Utilities Policy xxx (2016) 1–8

Contents lists available at ScienceDirect

Utilities Policy

journal homepage: www.elsevier.com/locate/jup

Competition and the single electricity market: Which lessons for Ireland?

Valeria Di Cosmo [a, b, *], Muireann Á. Lynch [a, b]

[a] Economic and Social Research Institute, Dublin, Ireland
[b] Department of Economics, Trinity College, Dublin, Ireland

ARTICLE INFO

Article history:
Received 30 March 2015
Received in revised form
11 May 2016
Accepted 11 May 2016
Available online xxx

Keywords:
Competition
Forward electricity markets
Capacity payments
European electricity market

ABSTRACT

This paper examines the evolution of the Irish Single Electricity Market in order to comply with the European Target Model for electricity. In particular, this work focuses on the challenges raised by the high concentration in the generation sector of the Irish electricity market. We examine the theoretical and empirical conditions under which forward markets promote competition in the spot and retail markets. We also investigate the impact of market concentration on the new capacity payment mechanism. In order to ensure a competitive outcome for consumers, the regulatory authorities should promote competition in the forward market; moreover, the regulator should extend regulation to the price and quantity that the dominant firm bids for holding new reliability options.

1. Introduction

The creation of the European harmonised electricity market has been a stated aim of the European Union (EU) in order to promote efficient trading in electricity. The framework for the EU internal market is contained in the Third Energy Package, which came into effect in March 2011, along with a detailed set of directives designed to put the single market in place.[1]

As a consequence of the Single Market design, all EU member states are expected to comply with the European Target Model for electricity trading.[2] While the European Target Model concerns itself primarily with efficient trading between price zones via electricity interconnection, there are several features of the Irish Single Electricity Market (SEM) that render it incompatible with the European Target Model at present (Gorecki, 2013). The SEM is therefore currently undergoing a process of transformation in order to integrate fully with the European Target Market, and is expected to comply fully by the end of 2017. The regulatory authorities have released decision documents on the high level design of the Integrated Single Electricity Market (I-SEM) and a consultation process on the detailed design of the I-SEM is ongoing. As well as introducing different trading platforms in order to enable coordinated scheduling of flows over interconnectors, there is a significant redesign of the SEM's capacity payment mechanism. This paper examines several aspects of the SEM redesign that are of concern, particularly considering the high level of supplier concentration that exists in this market.

The paper is structured as follows. Section 2 introduces the Irish electricity market and the possible changes. Section 3 presents a review of the literature relating to forward markets and competition and provides a summary of the conditions under which forward markets can enhance competition in spot markets. Section 4 considers the proposed changes for the SEM and outlines potential pitfalls and concerns. Section 5 considers the new proposed capacity payment mechanism for the SEM and Section 6 concludes.

2. The Irish electricity market: transition to the single European market

2.1. The current single electricity market (SEM) design

The Single Electricity Market (SEM) of Ireland, through which electricity on the systems of the Republic of Ireland and Northern

* Corresponding author. Economic and Social Research Institute, Dublin, Ireland.
E-mail address: valeria.dicosmo@esri.ie (V. Di Cosmo).

[1] See Directive 2009/72 on common rules for the internal market and Regulation (EC) 713/2009, which established the Agency for Cooperation of Energy Regulators. On the transition from regional to single market see http://ec.europa.eu/energy/sites/ener/files/documents/2010_gas_electricity_markets.pdf.

[2] See Newbery (2006) for a summary on how many markets in Europe have evolved to satisfy these liberalisation requirements.

http://dx.doi.org/10.1016/j.jup.2016.05.002
0957-1787/

Ireland is traded, has been in place since the 1st of November 2007. It is a single cross-border market that takes the form of a centrally-scheduled gross pool. The market was established due in part to requirements of the European Commission that electricity markets across Europe undergo a process of liberalisation and regulation (European Commission, 1996).

At present, the SEM's wholesale electricity market is a gross mandatory pool with a single System Marginal Price (SMP) in each period. The SMP has two components: the Shadow Price and uplift payments. The Shadow Price is the marginal cost of provision, as determined by a least-cost unit commitment and economic dispatch market algorithm. Due to the discontinuities in electricity generation, such as the costs of starting a unit or no load costs, a unit might be called to generate at a price that is not high enough to compensate them for all the costs incurred in generating for that time period. In these circumstances, an extra payment is required in order to render the unit's revenues sufficient to cover their costs. In the SEM, this extra payment is called uplift, and is added on to the Shadow Price received by all generators. The sum of the Shadow Price and the uplift payment at each half hour is the SMP in each half hour.

Plants bid in the day-ahead market according to a 'three-part bid'. Under this structure, a generator submits a bid that specifies the cost of starting the unit, the cost of no-load running of the unit, and the incremental cost of electricity generation. Generators are dispatched according to a least-cost schedule, taking these three-part bids into account, until the production is enough to service existing demand, after accounting for each plant's technical constraints. The three-part bids are also used to determine the magnitude of any uplift payments required, as described above. The SMP is based on the resulting 'unconstrained market schedule', which does not take account of transmission constraints. If transmission constraints arise in the real-time market, plants that are constrained off still collect the SMP for that period but have to return the equivalent of the costs they did not incur, based on their bids. Plants that are called to generate even if they were not included in the afore-mentioned unconstrained market schedule will be compensated for their generation costs, but do not receive that period's SMP. The regulatory authorities monitor the market through the Market Monitoring Unit (MMU). Power plants are required to bid their short run marginal costs, comprising fuel, carbon and variable operation and maintenance costs, in line with the bidding code of practice (available from the regulator's website: www.allislandproject.org), based on day-ahead spot prices. Total energy payments in 2015 came to €1.855bn and constraint payments in 2015 came to €156M[3].

The SEM also has a capacity payment mechanism that, in the parlance of the regulators, is a price-based mechanism (CER and NIAUR, 2014a,b). A capacity 'pot' is set each year and distributed among all generators; in 2015 this pot was €573 million. The size of the pot is designed to mimic the infra-marginal rent required to allow an otherwise marginal unit to recoup its capital costs. Such a unit would receive the SMP in each hour of operation, and would incur costs equal to the SMP in each hour of operation, and so the revenues required by these plants are simply equal to capital costs and unrelated to operational costs and/or the SMP. The normal method of ensuring capital-cost recovery in any market (and for any type of firm) is by earning revenues over and above marginal costs (infra-marginal rent). However, a unit that always operates as the marginal unit will earn no infra-marginal rent and so must seek alternative compensation to cover fixed costs. The capacity pot is therefore determined based on the capital costs of generation units, any revenues earned from unit operation over and above energy payments (such as ancillary services payments), and the total system demand requirement.

The structure of the SEM at the moment promotes competition, as highlighted by Malaguzzi Valeri (2009). The regulation and the bidding code of practice, along with constraint payments that are based on the differences between expected and actual dispatch, have ensured that wholesale prices have remained at a competitive level from the market origin. The capacity payment mechanism also cannot escalate beyond a competitive level as the pot is set administratively. This is in spite of the presence of a dominant firm, the legacy monopolist. One potential weakness of the SEM, however, is the level of competition in the retail market where links between generators and suppliers are still present; a particular concern in this case is that the dominant firm is a vertically integrated utility. The presence of vertically integrated utilities may weaken competition in the retail markets if there is no liquid and transparent forward market or if the retail prices are not regulated, as highlighted by Helm (2015).[4]

The new design for SEM should take all these aspects into account, delivering competitive outcomes for both wholesale and retail prices.

2.2. Proposed Integrated Single Electricity Market (I-SEM) design

There are several criteria against which the success of the I-SEM can be judged, including static efficiency, dynamic efficiency, and integration with other EU electricity markets. In order to bring about a welfare-enhancing outcome, the I-SEM design should at a minimum maintain the positive aspects of the SEM to date, which include the competitive prices that have prevailed in the spot and capacity markets. Consumer welfare could be enhanced by extending these competitive outcomes to the retail market. The main challenge for I-SEM, as is the case at present in the SEM, is high supplier concentration and potential market power. The proposed structure of the I-SEM includes a forward market of financial trades only, and an exclusive but not mandatory day-ahead market (CER and NIAUR, 2014a,b). The exclusive nature rules out self-scheduling by generators and precludes physical forward contracting. The non-mandatory nature means generators may participate only in the intraday or in the balancing market if they desire. This design may be intended to facilitate the ability of renewable generators to take advantage of more accurate forecasts closer to real time.[5] Generators submit their bids on the day ahead according to the EUPHEMIA algorithm, which does not allow three-part bids of the kind that exists in the SEM at present. Once a market-clearing schedule is determined, intraday trading allows market participants to adjust their positions until an hour before real time, at which point the balancing market operates. The detailed design regarding market scheduling and constraint payments has not been decided. However the intricacies of scheduling are unlikely to have a major effect on final consumer prices, as these are typically determined on the basis of forward contracts entered into by supply companies.

[3] Full details available at http://www.sem-o.com/pages/MDB_ValueOfMarket.aspx.

[4] A liquid market is defined as a market in which the price a buyer offers (bid price) and the price the seller is willing to accept (ask price) are close to each other. More on the lack of liquidity in the Irish electricity forward market can be found in CER (2015), Appendix 1.

[5] At present, forecasted wind may be far from the realised outcome. Using SEMO data, calculations by the authors show wind discrepancies between ex ante and realised values of up to −1082.444 MW h between 2008 and 2012.

Please cite this article in press as: Di Cosmo, V., Lynch, M.Á., Competition and the single electricity market: Which lessons for Ireland?, Utilities Policy (2016), http://dx.doi.org/10.1016/j.jup.2016.05.002