it is worth examining whether the forward contract market is a relevant product market, separate from the physical commodity, and how it affects competitors' ability to manage risk.

Second, the geographic definition of the market requires further analysis, but may not be affected by the expansion of market coupling between Ireland and Great Britain. Physical constraints may remain the main barrier to expanding international trade in response to price differences, limiting the geographic scope of the electricity market to the national or sub-national level.

Measuring Market Power (Chapter 3)

There is a fine line between protecting competition and stifling competitive behaviour. Any final decision on Market Power Mitigation Measures (MPM Measures) will need to demonstrate that the measures are applicable to all-island conditions (and that they will not unduly hamper normal competitive behaviour). MPM Measures cannot merely be copied from other markets.

These demonstrations of efficacy can rely on objective evidence about the current state of the market and known future developments. It will not be necessary to use a "forward-looking assessment" reliant on subjective forecasts of future market conditions. We note that the European Commission's statements about forward-looking assessments do not apply when measuring market power in the electricity sector. Sunset clauses or periodic reviews of the proposed MPM Measures provide a better means of dealing with unpredictable future trends in market power.

Any process of market assessment needs to apply the SEM Committee's principle of transparency by adopting observable data and objective methods. Such assessments are likely to use a combination of methods. The SEM Committee has some leeway over which combination to adopt, but should for the sake of transparency select a combination that can be applied consistently to all markets, and avoid applying different methods arbitrarily, to different markets.

Focus of Market Power Mitigation (Chapter 4)

ESB's position is a (large) state-owned enterprise, and may not operate with entirely commercial objectives. ESB's state-ownership, along with its size and degree of vertical integration, reduces its requirement to manage risk by trading forward contracts with entities outside the ESB group of companies.[1] Accordingly, for a number of reasons related to competition (as well as liquidity), the SEM Committee may need to regulate ESB's behaviour in forward markets. In particular, it may be necessary to ensure that independent generators and suppliers (existing ones and new entrants) have access to the forward contracts. They will need these contracts to manage risk, and without them they will not be able to compete effectively in physical markets for generation and retail supply.

Principles for Market Power Mitigation (Chapter 5)

Regarding the "key principles", we note the importance of maintaining transparency and minimising regulatory discretion, in order to permit effective competition. Vague or arbitrary application of these principles will discourage market participants from acting in a competitive manner, as well as (or instead of) discouraging non-competitive behaviour. The assessment process will therefore need to provide objective evidence for any proposed interventions, based on a detailed discussion of each principle.

As a general comment on the standards of evidence used by the RAs to apply these principles, we would stress the need to assess the impact of proposed MPM Measures in local market conditions. Even transparent and efficient measures that have proved effective and non-distortionary elsewhere may not be useful in the all-island market. Similarly, observing that a particular market functions well in some other jurisdiction is no guarantee that it will function efficiently without MPM measures in all-island conditions. Detailed consideration of all-island conditions will be required to avoid both over- and under-regulation of competitive markets.

[1] We note that each of ESB's generation and retail supply businesses are ring-fenced, but also that similar arrangements in Great Britain were not sufficient in the past to allay concerns over vertical integration by contract

1. Introduction

Viridian asked NERA to review the Discussion Paper on Market Power Mitigation in the I-SEM released by the Regulatory Authorities (RAs) on 8 May 2015 ("the Discussion Paper").

In particular, Viridian asked NERA to focus on three questions:

- How the RAs should identify the market power to be mitigated;
- Whether the approach taken in the Discussion Paper is comprehensive and devotes sufficient attention to all of the areas where market power may develop; and
- Whether the proposed principles for market power mitigation outlined by the RAs were appropriate.

This short report provides our responses to each of these questions and proceeds as follows:

- Section 2 examines the process of market definition and explains that the geographic market must be assessed with regard to physical network constraints between interconnected systems;
- Section 3 examines the process of assessing market power over a defined market and how market power should be assessed with regard to objective information;
- Section 4 reviews the SEM Committee's proposed focus for its market power mitigation strategy and explains that the SEM Committee should provide a detailed assessment of market power in the forward market; and
- Section 5 describes the SEM Committee's key principles and comments on their economic interpretation in the current context.

2. Defining the Relevant Market

The first step in identifying the economic concept of market power, [the economic equivalent of the legal concept of dominance], is defining the relevant market or markets on which market power may be present. Conceptually, the relevant market comprises the set of goods and services over which any *hypothetical* monopolist could profitably raise prices above the competitive level.[2] As a practical matter, market definitions in European Competition Policy distinguish between two dimensions:[3]

- The relevant product market, which comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer by reason of the products' characteristics, their prices and their intended use; and
- The relevant geographic market, which comprises the area in which the firms concerned are involved in the supply of products or services and in which the conditions of competition are sufficiently homogeneous.

Market definitions rely on bespoke analysis conducted for individual cases and so definitions are not, in principle, binding from one decision to the next. Nonetheless, previous decisions illustrate the principal methods used to define markets in previous cases and provide the starting point for future assessments.

2.1. Product Definition

The Discussion Paper omits any consideration of the relevant *product* market. Previous decisions in the electricity sector have typically distinguished between separate product markets for generation, transmission and distribution, and supply (with sub-segments by volume of consumption). These markets concern different stages in the physical supply chain. Some discussions of competition policy consider markets for derivative products (i.e. electricity contracts). Market power in these products is sometimes derived from, and addressed as, a problem of market power over a physical commodity. However, dominance over forward markets also affects competitors' ability to manage risk, which requires separate attention.

In any analysis, it will be important to define the market by reference to products seen from both the buyer and seller's point of view, rather than by reference to production technologies. In principle, all forms of generation produce a single product – electricity – though they sell it at different times, and hence in different markets.

Electricity is expensive to store and the level of demand fluctuates over time. Accordingly, the potential for market power to arise depends on a range of different conditions. In particular, it will be important to consider periods when wind output is low, and demand

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[2] Office of Fair Trading (2004), "*Market Definition: Understanding Competition Law*", paragraphs 2.5-2.7.

[3] European Commission (1997), "Commission Notice on the definition of relevant market for the purposes of Community competition law", *Official Journal of the European Communities,* 97/C 372/03, paragraphs I.4, II.7-8.

must be met by turning on so-called "peaking" or "flexible" capacity.[4] At such times, possession of such capacity may confer on its owner(s) a high degree of market power over the electricity market as a whole, even if its market share is relatively small. Defining markets by time period and/or supply conditions therefore provides useful insights.

2.2. Geographic Market

The Discussion Paper does not explicitly set out any opinion as to whether the relevant *geographic* market is Ireland as a whole, or narrower, or wider. Competition authorities and courts have repeatedly defined the relevant geographic markets for the electricity sector as national or sub-national, due to the observed constraints on trade between national markets.[5] When defining the relevant geographic market for the wholesale electricity sector, the European Commission, for instance, typically considers the geographic scope of any set of trading arrangements, such as the SEM/I-SEM, as well as contractual and physical barriers to cross-border trade. Physical or other forms of market segmentation have sometimes led to markets being defined below the national level.

In principle, market coupling achieved through implementing the EU Target Model in the I-SEM may reduce the contractual barriers to trading wholesale electricity. It therefore has the potential to widen the geographic scope of the relevant wholesale market, if the only barriers are contractual ones. In practice, even where markets are already coupled, the Commission has repeatedly defined the relevant electricity wholesale market as national or sub-national, in large part due to the presence of physical constraints and congested interconnectors.[6] As Faull and Nikpay (2014) put it:

> "The question has arisen whether the relevant wholesale markets should be defined as being wider than national. To date, however, the Commission has considered that the evolution observed is still not sufficient to change market definition and that the conditions of competition are still very heterogeneous across borders. In particular, in electricity:
>
> - on most borders, congestion remains high for a significant part of the time, as significant interconnection capacity investments remain necessary to suppress all bottlenecks;
> - the liquidity of wholesale markets remains relatively limited in many Member States and competition within Member States from market players

[4] The nature of the capacity performing this role changes from time to time and depends on relative fuel prices, among other things. Within the all-island market, the role described here may be provided by starting the plant normally used to meet peak demand, such as hydro plant and open-cycle gas turbines, or by starting other available plant that is more efficient to run and flexible enough to meet the fluctuating demand, such as combined cycle gas turbines.

[5] Faull, J and Nikpay, A (2014), "*The EU Law of Competition*", 3rd edition, Oxford: Oxford University Press, paragraph 12.3.

[6] Despite market coupling between Slovakia and the Czech Republic the Commission found that the relevant market was still limited to Slovakia because of low liquidity and frequent congestion of the interconnectors, see Case COMP/M.5591 CEZB/JAVYS/JESS JV (2009), para 11. The Commission argued that Denmark consisted of subnational wholesale electricity markets, despite being integrated within Nordpool (See Case No COMP/M.3868-DONG/Elsam/Energi E2).

which do not have their own generation capabilities remains limited. This also implies that even if prices are aligned on the power exchanges of two coupled zones, there are still significant volumes traded off-exchange (OTC brokered or OTC bilateral) for which prices may not be aligned between two coupled Member States;

- Electricity trading regulation remains national for power exchange activities, and electricity contracts usually specify a national delivery zone, even when that zone is coupled with other zones; this implies in addition that only the power~~(s)~~ exchange(s) appointed in that zone by the Member State can actually execute that contract.

Most electricity wholesale markets are therefore still defined as national. In some countries, such as Denmark or Italy, relevant markets have been defined even more narrowly"[7]

Trading arrangements within the all island electricity market may in future be coupled with those in the electricity market in Great Britain. More efficient coupling may, at different times increase both imports (i.e. supply), and exports (i.e. demand) in the I-SEM, with multiple and variable effects on the level of competition. These effects may merit further analysis. However, market coupling will *not* overcome the physical constraints on trade between these two geographic markets. Any hypothetical monopolist might be able to raise prices in Ireland without fear of being undercut by competitors from Great Britain. The persistence of such physical constraints implies a geographic market definition that is limited to the island of Ireland, suitably adjusted for the additional supply and demand from interconnectors. However, to reach a final answer, this aspect of market definition requires more detailed analysis, using objective evidence on supply and demand conditions.

The standard quantitative approach (which we have applied in other circumstances) is to examine the impact of the hypothetical monopolist imposing a Small but Significant Non-Transitory Increase in Price, referred to as the "SSNIP Test".[8] Applying the test to the all-island electricity market would require modelling of supply (generators' short-run marginal costs) and demand (consumers' willingness-to-pay) within both the I-SEM and Great Britain. Similar analysis would also help to determine whether the market was in fact narrower than total generation – for example whether renewable and conventional sources of generation sell their output in the same or different markets.

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[7] Faull, J and Nikpay, A (2014), "*The EU Law of Competition*", 3rd edition, Oxford: Oxford University Press, paragraphs 12.41 and 12.42.

[8] The SSNIP test takes one possible definition of the market and hypothesizes the existence of a monopoly on the supply side within that market. It assumes that this hypothetical monopolist imposes a "Small but Significant and Non-transitory Increase in Price" (i.e. a price rise of 5-10% or so). The test then examines how supply and demand would respond. If the price increase would *raise* the profits of the hypothetical monopolist, even after allowing for the reaction of customers and potential competitors, then the test has defined the scope of the market in question. If increasing the price would *lower* the profits of the hypothetical monopolist, the test has defined the market too narrowly and the test is repeated for a wider definition of the market.

2.3. Conclusions

Previous cases within Europe provide a lot of experience in defining electricity markets for the purpose of competition policy. The Discussion Paper has only begun to scratch the surface of this question, but two points stand out.

First, the Discussion Paper devotes relatively little attention to product definition. Within the I-SEM, products are defined by the characteristics of the electricity supplied, not by the technology supplying it. However, electricity cannot be stored, so markets are defined for short time periods. Market power may arise only at certain times and in certain conditions. However, if those conditions are repeated often, they would collectively form a relevant market that merited further analysis. Given the experience of the I-SEM and other electricity markets, it is worth examining whether the forward contract market is a relevant product market, separate from the physical commodity, and how it affects competitors' ability to manage risk (see chapter 4, below).

Second, the geographic definition of the market requires further analysis, but may not be affected by the expansion of market coupling between Ireland and Great Britain. Physical constraints may remain the main barrier to expanding international trade in response to price differences, limiting the geographic scope of the electricity market to the national or sub-national level.

3. Measuring Market Power

The Discussion Paper devotes section 2.4 to reviewing different measures for assessing market power, given its prior definition of the relevant market.[9] The SEM Committee reviews four measures including market shares, the Herfindahl-Hirschman Index (HHI), the Residual Supply Index and the ability of generators to set prices (for which it could take several approaches).

3.1. Selecting a Method for Measuring Market Power

With regard to selecting a method for measuring market power, the general conclusion in the academic and policy literature is that there is *no* objective standard for deciding which method to employ in general. One practical study, conducted by a group of academics based largely at Cambridge University, reviewed all of the measures under consideration by the SEM Committee, and argued that the failings in each method made it necessary to rely on a combination:

> "[A]lthough there is no definitive method… the more recent tools are better able to capture relevant factors and dynamic considerations that are not present in traditional tools such as concentration ratios or the Lerner Index [a measure of the mark-up on costs]. However, with these advances come associated theoretical or data estimation issues that can blur the reliability of the results. As such the pragmatic approach to market power detection is to gather together a number of metrics with the hope of constructing a consistent story of the competitiveness of the companies or market as a whole."[10]

To mitigate market power on an ex ante basis, the SEM Committee must define a screening rule for identifying maker power that complies with its principle of *transparency* (see discussion in chapter 4 below). Accordingly, a combination of measures to identify market power will only fulfil the SEM Committee's principles, if that combination is applied in a transparent, formulaic way that does not allow room for undue regulatory discretion.

3.2. Precedents in Competition Policy

In practice, the SEM Committee will probably have to judge any method for identifying market power by the credibility of its results in the context of the all-island market. As one of the simplest measures available, market shares are usually the starting point for assessing competition. The thresholds to trigger ex post investigation under competition law may be stricter than those required for ex ante regulatory enforcement. Nonetheless, the thresholds used in competition policy offer insight into the thresholds at which market shares are likely to lead to significant market power.

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9 SEM Committee (2015), "*Integrated Single Electricity Market (I-SEM): I-SEM Market Power Mitigation Discussion Paper*", (SEM-15-031), 8 May 2015, pp.14-17.

10 Twomey, P., Green, R., Neuhoff, K and Newbery, D. (2005), "A Review of the Monitoring of Market Power : The Possible Roles of TSOs in Monitoring for Market Power Issues in Congested Transmission Systems", *Cambridge – MIT Working Papers,* No. 71., p.37.

Typically, competition authorities: (1) assume that market participants *may* have a dominant position if they possess market shares above 40 per cent, (2) presume that market participants *do* have a dominant position if they possess market shares above 50 per cent; and (3) presume that market participants are "super dominant" if they possess market shares above 80 per cent.[11]

The market shares presented by the SEM Committee show that, by these standards, ESB has a share that would be consistent with a dominant position in installed capacity and super dominance in Contracts for Difference (see the figure on page 15 of the Discussion Paper[12]). If the SEM Committee were to adopt narrower market definitions by geography or by period of delivery, ESB's market shares in those segmented markets might increase further. Moreover, ESB has the largest market share in both generation and supply segments and has three times as much capacity as its competitors by any measure presented in the Discussion Paper. Thus, all the measures of market power suggested by the SEM Committee point towards including ESB in the proposed arrangements for market power mitigation.
If some of the same measures show other market participants do not have market power, the SEM Committee should take care not to include them in a blanket restriction without good reason. It is harmful to competition to design thresholds that include market participants unnecessarily, since Market Power Mitigation Measures ("MPM Measures") can discourage competitive behaviour as well as non-competitive behaviour (see discussion of the principle "enabling competitive entry and exit" in chapter 5 below). In such conditions, it makes sense to extend MPM Measures only to those market participants that appear to possess market power by a number of different measures.

3.3. Transparency and Objectivity of Market Assessments

Although there are no universal, objective standards for measuring market power in regulatory procedures, any procedures adopted for measuring market power still need to comply with normal standards for the objectivity of the data that they use. Specifically, market power mitigation will only be "*transparent*" if it is based on observable data on the market situation at the time the regulator introduces the measure.

ESB has advocated using a "forward-looking" assessment to identify market power in the context of the I-SEM.[13] In support of its proposal, ESB cites a previous statement by the European Commission, that National Regulatory Authorities will define relevant markets on a forward-looking basis for the purposes of *sector-specific* regulation.

However, this statement is irrelevant, and ESB's argument is misleading, for the following reasons.

First, the Commission statement cited by ESB did not refer to the electricity sector. Although ESB did not provide a reference to its source in its submission, ESB appears to be

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[11] See for example, the discussion in Whish, R. (2009), "*Competition Law*", 6th Edition, Oxford: Oxford University Press, p.46.

[12] SEM Committee (2015), "*Integrated Single Electricity Market (I-SEM): I-SEM Market Power Mitigation Discussion Paper",* (SEM-15-031), 8 May 2015, p.15.

[13] ESB (2015), "*Response to: Forwards and Liquidity Discussion Paper*", (SEM-15-010), 27 March 2015, p.3.

citing the Commission's Guidelines on the analysis of markets and market power in *electronic communications networks*.[14] In this document, the Commission explains that the use of a forward-looking assessment is required in the specific conditions of rapid technological progress – conditions that are widespread in "electronic communications markets", but unusual for the electricity sector:

> "high barriers to entry may become less relevant with regard to markets characterised by on-going technological progress. In electronic communications markets, competitive constraints may come from innovative threats from potential competitors that are not currently in the market. In such markets, the competitive assessment should be based on a prospective, forward-looking approach".[15]

Technological progress is a feature of electricity markets, but proceeds more slowly than in communications and has a different effect on competition. The electronic communications sector is experiencing such rapid cost reduction that entire technologies rapidly become obsolete. What appears to be an important technology today may have no users tomorrow, so a forward-looking assessment of market definition is necessary. In the electricity sector, the pace of innovation, technological change and cost reduction is slower. When market participants invest in long-lived assets, with high sunk costs, they expect them to supply the same markets in the future. The markets observed today would be expected to persist. Thus, the specific conditions in which the Commission argues that NRAs should use forward-looking data do not apply to electricity markets.

Second, in advocating a forward-looking assessment, ESB conflates the two components of assessing market power: market definition and dominance in that market. The Commission's statement applies only to the assessment of the relevant market. It is logical to look forward in sectors where the range of competing products evolves rapidly, as in communications. The Commission does not suggest, however, taking a forward-looking approach to assessing the position of undertakings on that market.

In the electricity sector, any market power mitigation based on forecasts or extrapolated trends in the position of individual market participants would be highly subjective and might prove to be mistaken if historical trends did not continue. For the sake of objectivity and transparency, any "forward-looking" component of a market assessment in the electricity sector would have to be limited to foreseeable changes that are *certain* to occur (such as investments in generation that will soon come onto the market) or simple *scenarios* based on recent experience (such as different fuel prices).

Of course, relying on current or historical data means that any particular set of MPM Measures may cease to be suitable in future. Such outcomes are the inevitable consequence of unpredictable conditions, not the result of "inadequate" forecasts. However, the

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[14] European Commission (2002), "Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services", *Official Journal of the European Communities*, 2002/C 165/03, paragraph 80.

[15] European Commission (2002), "Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services", *Official Journal of the European Communities*, 2002/C 165/03, paragraph 80.

possibility that market power might reduce in the future provides no excuse for not mitigating market power today, as the RAs can always withdraw MPM Measures that later prove unnecessary. Indeed, the SEM Committee's own principles acknowledge that such measures can include sunset clauses so that MPM Measures elapse at a defined time or in (objectively) defined circumstances.

3.4. Conclusions

There is a fine line between protecting competition and stifling competitive behaviour. Any final decision on Market Power Mitigation Measures (MPM Measures) will need to demonstrate that the measures are applicable to all-island conditions and that they will not unduly hamper normal competitive behaviour. MPM Measures cannot merely be copied from other markets.

These demonstrations of efficacy can rely on objective evidence about the current state of the market and known future developments. It will not be necessary to use a "forward-looking assessment" reliant on subjective forecasts of future of market conditions. The Commission's statements about forward-looking assessments do not apply when measuring market power in the electricity sector. Sunset clauses or periodic reviews of the proposed MPM Measures provide a better means of dealing with unpredictable future trends in market power.

Any process of market assessment needs to apply the SEM Committee's principle of transparency by adopting observable data and objective methods. Such assessments are likely to use a combination of methods. The SEM Committee has some leeway over which combination to adopt, but should for the sake of transparency select a combination that can be applied consistently to all markets, and avoid applying different methods arbitrarily, to different markets.

The results of applying these methods should be credible in all island conditions, but should not extend MPM Measures further than necessary, to avoid stifling competition.

4. Focus of Market Power Mitigation

The Discussion Paper covers the principal forms of behaviour covered in market power mitigation, such as artificially raising offer prices, withholding plant from the market and "price suppression" (often referred to as predation**)**.[16] However, it assumes that such behaviour arises only out of a desire to raise profits. That assumption may not apply to state-owned companies such as ESB.

4.1. Competition Policy and Incentives for Exercising Market Power

Because of ESB's position as a (large) state-owned enterprise, it will be necessary to consider the possibility of ESB using its market power to achieve political objectives, rather than to raise its profits. As a state-owned company, ESB may not operate with entirely commercial objectives. For instance, it may come under pressure to lower energy prices, leading to predation, or it may be driven by management objectives to maintain or expand its market share, even when it would be unprofitable to do so.

However desirable such behaviour may seem from a political point of view, it would be inimical to competition and need not operate in the interests of all electricity consumers. The assessment of ESB's market power and the design of MPM measures should not therefore be limited to actions that would raise ESB's profits. The SEM Committee should consider a wider range of possible actions that would harm competition, including actions intended to lower prices (temporarily at least) and/or increase ESB's market share.

4.2. Impact on Competition of Market Power in Forward Markets

The Discussion Paper refers to the potential for inflating prices in the forward market as well as in the spot market. However, the Discussion Paper observes that market power tends not to be focused in forward markets, but in the underlying physical markets. The Discussion Paper also suggests that system constraints provide opportunities for exercising local market power. It therefore concludes that "mitigating local market power that might arise in the balancing market is therefore an important area to focus on."[17]

However, conditions in the I-SEM suggest that it may be wrong to focus on market power in the physical markets. Because of the peculiar status of ESB, market power in forward markets can act as a constraint on competition in the physical markets, as explained below.

ESB's state-ownership, along with its size and degree of vertical integration, reduces its requirement to manage risk by trading forward contracts with entities outside the ESB group of companies. (We note that each of ESB's generation and retail supply businesses are ring-fenced, but also that similar arrangements in Great Britain were not sufficient in the past to allay concerns over vertical integration by contract). By not offering forward contracts, ESB

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[16] SEM Committee (2015), "*Integrated Single Electricity Market (I-SEM): I-SEM Market Power Mitigation Discussion Paper",* (SEM-15-031), 8 May 2015, pp.6-7, paragraphs 2.2.1.

[17] See, for instance, SEM Committee (2015), "*Integrated Single Electricity Market (I-SEM): I-SEM Market Power Mitigation Discussion Paper",* (SEM-15-031), 8 May 2015, p.4, paragraph 2.3.5.

may be preventing independent generators or suppliers from managing their risks and hence from competing effectively in the physical generation and supply markets.

In comparison, the system operator's concern about transmission constraints and abuse of local market power is likely to prove a secondary issue from competition policy. One of the SEM Committee's proposed principles is that the market power mitigation mechanism should allow competitive entry and exit, which relies on efficient signals being sent to market participants about the local value of electricity. As a result, it would also be a mistake to try to address transmission constraints using methods that limit the local price of electricity in constrained areas (such as such as bidding rules for the affected generators, if feasible under the new arrangements, or contracts that dampen price signals), if they undermine competition or risk-hedging in the wider electricity market.

4.3. Liquidity and Forward Market Access: Two Separate Aims

As the largest market participant, ESB's behaviour has a major impact on liquidity in the forward market on one hand and on the ability of independent generators and suppliers to access the forward market on the other. The Discussion Paper refers to the efforts being made in other workstreams to promote liquidity within the I-SEM.[13] From the point of view of competition, however, it may be necessary to distinguish between:

a. the measures intended to create *liquid trading* in forward contracts (i.e. to provide repeated, high volume turnover in the trading of electricity contracts); and
b. measures required to give *forward market access* to generators and suppliers that are not fully integrated (i.e. to provide a sufficient volume of forward contracts to cover their net supply or demand).

Market power mitigation mechanisms may not need to tackle both problems. A liquid market in contracts is a desirable addition to any commodity market, but it may not make a major contribution to competition in retail supply markets (and it may in any case be impossible to force liquidity through regulation[18]). However, if independent generators and suppliers are denied access to forward markets, they may be unable to manage their risks to the extent required for them to compete with ESB in markets for generation and supply. It may therefore be necessary to encourage generators to sell their output at least once on forward markets, without holding out the hope that this contract will be re-sold enough times to create a liquid market.

ESB's management may prefer not to participate fully in forward markets for a number of reasons, such as reduced sensitivity to commercial risks and their costs, or a desire to preserve flexibility over future prices of electricity. In Great Britain, major electricity companies have been able to rely on the stability of their retail customer base (due to the switching costs faced by consumers) in lieu of wholesale contracts, and ESB's management

[18] In practice, liquid forward markets emerge where traders are confident that such markets offer a competitive, fair and transparent means for managing their risks. Frequent or heavy-handed regulatory inventions cannot substitute for a competitive market structure. Instead, they tend to undermine traders' confidence in the market and to hamper the development of liquidity.

may take a similar view of the company's risks. Given the effect of such a view on the ability of others to manage risk and to compete effectively, the SEM Committee may have to impose MPM Measures on ESB's behaviour in forward markets (as well as spot and other physical markets) to promote competition, rather than liquidity *per se*.

4.4. Promoting Forward Market Access

Great Britain offers some experience in this area. The Secure and Promote (S&P) Licence Condition in Great Britain, referred to in the Discussion Paper,[19] is one such market intervention and consists of two parts: (1) a liquidity obligation on the six large vertically integrated companies to provide trading opportunities at regulated bid-ask spreads and (2) a market access obligation on the eight largest generators to offer fair trading terms to counterparties. Ofgem introduced the S&P Licence Condition in part to address concern about lack of access to power for entrants, particularly in the forward market, arguing that access to forward contracts was necessary for new entrants.[20] However, the S&P Licence Condition is also intended to kick start a market in contracts, since it places an obligation on the vertically integrated market participants not just to sell electricity by contract, but also to offer contracts all along the forward curve.

The Discussion Paper takes a slightly different view from Ofgem of the need for market power mitigation in forward products. It argues primarily that the forward market will right itself if market power is mitigated in the spot market, as long as market participants arbitrage the two ("can choose not to contract at a price that is above their expectations of the spot price"[21]). However, it also recognises that market power can be exercised separately in the forward market, specifically if suppliers "need to buy forward hedges to reduce the risk of exposure to the volatile physical spot market".[22]

In principle, the Discussion Paper's view of electricity prices has some economic underpinning. Market participants trade in the forward market in order to *share* risks. The generator and supplier each provide one another with the service of locking in a specified margin, rather than transferring risk to one to another. As a result, in a perfectly competitive market with risk neutral participants (or with equally risk-averse buyers and sellers), the forward and spot prices would be the same in expectation. In such circumstances, correcting market power in the spot market would be sufficient to correct market power in the forward market.[23] Some authors even find that the mere existence of

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19 SEM Committee (2015), "*Integrated Single Electricity Market (I-SEM): I-SEM Market Power Mitigation Discussion Paper",* (SEM-15-031), 8 May 2015, Appendix B, p.30

20 Ofgem (2013) "*Wholesale power market liquidity: final proposals for a 'Secure and Promote' licence condition"*, 12 June 2013, pp.4-7.

21 SEM Committee (2015), "*Integrated Single Electricity Market (I-SEM): I-SEM Market Power Mitigation Discussion Paper*", (SEM-15-031), 8 May 2015, p.7, paragraph 2.2.3.

22 SEM Committee (2015), "*Integrated Single Electricity Market (I-SEM): I-SEM Market Power Mitigation Discussion Paper*", (SEM-15-031), 8 May 2015, p.7, paragraph 2.2.5. In economic terms, the "need to buy forward hedges" translates into a lower elasticity of demand for forward contracts, compared with a market based on arbitrage, where the elasticity of demand is infinite.

23 Stoft, S (2002), "*Power System Economics: Designing Markets for Electricity*", IEEE Press and Wiley-Interscience.

forward markets restrains abuse of market power in the spot market, because parties who have sold contracts ahead of time have less incentive to raise prices in the spot market.[24]

In practice, however, the caveat recognised by the SEM Committee remains a cause for concern – suppliers do need to buy hedges to reduce their risk exposure and would be vulnerable to any exercise of market power. They may be able to obtain such hedges by means other than electricity forward contracts, such as forward contracts for gas and other fuels. However, the investment in wind power will make electricity-specific risks more and more important, thereby reducing the value of cross-fuel hedging, and increasing the importance of the forward market for risk management.

The need to hedge risks by buying electricity forward creates an opportunity for the exercise of market power when suppliers are faced with a larger, vertically integrated incumbent that is less risk averse or has less need to manage risks. That incumbent can exploit the demand for hedges to raise the premium at which forward contracts trade above expected spot prices (whether or not the spot price is set competitively).[25] Risk premiums may not be applicable in a competitive market, where both parties to the contract benefit from a reduction in their risk ("risk sharing"). By imposing a premium in forward markets, a vertically integrated company may just harm competition downstream, i.e. in the supply market, by raising the costs of its principal rivals.[26]

4.5. Conclusion

ESB's position is a (large) state-owned enterprise, and may not operate with entirely commercial objectives. ESB's state-ownership, along with its size and degree of vertical integration, reduces its requirement to manage risk by trading forward contracts with entities outside the ESB group of companies.[27] Accordingly, for a number of reasons related to competition (as well as liquidity), the SEM Committee may need to regulate ESB's behaviour in forward markets. In particular, it may be necessary to ensure that independent generators and suppliers (existing ones and new entrants) have access to the forward contracts. They will need these contracts to manage risk, and without them they will not be able to compete effectively in physical markets for generation and retail supply

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[24] Evidence of this can be found in Joskow, P. and Kahn, E. (2002), "A Quantitative Analysis of Pricing Behavior in California's Wholesale Electricity Market During Summer 2000", *The Energy Journal*, Vol 23, No. 4, and in Green R. (1992), "*Contracts and the Pool: The British Electricity Market*", DAE Mimeo.

[25] See for instance, discussion in: McDiarmid, R., Bogorad, C. S. and Hegedus, M. S. (2002) "*Comments of the American Public Power Association and Transmission Access Policy Study Group on Market Power, Market Monitoring, and Market Mitigation Issues in Supply Margin Assessment and Standard Market Design*", FERC Conference on Supply Margin Assessment, Docket No. PL02-08-000.

[26] We note the standard critique that there is only one monopoly profit, which the incumbent can extract either as an increased market share in the downstream market, or as an inflated risk premium, or as a mixture of the two. For a discussion of the single monopoly profit theorem, see, for example: Ahlborn C, Evans, D, S, and Padilla, A J (2004): "The Antitrust Economics of Tying: A Farewell to Per Se Illegality", *The Antitrust Bulletin*, 2004 Spring-Summer, p.323.

[27] We note that each of ESB's generation and retail supply businesses are ring-fenced, but also that similar arrangements in Great Britain were not sufficient in the past to allay concerns over vertical integration by contract

5. Principles for Market Power Mitigation

The Discussion Paper sets out nine high level principles for the market power mitigation strategy in the I-SEM.[28] We set out these principles and our comments on each below. The key to effective application of these principles will be to provide detailed evidence and reasoning for the application of each of these principles to each proposed remedy. The eventual remedy must be clearly understood by market participants and eliminate regulatory discretion to minimise the risk of distorting behaviour.

- **Effective and Feasible:** The SEM Committee correctly points to the need for effective and feasible remedies for market power mitigation. In practice, effective and feasible remedies will require rigorous testing to ensure that they will promote competition.

- **Targeted:** The SEM Committee discusses the need for a market wide or more targeted mechanism. The principal deciding factor behind which mechanism to adopt should be the effect on the ability of competition to secure an economically efficient outcome. In seeking to prevent the abuse of market power, remedies run the risk of distorting competitive behaviour by not sending efficient signals to market participants on where and when to increase output, schedule outages, enter or exit. Accordingly, the remedies should be targeted at objectively identified problems, to minimise their adverse effects on competition.

- **Flexible**: The SEM Committee requires that Market Power Mitigation Mechanisms should be flexible to cope with evolving conditions. The description of this criterion should clarify that the remedy should not be flexible in the sense that it leaves room for regulatory discretion but only so that MPM Measures should adapt automatically to changes in economic conditions (such as fuel prices and the level of demand), or be subject to review at a defined time or in defined circumstances (in case changing market conditions render the measures no longer suitable).

- **Practical**: The SEM Committee explains that any measures must be implementable "in very short timeframes. This principle overlaps with the principles of Transparency ("It should involve readily understood and accepted administrative processes that are predictable and reasonable") and Regulatory Efficiency ("This process, once implemented, should operate in very short timeframes"). Thus, however desirable it may seem to adopt "practical" measures, it will be necessary to minimise confusion by editing this principle and by tightening up the definitions of related principles. The most effective approach would be to drop this principle altogether. Alternatively, it could be focused on the need for implementation in very short time frames (and renamed "Quick to Implement").

- **Facilitate Competitive Entry and Exit**: The SEM Committee recognises that prices may need to rise above competitive levels to incentivise entry. It is vital for remedies not to hide the signals and incentives provided by market prices that are temporarily higher or lower than normal. Attempts to prevent market participants from earning the market value

[28] SEM Committee (2015), "*Integrated Single Electricity Market (I-SEM): I-SEM Market Power Mitigation Discussion Paper*", (SEM-15-031), 8 May 2015, p.21-23, paragraph 3.3.2.

of their electricity will increase regulatory risk, increase the threshold for entry, hinder competition and ultimately be self-defeating.

- **Allows for Innovative Strategy**: As with the previous principle, this principle is a reminder that competition policy should enhance competition between rivals and should not impose the regulators' best estimate of the competitive outcome.

- **Transparent**: The SEM Committee states that remedies should not be overly complicated, should be easily understood and compliance should be achievable, with transparent publication of the market power mitigants. This is an important principle, since measures will not promote competition if market participants are unsure how they will be implemented. Note that "transparency" is not the same as "simplicity". The SEM Committee should beware of adopting remedies for the sake of "simplicity", if they distort economic decision making.

- **Regulatory Efficiency**: The SEM Committee states that the remedy should not be expensive to implement and achieve benefits in excess of costs. The principle is sound but should not be used as an excuse to override the need for transparency. A transparent mechanism may require detailed supervision, but a mechanistic approach to monitoring will impose lower costs than an arbitrary approach to enforcement.

- **Sunset Ability**: The SEM Committee states that the remedies should be removed when conditions allow, and, if possible, the conditions under which they will be removed should be stated in advance. The principle is useful for the same reasons that it is important that remedies are targeted: remedies run the risk of distorting efficient behaviour as well as preventing abuse. They should therefore be removed when they no longer serve the useful function of preventing abuse.

As a general comment on the standards of evidence used by the RAs to apply these principles, we would stress the need to assess the impact of proposed MPM Measures in local market conditions. Even transparent and efficient measures that have proved effective and non-distortionary elsewhere may not be useful in the all-island market. Similarly, observing that a particular market functions well in some other jurisdiction is no guarantee that it will function efficiently without MPM measures in all-island conditions. Detailed consideration of all-island conditions will be required to avoid both over- and under-regulation of competitive markets.

In our view, more detailed commentary on the principles proposed by the RAs would not be useful at this stage, before they have been applied to real decisions.

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