ESRI Research Note

The Irish Electricity Market: New Regulation to Preserve Competition

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1. Introduction

In the electricity sector there are two different markets: the wholesale (or spot) market, in which electricity generators generate and sell electricity at a new price every half hour, and the retail market, in which electricity supply companies sell electricity to the final consumers. Supply companies tend not to change the price they charge their consumers very frequently, and so these companies typically enter into longer-term contracts for electricity with generators to avoid the risks they would face if they bought at a new price every half hour. Internationally, many electricity markets also include a specific capacity payment mechanism, which ensures generators receive sufficient revenue to cover their fixed costs, thereby incentivising investment.

The Single Electricity Market (SEM) of the island of Ireland has been in place since 2007. The market takes the form of a centrally-traded pool where all electricity is bought and sold. In 2014, the payments made to generators for the electricity they provided came to €2.2 billion and capacity payments came to €556 million.[2] Since the SEM was launched, wholesale electricity prices have tracked input fuel prices closely and the costs and bids of generators have been open and transparent.

The European Union is working to harmonise electricity markets in its Member States by specifying a Target Model for electricity markets across Europe. The SEM has some technical features that render it incompatible with the European Target Model and so a number of changes to the market are necessary.[3] The SEM will therefore be replaced by a new Integrated Single Electricity Market (I-SEM),

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2 See http://www.sem-o.com/pages/MDB_ValueOfMarket.aspx for full details.

3 The rationale behind the Target Model is to promote efficient trading of energy between different countries. This includes allowing the cheapest generators to meet demand at each point in time while respecting their technical constraints, enhancing security of supply in each market, and facilitating the integration of renewable generation.

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which will be Target-Model compatible, by 2017. The new market will affect the spot and retail markets and the mechanisms through which supply companies buy electricity in advance to manage their risks.[4] We have concerns about some possible undesired consequences of the new market design for the I-SEM, relating to both spot and retail markets. There are also proposed changes to the capacity payment mechanism which are of concern.

Traditionally, electricity was generated and supplied to final consumers by state-owned monopolies. In the past two decades, electricity markets worldwide have been liberalised, with many players competing in both generation and retail markets. Often, however, the legacy monopolist retains a large market share in generation and retail markets. The SEM is no exception.

The legacy monopolist in the SEM has both a generation and a retail arm. Thus, one firm owns a large amount of the generation units on the system, provides a large proportion of total power generated and has the largest number of retail consumers. This allows the firm, in theory, to hide the true costs in each market by passing costs between its retail and generation arms. The legacy monopolist therefore has the potential to influence prices in both wholesale and retail markets. Any redesign of the SEM should take these structural issues, namely a low number of players and a dominant firm, into account.

The paper is structured as follows. Section 2 analyses the challenges facing the new I-SEM in spot and retail markets. Section 3 analyses the risks associated with the new capacity mechanism and Section 4 concludes.

2. Market Power in Spot and Retail Markets: the Role of Forward Markets

Both theoretical literature and international experience suggest that in order to promote competition in electricity markets with a small number of players, three measures may be employed. The first is where generators are required to base their bids on their true costs, and the regulator closely monitors spot market prices. The second is to improve the links between local and international electricity markets (this is achieved by building interconnectors). The final option is to incentivise local generators to commit to sell electricity at a competitive price in advance (this is achieved with a liquid forward market).[5] These options should not be seen as exclusive, as they can successfully be integrated. In

4 See *Directive 2009/72/EC* on common rules for internal market and Regulation 713/2009/EC for coordination in the Single European Market.

5 See Di Cosmo and Lynch (2015) for more details.

particular, a liquid forward market can also prevent the retail price, which represents the ultimate cost to consumers, from rising in the long term, as we will discuss below.

Competition in the current SEM spot market is currently ensured primarily through the first of these options, namely by regulating and monitoring spot market bids. This efficiently prevents generators from setting prices which do not reflect their true costs. This is achieved by the so called "Bidding Code of Practice", which legally requires generators to declare (or bid) their short-run marginal costs. This is the cost of producing one extra unit of electricity, and therefore is directly linked to generators' costs of fuel and carbon. These short-run marginal costs are bid separately from all other costs, such as the costs of starting or running the plant without producing electricity. Instead, generators include start costs and running costs in separate bids. Generators are also required to bid these other costs truthfully.

In the I-SEM, a new bidding structure will be used, which will bring new challenges to the Irish electricity market. In particular, it will no longer be possible to declare the different components of generation costs (start costs, running costs and short-run marginal costs) separately. This may weaken the link between generators' costs and market prices, and will also increase the responsibility generators must bear for ensuring their generation schedules are such that all their running costs are met. This new responsibility for meeting all costs may necessitate extra payments to generators. Furthermore it will be more difficult, but not impossible, for the regulatory bodies to impose conditions on the bids generators make in the new market, as they do at present. Given these limitations, in order to maintain the competitive spot market prices seen to date, we recommend that generators' bids be monitored carefully by the regulatory authorities to prevent them from exhibiting strategic behaviour.

Interconnection is the second of the three mechanisms through which competition is promoted. If there is a good level of interconnection between countries, generators compete not only within their country, but also with generators in other countries. In this case the number of market players is likely to be high enough to promote competition and, by extension, to keep electricity prices at their competitive level (which is the lowest level achievable). Although the efficient use of interconnectors will be beneficial for competition, the potential benefits and costs associated with higher interconnection levels may deserve further analysis.

The Irish market will be interconnected with the UK market, but not directly with Europe. As the UK market cannot be considered completely integrated with the rest of the European markets (i.e. the prices in the two zones won't necessarily always be the same), the existing interconnection is unlikely to open the Irish market to other EU players. Moreover, some companies in the UK are also owners of electricity companies in the Irish market, and this may reduce the benefits in terms of competition which can be gained through interconnection. Therefore the potential for interconnection to act as a means of ensuring competition in the new I-SEM, as with the current SEM, is limited.

Forward markets are the third measure often used to promote competition in electricity markets. In forward markets, generators commit to sell electricity in advance at a certain price. However, forward markets are also unlikely to underpin effective competition in Ireland, because the SEM is probably too small to support a liquid financial forward market. More realistically, the main forward contracts in this market will be bilateral contracts between generators and suppliers. Nevertheless, forward markets could still contribute to competition in I-SEM if they are properly designed. In particular, forward markets should be transparent, with the forward prices emerging from bilateral contracts made public.

If forward prices are made public, suppliers that earn high profits (which, in turn, will be associated with high retail prices) can be easily detected. This will provide a signal for new companies to enter the retail market and take advantage of the high profit margins. Furthermore, given the availability of such information on prices and suppliers, consumers can switch supplier and secure the best price. The regulator should facilitate such switching by ensuring there is sufficient information available to consumers. In particular, the regulator should require supply companies to publish all details of the components of the tariffs they applied to consumers who are not willing to switch their provider.[6] Extra consumer charges to subsidise renewable generators should also be published separately.

In summary, there are several challenges the I-SEM design encounters: it must keep spot prices at the lowest level achievable and ensure that supply companies transfer this price to final consumers, without earning extra profits. The low level

[6] These include the price at which the electricity was bought (either on the forward or spot market) and the costs of billing and metering. The focus on information and the role of the regulatory authority is particularly important, as recent economic theories highlight that consumers who are offered sufficient choice between plans sometimes do not select products that maximise their best interests. Wilson and Waddams (2010) used survey data from the UK electricity market and found that 20-32 per cent of consumers who switched supplier in order to obtain cheaper electricity actually ended up paying more, while less than 20 per cent switched to the firm offering the highest saving.

of interconnection and the lack of a liquid forward market may prevent the I-SEM from delivering an efficient price. Therefore, it seems regulation is the best way to ensure a competitive final price for consumers.

In particular, regulation should monitor the quantity and the price of the forward contracts in order to ensure that forward sales are at a reasonable price.[7] On the retail side, the regulator should require supply companies to publish the components of their tariffs, enabling consumers to make an informed decision when choosing supplier and to encourage new entrants if retail margins are high.

3. New Capacity Payment Mechanism

Capacity payments are payments made to generators to cover the fixed costs of the plant, as revenues from the sale of energy may not prove sufficient to ensure an appropriate level of investment arises. At present, capacity is paid for by dividing a capacity "pot", the size of which is determined by the regulatory authorities, among all available generators. This mechanism will be replaced by a reliability options mechanism in the I-SEM.

In a reliability options framework, generators participate in a competitive auction to hold reliability options in a given year. The total amount of options sold in the auction is equal to the estimated maximum level of electricity demand for the year. Thus consumers pay generators to hold reliability options, and in return receive assurance that there will be sufficient generation plants installed on the system to meet the maximum demand.

Generators that hold reliability options can be called upon by the Transmission System Operator (TSO - i.e. the System Operator of Northern Ireland or EirGrid) to generate at periods of system stress. These are identified as periods when spot prices rise above a "strike price" which will be predetermined by a central regulating body and announced in advance of the reliability option auction. In these circumstances, generators holding reliability options are required to repay the difference between the market price and the strike price to the TSO. This shields consumers from the effects of high spot prices. Reliability options have been implemented in the New England electricity market and are proposed for the Italian market.

7 See Di Cosmo and Lynch (2015) for more details.

There is a danger that if the total amount of options cannot be sold without the participation of one particular firm, this firm will have both the ability and incentive to bid a high price for holding these options, which will lead to the auction clearing at a high price. The current capacity payment mechanism was not vulnerable to this exercise of market power, as the regulatory bodies determined the capacity pot. Therefore firms could not cause total capacity payments to rise through strategic behaviour.

The regulators remain confident that appropriate measures can be identified to mitigate this potential strategic bidding which can be implemented along with the move to reliability options. However, there is no examination in the academic literature to date of the interaction of reliability options with a dominant firm or a low number of players. Indeed, much of the literature specifically ignores such issues when examining reliability options. These structural issues, which are present in the SEM, do not hold in other markets operating such capacity payment mechanisms.

Given this background, the authors are of the view that the only feasible way to protect consumers from the exercise of market power in the capacity market is to regulate prices. The regulator should perform a pivotal supplier test every year, which ascertains whether there is one firm without which the total allocation of options cannot be sold. If such a pivotal supplier is found, the price and quantity bid into the reliability options auction by every unit owned by the pivotal supplier should be regulated.[8] However, this would lead to the regulatory bodies determining not only the demand, but also a large portion of the supply curve of capacity in the I-SEM. Such a regulatory regime would also prove a significant administrative burden for the regulatory authorities. Finally, it could lead to a risk of litigation.

One final question regarding reliability options relates to wind generation, which is of increasing importance in the SEM. At present, the capacity payment pot is divided amongst all available generators, including wind generators. The revenue wind generators receive from the capacity payment mechanism is taken into account when determining the subsidy to which wind generators are entitled.

Under the new regime it is unlikely that wind generators will hold many if any reliability options, as periods of system stress may not coincide with positive wind output. Wind generators will therefore be reluctant to participate in the auction

8 Similar practices exist in other jurisdiction, see for example http://www.ferc.gov/CalendarFiles/20130826142258-Staff%20Paper.pdf.

at a low price, and are unlikely to hold these options. Thus, in determining whether a reliability options framework represents a net benefit for the consumer compared with the current regime, the total cost of the current mechanism should be compared with the cost of the new mechanism plus any addition to wind subsidies caused by the loss of capacity payments to wind generators.

4. Conclusion

The design of the Integrated Single Electricity Market raises concerns about the potential to realise a competitive outcome in the spot market, the retail market and the capacity market. The capability of forward trading to mitigate these risks is limited due to the nature of the Irish market. In a small market with limited interconnection capacity, liquid and transparent forward markets are unlikely to develop.

Therefore we recommend that the dominant firm face regulation of its forward sales and also the prices and quantities it bids into the new capacity payment mechanism. Furthermore spot market prices and retail prices should be closely monitored and retail margins should be made publicly available.

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