

Electricity Prices in NI: A Factual Analysis

Autumn 2016



About the Utility Regulator

The Utility Regulator is the independent non-ministerial government department responsible for regulating Northern Ireland's electricity, gas, water and sewerage industries, to promote the short and long-term interests of consumers.

We are not a policy-making department of government, but we make sure that the energy and water utility industries in Northern Ireland are regulated and developed within ministerial policy as set out in our statutory duties.

We are governed by a Board of Directors and are accountable to the Northern Ireland Assembly through financial and annual reporting obligations.

We are based at Queens House in the centre of Belfast. The Chief Executive leads a management team of directors representing each of the key functional areas in the organisation: Corporate Affairs; Electricity; Gas; Retail & Customer Protection; and Water. The staff team includes economists, engineers, accountants, utility specialists, legal advisors and administration professionals.

Our Mission:

Value and sustainability in energy and water

Our Vision:

We will make a difference for consumers by listening, innovating and leading

Our Values:

Be a best practice regulator: transparent, consistent, proportionate, accountable, and targeted

Be a united team

Be collaborative and cooperative

Be professional

Listen and explain

Make a difference

Act with integrity

Abstract

The paper provides an analysis and commentary on the costs of electricity in Northern Ireland (NI). The aim of this paper is to provide information and explanation of the level of electricity prices in NI relative to the Republic of Ireland (RoI), Great Britain (GB) and other EU countries. It is intended to build on the transparency already offered by current UR publications: the Retail Quarterly Transparency Reports and the Market Monitoring Unit's Quarterly Wholesale Reports. As far as possible, the report is presented in a non-technical manner to facilitate as wide a readership and understanding as possible.

Pricing data has been collated from a range of sources in order to show electricity price comparisons for both domestic consumers and non-domestic (Industrial and Commercial (I&C)) consumers. This is necessary as the price data and causal factors of price comparisons differ between these customer groups.

We show that electricity prices across NI and its comparators are driven by key elements such as wholesale, network and policy costs and the allocation of these costs to domestic and I&C customers.

Audience

Energy industry stakeholders, policy makers, energy consumers and consumer representatives, regulators, statistical bodies, potential new entrants into the retail energy markets, researchers, students and journalists.

Consumer impact

The information contained in this report provides an overview of the elements of electricity pricing, thereby allowing consumers and consumer representative groups to be better informed of the factors that drive the underlying price. The paper improves the transparency around electricity price levels and comparisons, which will lead to a more informed policy debate, which in turn should lead to a better outcome for consumers.

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1 Introduction

1.1 Context of the paper

Electricity prices remain the subject of much scrutiny and policy debate. In the Northern Ireland (NI) context this is amplified by:

- (i) relatively high levels of fuel poverty in the domestic sector; and
- (ii) the concern that high energy prices contribute to a perceived lack of NI business cost competitiveness.

The concern is evidenced by the previous Assembly Committee (ETI) enquiry¹ on the matters and more recently the work of the DfE Minister's advisory group (EMAG). There is also a significant degree of media and stakeholder scrutiny of electricity price levels and comparisons. This attention on prices exists despite the fact that recent years have been characterised by falling/lower underlying wholesale costs and historically low electricity prices in NI.

Through the collection, analysis and reporting (internally and externally) of information on electricity prices, the UR continues to build on our insight of final prices in NI and how they compare to other jurisdictions.

This is especially true for NI price comparisons against Republic of Ireland (RoI) and also Great Britain (GB). We can learn a lot about electricity price drivers and comparisons through NI/GB/RoI comparisons. Our analysis also includes, where available, EU comparisons. We also separate domestic and non-domestic (Industrial & Commercial (I&C)) prices for comparison.

This paper builds on the work the UR already undertakes to foster a better understanding of energy issues more widely, but especially of electricity price levels and comparators. This is evidenced by the series of Retail Quarterly Transparency Reports² and the Market Monitoring Unit's Wholesale quarterly reports³.

Prices do not remain static, and as a result we will continue to update our pricing information on a quarterly basis via our QTR publications and annually in our Annual Energy Retail Reports. Analysis of prices and publication of same is an ongoing piece of work for the UR.

This paper is intended to be relatively easily accessible to non-energy specialists and focuses on:

- Identifying the current electricity price levels and comparisons for NI, UK, RoI and EU, using the most up to date data available;
- Explaining the drivers and build-up of these electricity price levels;
- Identifying the key issues which explain where NI prices sit, relative to the comparators; and
- Identifying issues which might require further work.

¹ <http://www.niassembly.gov.uk/globalassets/documents/enterprise-trade-and-investment/reports/10128.pdf>

² http://www.uregni.gov.uk/publications/transparency_reports_2016

³ <https://www.semcommittee.com/sites/semcommittee.com/files/media-files/SEM%20-%202016%20-%20037%20-%20MMU%20Quarterly%20report%20-%20Q1.pdf>

[1] <https://www.gov.uk/government/collections/quarterly-energy-prices>

[2] <http://ec.europa.eu/eurostat/web/energy/data/database>

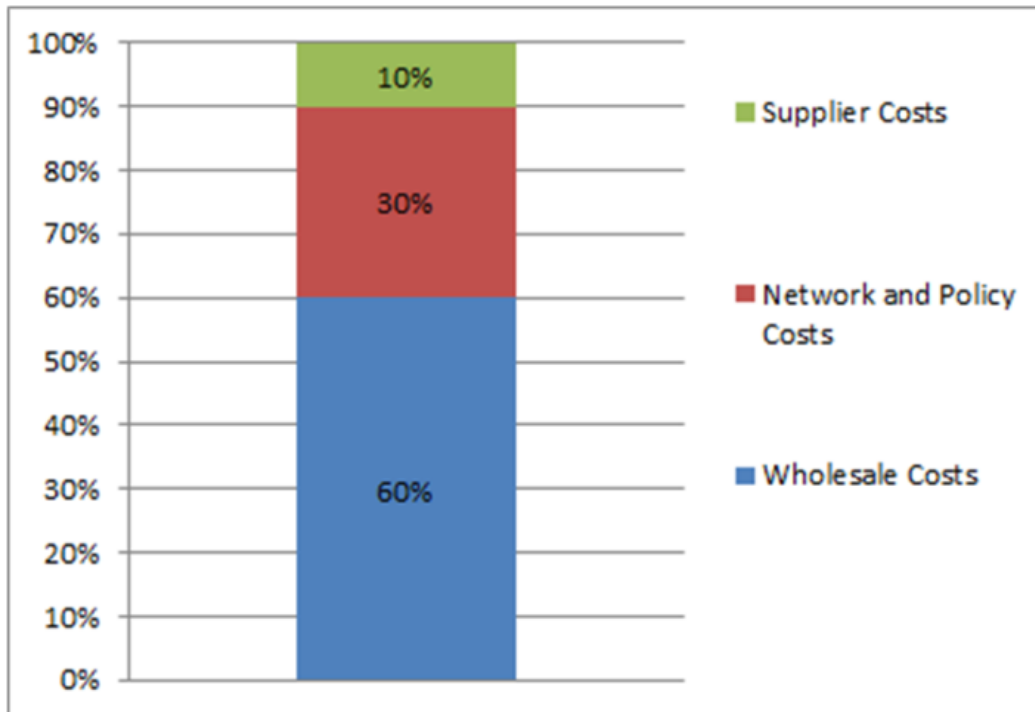
⁴ This is based on a comparison of the medium-usage domestic customers (that consume between 2,500 –

It is important to note at the outset that no one organisation controls all the levers and inputs into the electricity price levels and comparisons considered in this paper. Regulators play their part through controlling energy monopolies, maintaining downward pressure on costs, fostering industry efficiency and promoting customer choice and energy efficiency options. But other parties impact significantly on electricity price issues:

- the industry players themselves, in ensuring energy efficiency and least cost in their actions and their prices to consumers;
- the relevant Government Departments, through setting energy policy and strategic priorities; and
- customer representative bodies, in ensuring customers are active and educated about their energy choices.

It is useful to note that final electricity prices for consumers are built up from a number of distinct elements within the electricity cost chain, as shown in Figure 1. In NI Wholesale/generation cost elements (wholesale fuels for power generation and generators' costs) are the largest, making up around 60% of the bill for domestic customers. Network and policy related costs (the latter usually collected via network charges) make up a further c30% - representing the cost of transporting the electricity from generators to final consumers. Only around the last 10% of the bill results from the costs of running the individual supply companies (Power NI, Budget Energy, SSE Airtricity, etc) who supply and bill end consumers.

Figure 1: Average NI domestic electricity price cost breakdown



Source: UR

1.2 Points to Note - Context

- *Electricity prices remain the focus of much debate – this is unlikely to change, and in fact will increase once wholesale markets turn upwards again and end price levels rise from current historically low levels.*
- *The debate on electricity prices in NI should be based on fact and analysis. The UR publishes regular reports and briefings to stakeholders to help deliver this.*
- *The UR has certain statutory roles and responsibilities in relation to maintaining downward pressure on costs and facilitating electricity supply competition. Other bodies have important roles to play: Government, customer advice organisations and the energy industry players themselves.*

2 Electricity Prices - the Facts

For electricity prices, we follow the Department for Business Energy and Industrial Strategy (BEIS's) and EU Eurostat's format and methodology. As a result the derived average prices for NI are comparable with prices in other EU countries (those published in BEIS's Quarterly Energy Prices reports^[1] and Eurostat data base^[2]). These average prices (which we refer to in this paper as prices) are not the actual prices that are paid by customers. This is because we do not receive or have any sight of the actual prices that are paid by non domestic customers as these are based on individual contracts between the businesses and their energy supplier.

The base figures that are used to calculate the average prices are all submitted on a quarterly basis by suppliers, split by domestic and non domestic (I&C). The UR performs a high level reasonableness check of the base figures, but the suppliers are responsible for the accuracy of the information that is provided to the UR. The base figures are as follows:

- **Volume** of electricity sold to consumers.
- The value, or **revenue** gained from the sale, split into three categories: excluding all taxes, excluding VAT, and including all taxes.
- The **number** of customers supplied in that particular size category.

These figures are used to calculate an average price per unit which is the average revenue collected per unit in that particular size category. Throughout this paper we refer to this derived average price as "price". Using the BEIS methodology to calculate an average price allows us to:

- (i) derive a NI average unit price per size category; and
- (ii) compare the NI prices with other EU regions on a like for like basis.

^[1] <https://www.gov.uk/government/collections/quarterly-energy-prices>

^[2] <http://ec.europa.eu/eurostat/web/energy/data/database>

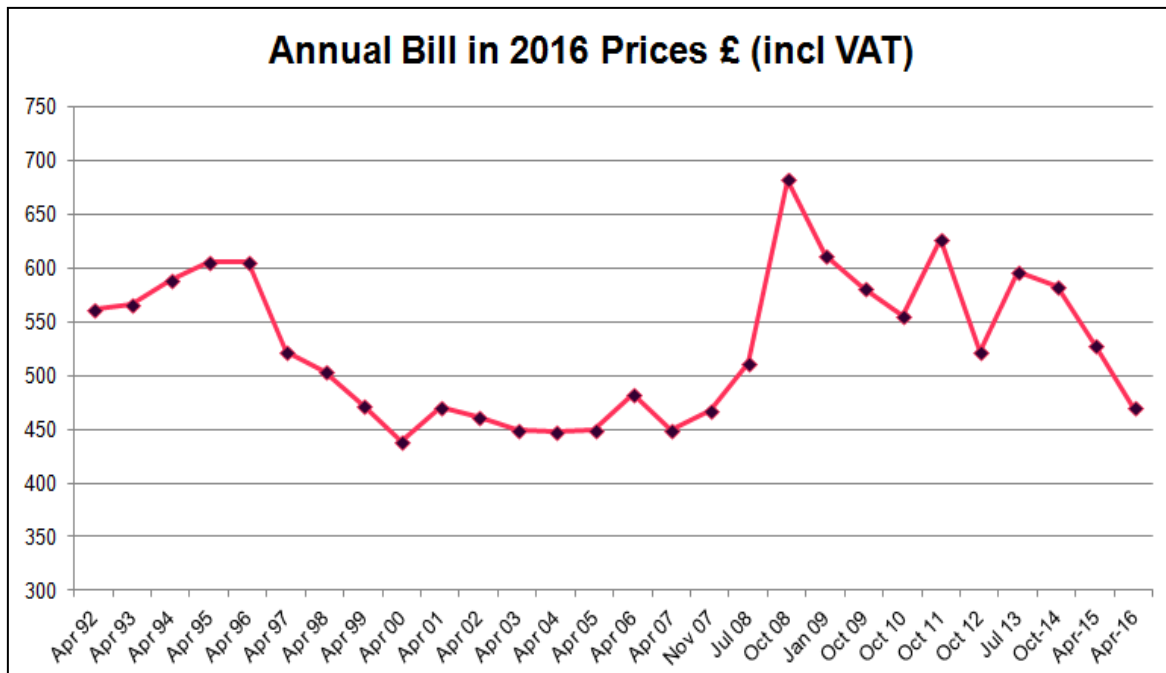
2.1 Domestic Electricity prices – the facts

NI domestic prices historically sat around 10% above GB levels. This was due to structural factors such as higher wholesale fuel transportation costs, high legacy generation costs, less economies of scale across the energy sector and a more limited wholesale fuel input mix.

NI domestic electricity prices have fallen markedly since 2013 as wholesale prices have fallen (e.g. Power NI prices fell 9.2% in 2015 and 10.3% in April 2016).

The current picture of low prices is reflected in Figure 2 below - showing an estimate of NI average domestic electricity bills over the last 15 years. It shows that domestic bills are now at low levels that were last seen some 10 years ago. It also shows clearly the impact of volatile wholesale fuel costs on electricity bills since 2008.

Figure 2 - Average annual (3,200 kWh) domestic electricity bill in NI: trend data



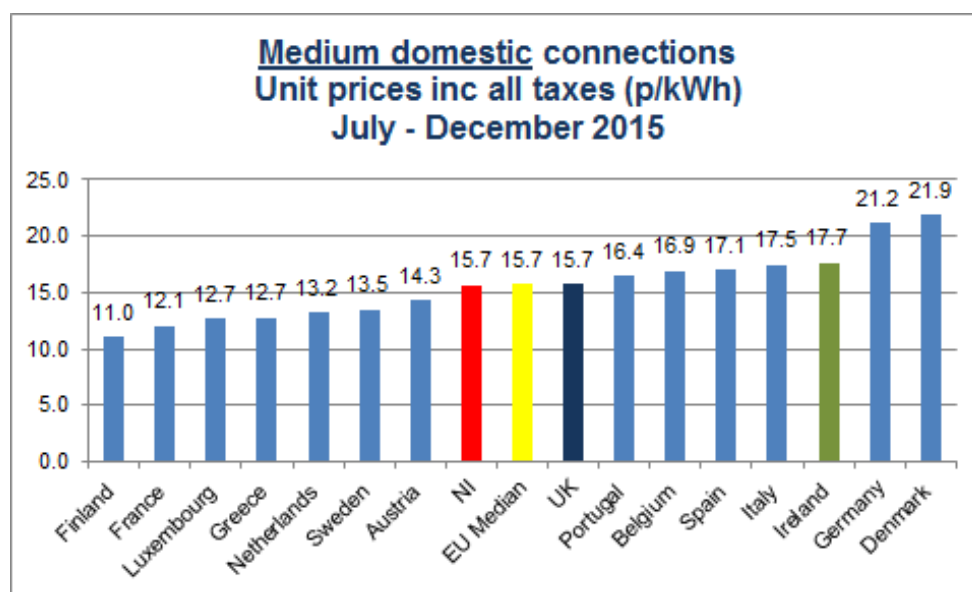
Source: UR

The UR continues to regulate the prices for the majority of domestic customers in NI, and our regulated prices benefit all domestic customers by effectively placing a price cap on the entire domestic market. Consequently NI domestic electricity prices compare well against RoI and GB.

In terms of domestic price comparisons with EU, the most recent data in Figure 3 indicates that households in NI pay the same as EU median and UK average levels. We also see that NI domestic prices are significantly lower than RoI. Given the single wholesale market on the island, the wholesale element of the tariffs are equal, therefore the difference is driven largely by network and policy cost levels, and how they are allocated between different customer bands (as we will return to explain this pattern later in the paper).

When comparing with GB, the domestic price comparison is complicated by the fact that there are currently one third of customers in GB on cheap fixed term deals resulting from switching supplier, whilst the remaining two thirds of customers remain on “standard tariffs” and pay relatively high prices. NI regulated tariffs which cover around two thirds of NI domestic consumers, compare favourably to GB standard tariffs.

Figure 3 – Medium⁴ domestic customers' prices p/kWh



Source: Eurostat and UR

2.1.1 Points to Note – Domestic electricity prices

- *NI domestic electricity prices are now on a par with prices in the UK and EU median. They are materially lower than RoI domestic prices.*
- *The continued existence of regulated domestic prices in NI means that our prices track underlying wholesale price movements closely, hence the large falls in recent years. Competing suppliers in NI subsequently track closely the price offered by the regulated former incumbent.*
- *When comparing with GB, the domestic price comparison is complicated by the fact that there are currently one third of customers in GB on cheap fixed term deals resulting from switching supplier, whilst the remaining two thirds of customers remain on “standard tariffs” and pay relatively high prices. NI regulated tariffs which cover around two thirds of NI domestic consumers, compare favourably to GB standard tariffs.*
- *NI domestic customers pay much less than those in RoI. Given the single wholesale market on the island, the wholesale element of the tariffs are equal, therefore the difference is driven largely by network and policy cost levels, and how they are allocated between different customer bands (as we will explain later).*

⁴ This is based on a comparison of the medium-usage domestic customers (that consume between 2,500 – 4,999 kWh per annum) from the latest available EU data (July to December 2015).

2.2 Non-Domestic Electricity prices – the facts

We now consider the electricity prices paid by non-domestic (referred to as I&C) customers, though they include public sector premises and other non-domestic customer categories.

Prices for non-domestic customers are best considered by customer size where customers are allocated to a band according to their annual consumption, as the data differs greatly for the very small non-domestic customers to the largest non-domestic customers due to the high variances in energy consumed.

The UR does not have access to the actual prices that are paid by any of these customers as the prices paid are unique to each customer, based on the individual contract terms agreed with their supplier. As noted earlier we use the BEIS methodology to derive the average NI prices per unit in each size band. The volume and revenues submitted by suppliers are used to calculate a NI quarterly average value, per size band, which we refer to in this paper as price. This ensures that we can compare these prices with the EU member states on a like per like basis, and the relativities therein are therefore accurate.

The table below sets out the number of I&C customers in NI by size band as well as by consumption. The very small category accounts for around two thirds (66%) of the I&C customers and 7% of I&C consumption. The large and very large category accounts for only 0.03% of customers (20 in number), and 14% of total I&C consumption.

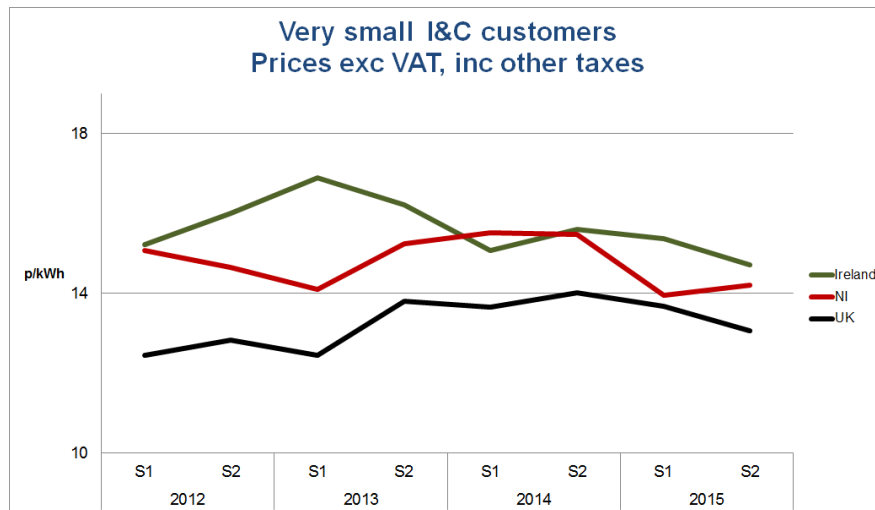
Table 1: NI non-domestic customers and consumption by usage, 2015 Q4

Size of Consumer	Annual Consumption Bands (MWh)	Total I&C customer numbers in NI	% of I&C customers	% of I&C consumption
Very Small	<20	46,012	65.7%	7%
Small	20 – 499	22,908	32.7%	35.5%
Small / Medium	500 – 1,999	829	1.2%	16%
Medium	2,000 – 19,999	265	0.4%	27.5%
Large & Very Large	>20,000	20	0.03%	14%

Source: NIEN

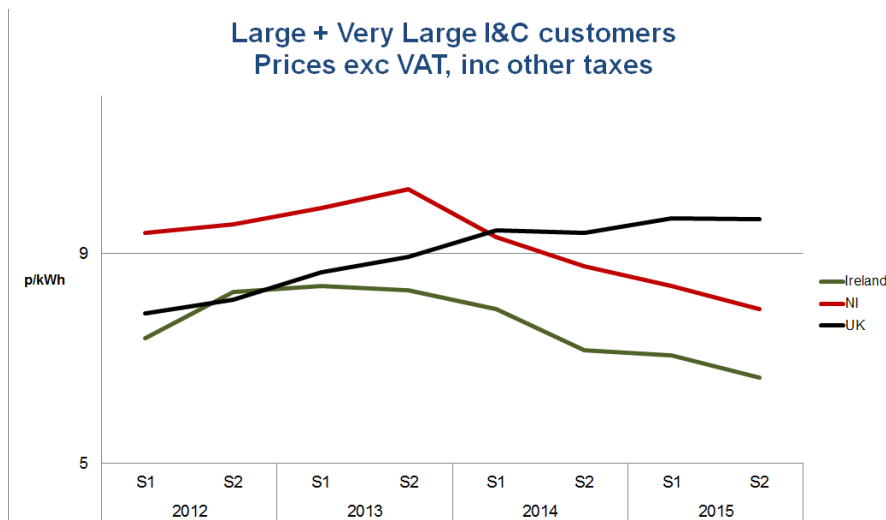
The current picture of low I&C prices is reflected in Figure 4 & Figure 5 below. These graphs show trend data from the start of 2012 for the smallest and the largest I&C customer categories. The graphs clearly show that the prices for both of these size bands have decreased, and for large & very large users in NI prices have dropped considerably in recent years.

Figure 4 Very Small I&C prices trend data



Source: NI electricity suppliers, Eurostat and UR internal calculations

Figure 5 Large & Very Large I&C prices trend data

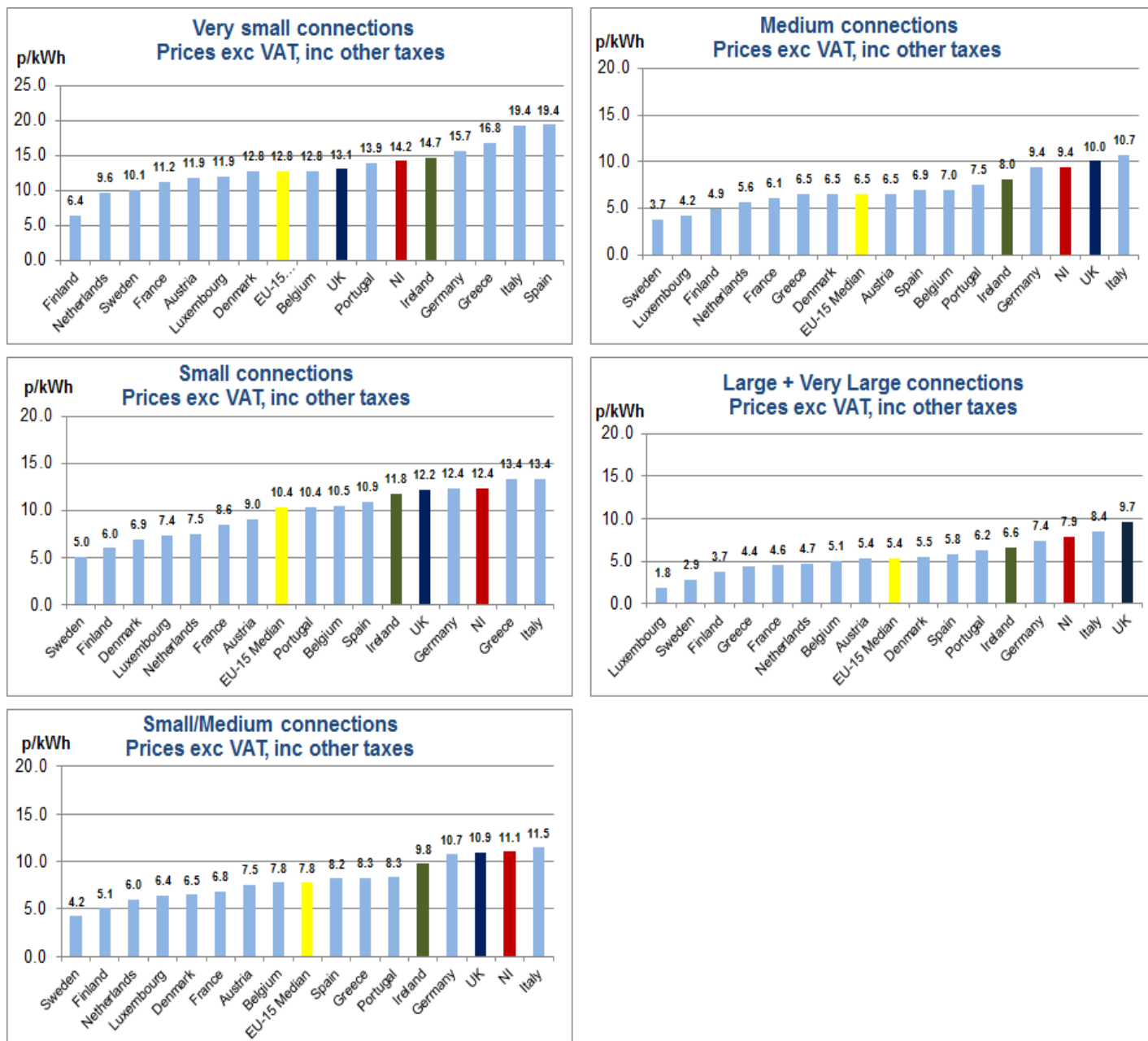


Source: NI electricity suppliers, Eurostat and UR internal calculations

Our more detailed analysis of non-domestic prices and comparison to other EU member states begins in Figure 6 below. This compares the prices that closely reflect what the businesses actually pay for their energy and is the chart that we have been publishing regularly in our Quarterly Transparency Reports (QTR). This comparison of prices excludes VAT, as this is a recoverable expense for businesses, but includes all other taxes (such as climate change taxes, “green levies” etc).

The chart compares NI non-domestic prices with a range of EU comparators, by customer size band. The charts highlight the EU median, UK, RoI and NI prices for ease of reference.

Figure 6 I&C electricity prices in EU15 compared to NI (exc VAT, inc other taxes). S2 - 2015⁵.



Source: NI electricity suppliers, Eurostat and UR internal calculations

For the smallest non-domestic customers, prices are slightly above EU median and UK levels, but below those in the RoI. These 46,000 customers make up 66% of total non-domestic customers.

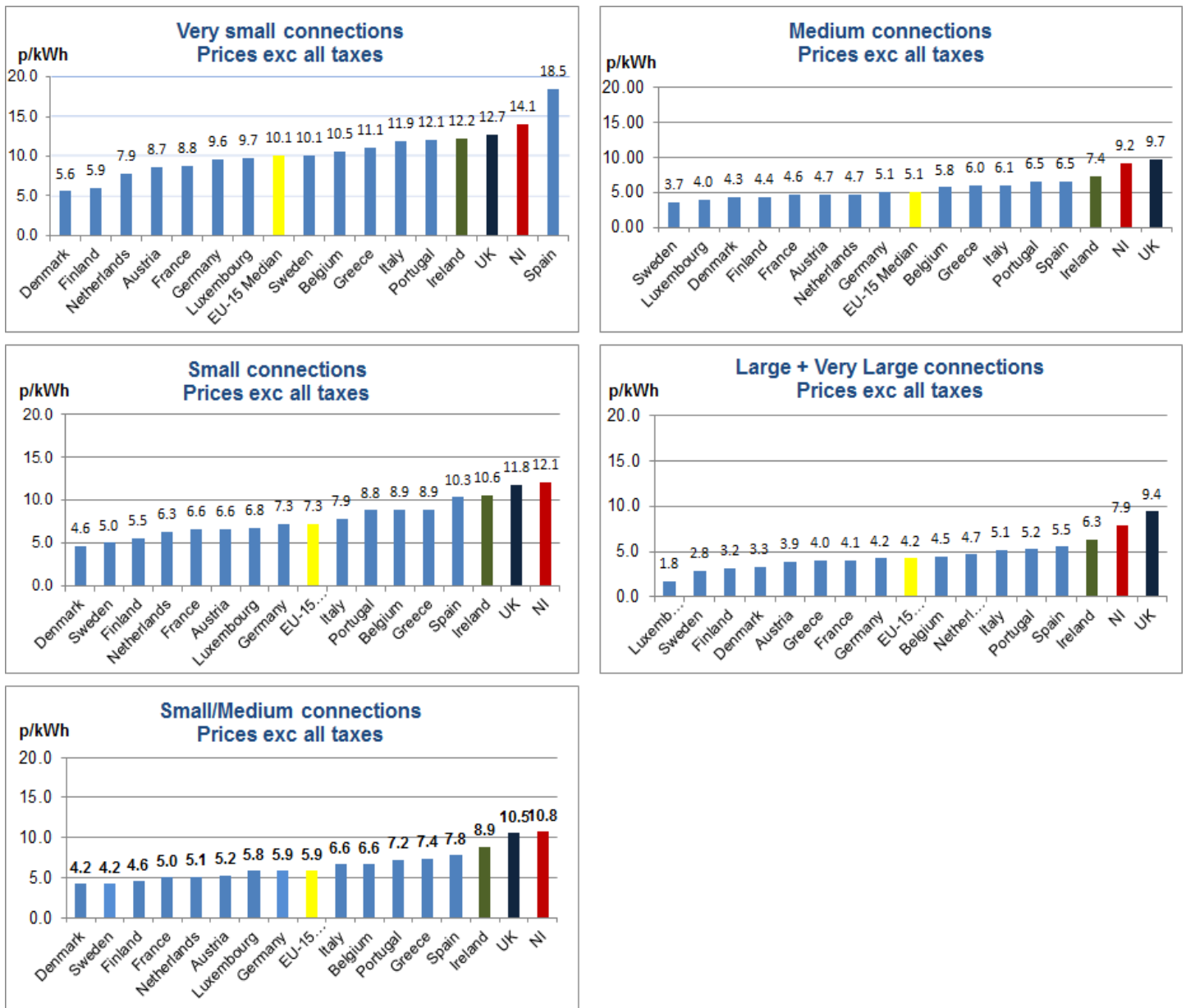
For the larger business customers, (the remaining 34% of non-domestic customers), NI prices are towards the top of the EU price range and higher than the RoI; though they are below those in the UK for the two largest user groups. The reason for the patterns and differences between NI and RoI is returned to and explained later, when we look at network and other policy cost levels and allocations between customer type.

⁵ S2 refers to Semester 2 (July – December 2015). This is the format and time period that Eurostat publish pricing data.

The data we collect for non-domestic prices is collated using the same content and methodologies as EU's Eurostat data. It allows two other variations of comparative price information which we have included in this report as it helps us to further understand the reasons for the NI ranking.

The first alternative comparison (below) shows the calculated non-domestic prices excluding all taxes. This removes the policy levies and other “green” taxes that are included in the previous charts. This position therefore reflects the core energy costs (without the influence of any governmental policy interventions through add-on taxes) and is likely to be heavily influenced by underlying wholesale price differences across the comparators.

Figure 7 I&C electricity prices in EU15 compared to NI (excluding all taxes). S2 - 2015.

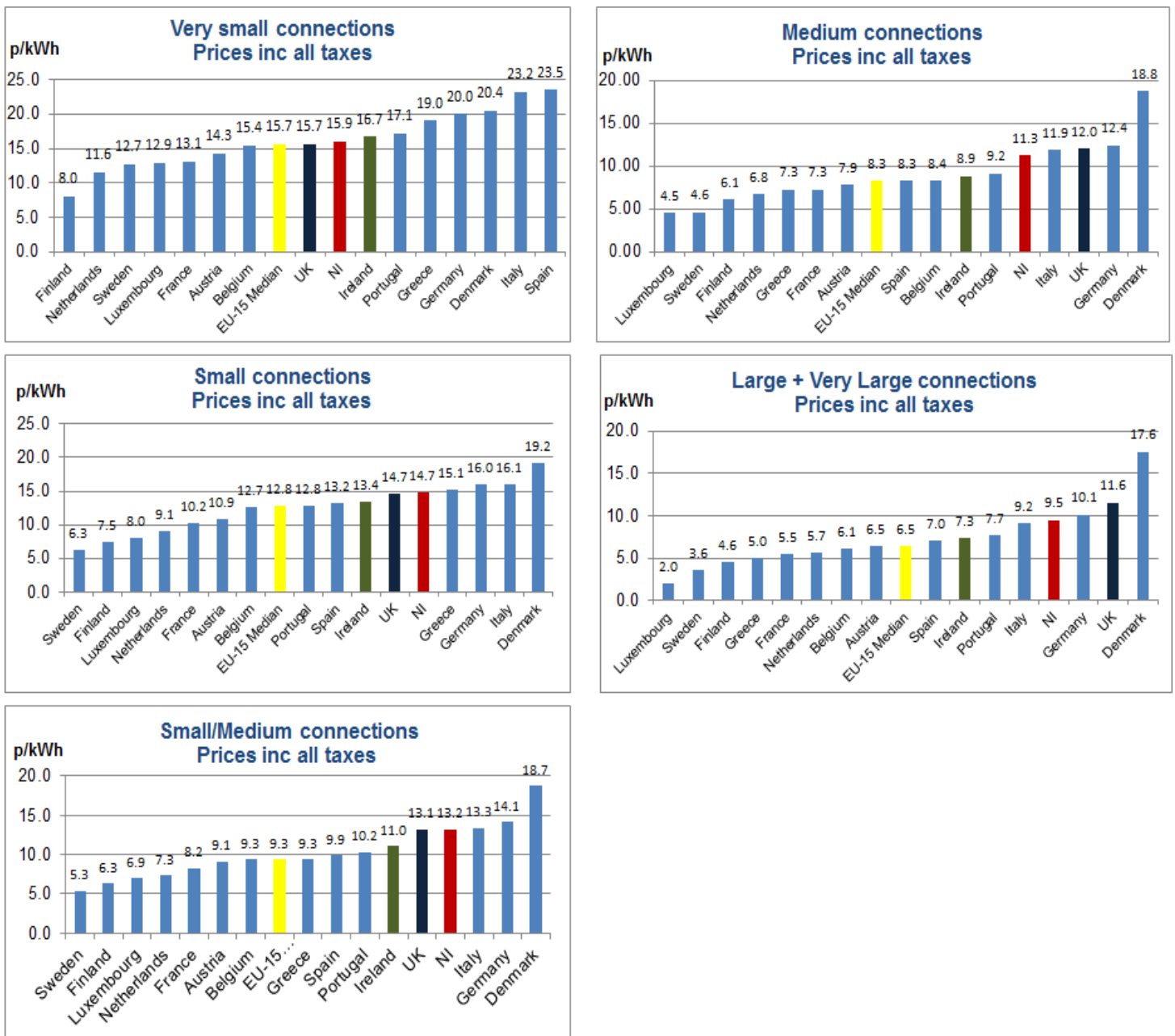


Source: NI electricity suppliers, Eurostat and UR internal calculations

This comparison shows that NI, UK followed by RoI move to the highest part of the charts in all non-domestic size bands. The more favourable comparison for the very small customers shown in the previous comparison is no longer evident as the NI prices move from being just above the EU median to ranking the second highest (above RoI). Also the relative position of the UK and the RoI worsens in this range of the charts. We discuss the wholesale element (core energy costs) in section 3.1 in more detail.

The second alternative comparison (figure 8 below) shows the inclusion of all taxes. This data set is shown in the following chart and includes all core energy costs and energy-related taxation/policy interventions costs.

Figure 8 I&C electricity prices in EU15 compared to NI (including all taxes). S2 - 2015.



Source: NI electricity suppliers, Eurostat and UR internal calculations

This alternative comparison shows an improvement in the position of NI, UK and RoI relative to other EU countries. This indicates the relatively high levels of taxation and policy intervention costs placed onto electricity prices in some other member states (e.g. Germany and Denmark).

2.2.1 Energy prices and business competitiveness

We mentioned earlier that there are particular interests and concerns regarding the competitiveness of electricity I&C prices in NI. The UR agrees that this issue needs to be considered and reviewed in detail and this paper aims to serve as a catalyst for discussion and informed debate on the topic.

Much will depend of course on the degree to which I&C customers are seeking to compete internationally and what percentage energy costs contribute to their overall operating costs. Whilst NI electricity prices are high on the broader EU comparative scale, they are lower than the RoI (our nearest competitor) for the majority of our businesses and lower than GB for our largest businesses.

A fundamental point however relates to overall costs competitiveness. Energy is only one component of businesses operating costs, sitting alongside other sizeable input costs such as property, labour and transportation costs. For example in the manufacturing sector, energy prices tend to rank third in terms of business input costs. The cost of doing business was reviewed in greater detail in a recent Department for the Economy report⁶ which concluded that overall NI business costs are substantially lower than overall RoI and GB business costs. This is important because energy costs do not lead to a lack of business competitiveness in NI when considered with the other major business costs. Any debate on energy prices in relation to business competitiveness should therefore give due consideration to all major business costs.

2.2.2 Points to Note – non domestic electricity prices

- ***The majority of non-domestic customers in NI have electricity prices below those in the RoI, and just slightly above UK and EU levels. In general, electricity prices experienced by NI, RoI and UK for the remaining larger non-domestic customers lie above EU medians and towards the top of the relative ranges.***
- ***NI prices for the largest users are high in the EU context, but below that in the UK.***
- ***RoI largest business customers compare relatively well to NI and UK counterparts, but their smallest businesses do not compare as favourably.***
- ***The fact that the inclusion of energy-related taxation improves the NI prices (and UK) comparisons with other EU countries, evidences varying policy decisions in relation to levels of taxation in a number of other EU states.***
- ***Energy costs are only one component of broader business operating costs and should therefore be considered as part of the total cost of doing business in NI.***

⁶ <https://www.economy-ni.gov.uk/publications/cost-doing-business-northern-ireland>

3 Explaining Electricity Price Levels and Relativities

The previous sections of the paper set out the context and facts in relation to electricity price levels and comparisons. This section explores the key factors which make up electricity prices and underpin the comparisons for both domestic and non-domestic customers.

These factors contribute to the overall levels of electricity prices and consequently influence the relativities of those prices either (i) between domestic customers and non-domestic customers, or (ii) between jurisdictions.

As noted in the introduction there are three distinct elements contributing to final electricity prices, Wholesale/generation which account for c60%; Network and policy related costs which account for around c30%; and Supplier/retail costs which account for the remaining c10% of costs. This chapter explores the make-up of each of these primary components and compares these to neighbouring regions.

3.1 Wholesale costs

Background

Wholesale and generation-related costs are an important element of electricity prices as they account for the largest proportion of the final price (c+60% for domestic customers and a much higher proportion for I&C customers).

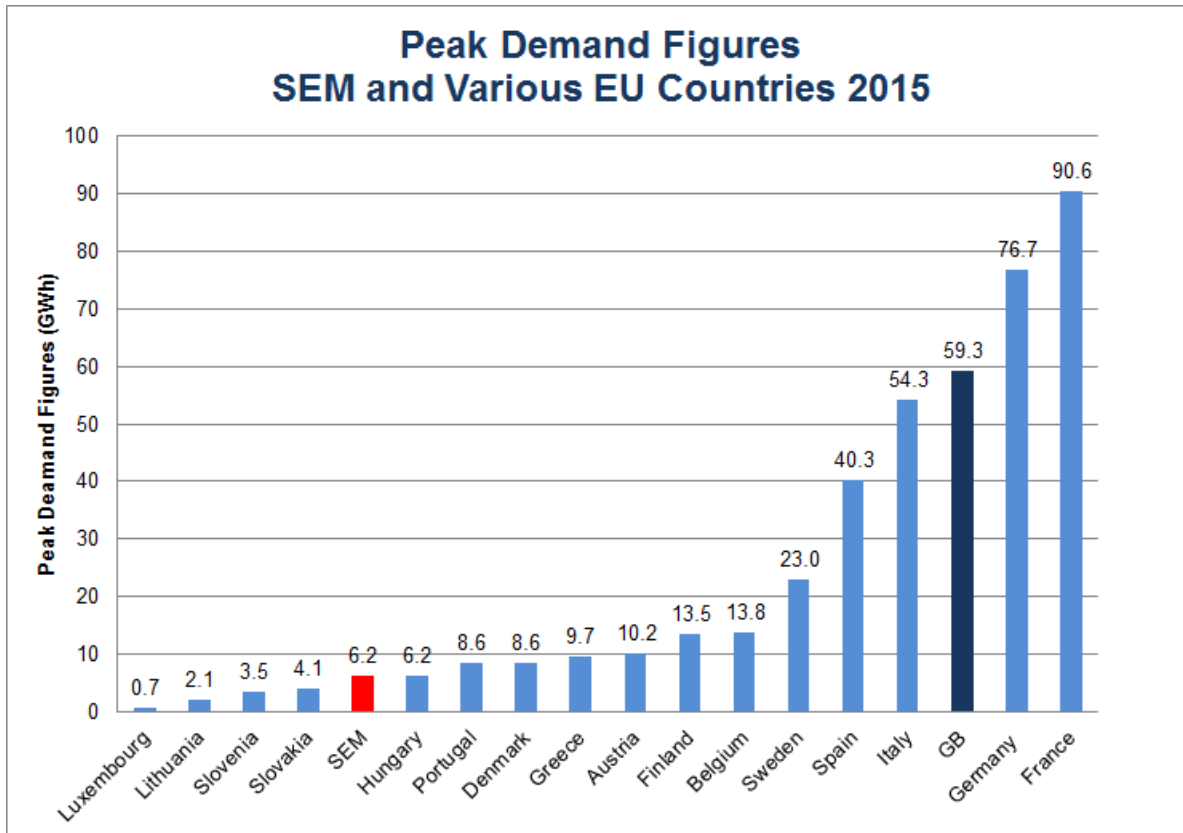
Wholesale costs for NI consumers are generated from the Single Electricity Market (SEM) which operates for the island of Ireland and therefore determines the same wholesale costs for both RoI and NI consumers. This market is regulated through Regulatory Codes and price controls by both the Commission for Energy Regulation (CER) in RoI and the Utility Regulator (UR) in NI, operating through a common Single Electricity Market Committee (SEMC). Quarterly SEM Market Monitoring reports are published on the SEMC website to ensure transparency of information and costs⁷.

Importantly, the current SEM is being fundamentally redesigned in a project known as “I-SEM”, which will align the wholesale market design with other markets across Europe and therefore facilitate better integration and future comparisons. This new I-SEM is due to be implemented by the end of 2017. The impact of the move to a new integrated electricity market (I-SEM) is expected to put downward pressure on wholesale prices.

⁷ See the MMU's quarterly report, published here:
<https://www.semcommittee.com/sites/semcommittee.com/files/media-files/SEM%20-%2016%20-%20037%20-%20MMU%20Quarterly%20report%20-%20Q1.pdf>

The difference in scale of the SEM market compared to other European comparators is very important as a factor of underlying wholesale electricity prices levels, and is shown in the graph below. The wholesale electricity market for the island of Ireland (SEM) represents a small isolated system (with interconnection to GB only) on the periphery of Europe, which has relatively low peak demand compared to other constituent EU countries. These factors contribute to higher prices when benchmarked to other European countries.

Figure 9 Peak Demand of European Markets in 2015



Source *ENTSO-E*

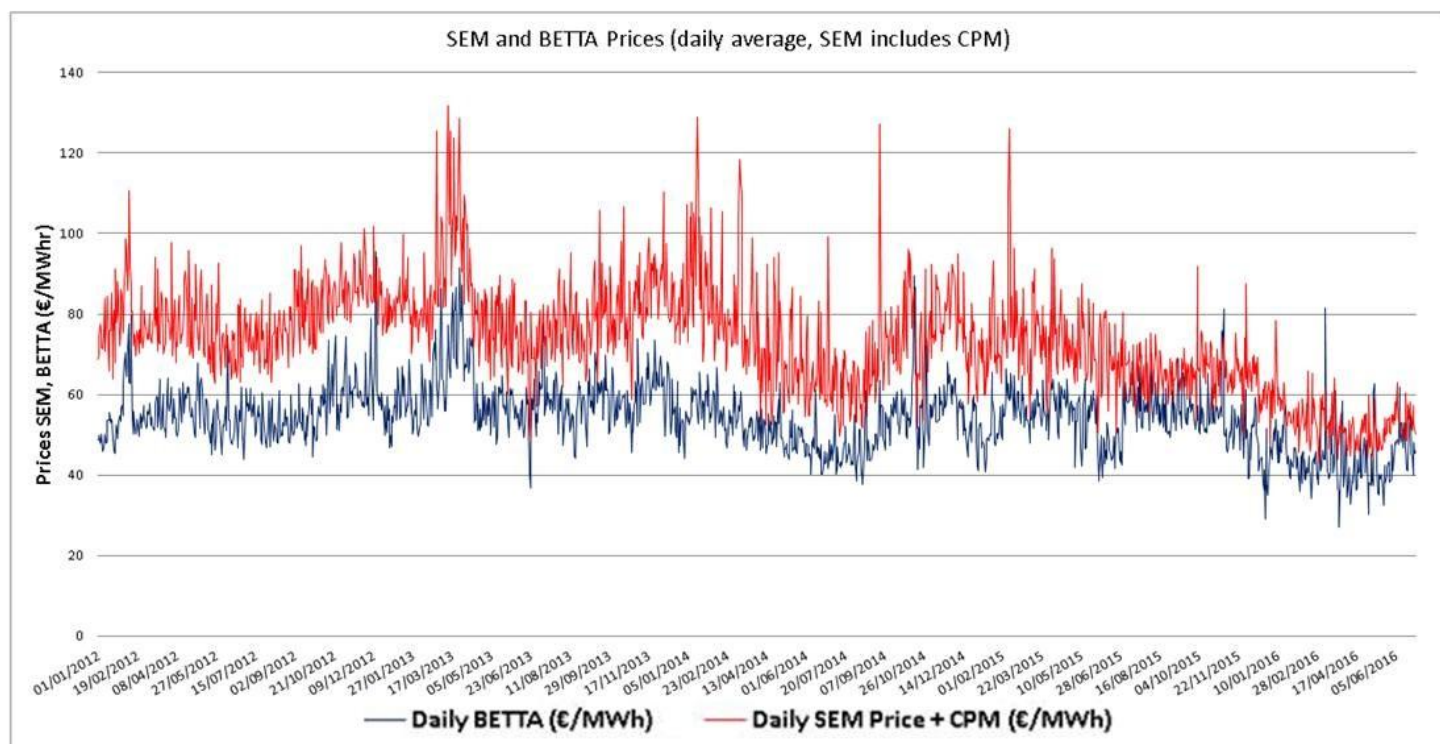
SEM wholesale electricity prices compared with other jurisdictions

Wholesale price comparisons and relativities with GB and, even more so, across the EU are made complex by the diverse wholesale market structures existing in different jurisdictions (such as the existence or not of capacity remuneration mechanisms, interconnection levels and substantially different base fuel mixes). We return to these issues later.

Focusing first on the SEM against GB wholesale market price (known as BETTA) comparison, wholesale prices in the SEM have historically been higher than those pertaining in the wholesale market in GB. However this gap has substantially narrowed in recent months.

Price differences between the SEM and BETTA markets have varied over time. From Q1 2012 to Q1 2014, the broad trend was that SEM prices were around 28% higher than BETTA. This pattern began to change from late 2014, when the gap began to narrow, until 2016, when there were several instances when SEM prices fell below those in GB (see Figure 10 below).

Figure 10 Wholesale prices in the Single Electricity Market (NI and RoI) and GB



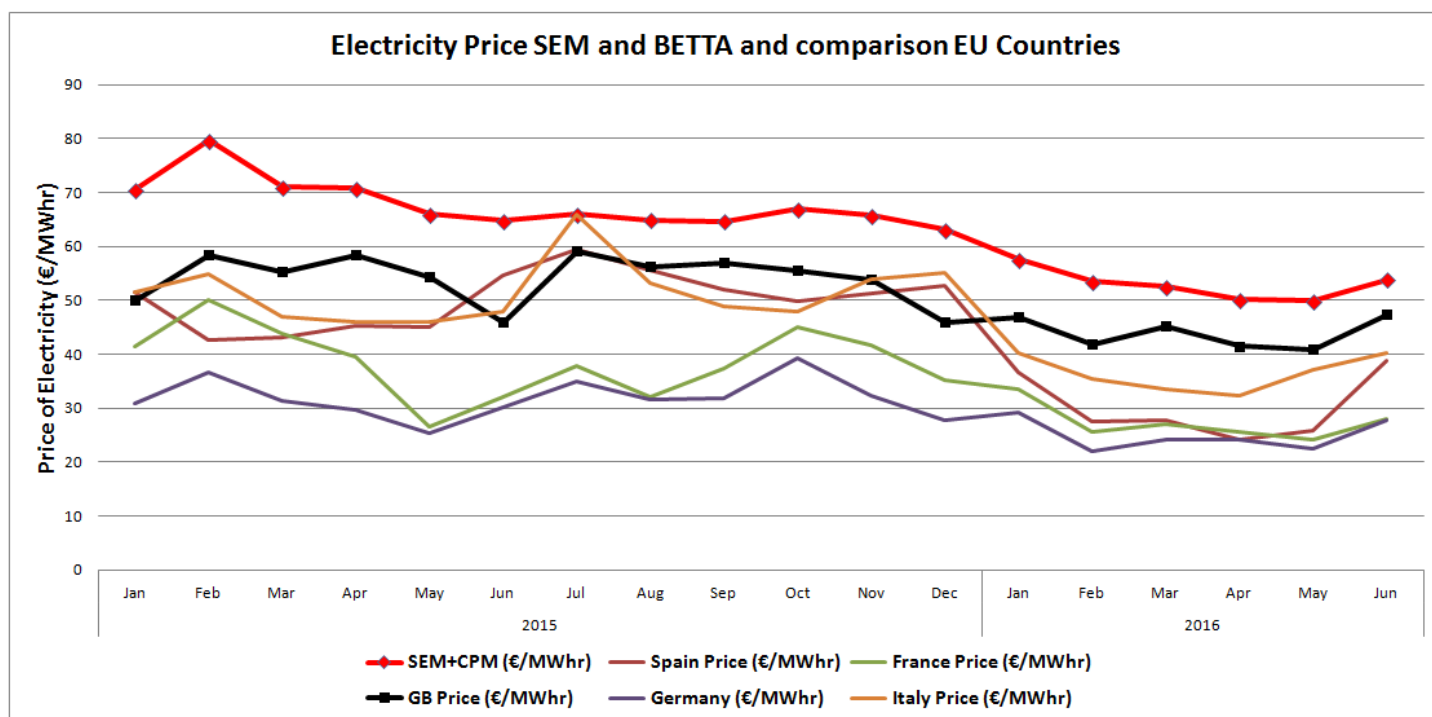
Source: SEMO (SEM Prices), Elexon (GB Prices)

Some causal factors for this tendency toward price equalisation between the SEM and GB BETTA market since 2014 include:

- i) The design of the SEM means that there is a tendency for the wholesale System Marginal Price (SMP) to closely track spot wholesale gas price movements more so than in GB. This happens because SEM prices are predominantly set by gas-fired power stations. Gas commodity prices fell markedly during 2015 and 2016.
- ii) Increased renewables penetration driving down the wholesale market System Marginal Price in the SEM. Contribution from wind has increased from an average of 555MW (13%) in the first quarter of 2013 to an average of 910MW (22%) in the first quarter of 2016.
- iii) Increased wholesale costs in GB due to a range of factors including the introduction of a Carbon Price Floor. NI and RoI negotiated exclusion from this policy framework given its operation within the Single Electricity Market.

Turning now to consider how SEM and BETTA prices compare against countries in the EU, the following chart (Figure 11) shows NI/RoI wholesale SEM and GB's BETTA prices in an EU context.

Figure 11 SEM & BETTA EU Within Day price (€) comparative



Source: ENTSO-E

The chart above indicates that in recent years wholesale prices on these islands (both SEM and BETTA), though declining, have been above the majority of the larger EU countries that form this comparison (namely Spain, France, Germany and Italy). This is also reflected in the pricing graphs in Figure 7 which shows the element of the price that reflects the core energy costs.

Definitive work to fully explain the wholesale price relativities between SEM, BETTA and other EU jurisdictions is not readily available. However the higher historical prices in SEM compared to BETTA and other European electricity markets can be attributed to a range of factors. These include:

- **Economy of scale differences** – SEM is a small wholesale market in the EU context. This affects many aspects of costs and is exacerbated by our island position. Other larger EU comparators (and BETTA) have the natural economies of scale of a larger market, together with higher levels of interconnection with other wholesale markets, with therefore lower average costs to generate in comparison to SEM.
- **Higher raw input prices in SEM** due to higher fuel transport costs and the effect of fuel shrinkage. NI and RoI are at the extremity of Europe geographically, and dependent on gas for around 42% of the fuel mix. Generating electricity from gas also costs more as a result of the longer total distance the gas must travel to the power stations on the island.
- **Generation mix factors** - the generation fuel mix in the SEM and GB markets in recent years has accounted for a significant portion of the SEM and BETTA price difference. This is linked to the contribution of coal and nuclear to the BETTA fuel mix as these fuel types tend to enjoy lower

per-megawatt costs. The difference in generation fuel mixes between the SEM and other EU markets is also a contributory factor in these EU price differentials.

- **Level of Constraints in the SEM** – SEM is a small market relatively speaking. To maintain safe operation of the power system and deal with system constraints, the System Operators sometimes have to call for generation from Power Plants that otherwise would not have been asked to generate (so-called ‘out of merit’ generators). This then displaces less-costly generation (that is ‘in merit’) within the wholesale market. Generators that are affected by this receive a payment in lieu of the benefit lost to them as result of the constrained action. Though the constraint costs are small compared to the energy and capacity elements of wholesale costs, the ‘limitations’ of generation and prevalence of constraints on the island of Ireland is relatively higher than in GB, and other European Countries which are much more interconnected. As a result this pushes constraint costs for consumers higher than those that are present other EU markets.
- **The design of the Capacity Payment Mechanism (CPM)** – The SEM since its inception has had a separate remuneration for capacity which limited the volatility of the energy prices and provided stable signals for long term investments in new capacity. The GB BETTA market has only recently introduced a capacity mechanism in light of its concerns for longer terms security of supply. The increasing level of wind in the SEM (now 22%) supports the continuing need for a separate capacity mechanism. The need and application of such a mechanism varies across EU Countries which also affects prices.

In addition to the other factors discussed above in terms of explaining wholesale price relativity, it is useful also to draw on recent research from Great Britain⁸ which indicates that there could be a number of explanations for the UK (and by extension SEM) having higher cost components than those in the EU at the wholesale level. This research compares the GB Market (BETTA) to the EU wholesale market and prices, and suggests that:

1. There are **structural differences** in generating costs: GB wholesale electricity prices are substantially higher than on the continent. This is because (a) GB generators pay network and balancing charges whilst in Europe these fall mostly to consumers. Since these reflect differentials in charging, rather than underlying physical cost differences, they thus ‘tilt the playing field’. Generators in Ireland pay transmission charges similar to GB, but on the continent most of these charges do not fall on generators, but rather on consumers. (b) GB generators pay the UK carbon floor price which is much higher than the EU equivalent (known as the European emissions trading system EUETS). The research estimates these costs as equating to over £10/MWh - which is around 20% of average wholesale generation costs.
2. The majority of the EU countries are **ahead of the UK in the development and impact of renewable energy and/or nuclear capacity**. These sources are more dependable (i.e. solar/hydro renewable rather than wind), and supported by subsidy regimes which consequently keep operating costs very low. As a result, the wholesale prices in Europe are falling faster than in UK (and potentially SEM also) and are likely to remain substantially lower for as long as the UK lags.

⁸ Grubb, M *The Value of Interconnectors*, Energy Spectrum, Cornwall Energy
http://www.cornwallenergy.com/cms/data/files/Downloads/160523_es_522-Nutwood.pdf

A fuller and systematic understanding of the explanatory variables behind wholesale price differences across jurisdictions would aid our understanding of the extent to which the differences are structural, and/or are open to policy prescription. Given the replacement of SEM with the new I-SEM in 2017 this can be considered along with other resource priorities once I-SEM is in place and operating.

Wholesale Cost Outlook – moving to I-SEM

Going forward there are a number of significant factors that we expect will place further downward pressure on wholesale costs for consumers in NI:

1. Better use of the Interconnectors: Energy Trading Arrangements in the new I-SEM will feature explicit (“day-ahead”) market coupling with neighbouring regions. This reform will optimise utilisation of the 1GW of interconnection capacity available to GB, which currently operates at between 40% and 70% economic efficiency due to the substantial differences in the existing market designs between the island of Ireland and GB.
2. The I-SEM will replace the existing Capacity Payments Mechanism (CPM) (which is a centralised process) with the Capacity Remuneration Mechanism (CRM) which is a new auction-based capacity contracting framework. It is expected that the transition will lead to a reduction in the capacity component of wholesale costs for consumers on the island.
3. Competition in pricing offers by generators in the SEM is presently regulated by controls that prevent discounting below Short-Run Marginal Cost (as a way of mitigating the potential exercise of market power by the largest wholesale market participants). As part of the new I-SEM reforms this form of regulation is proposed to be relaxed in the day-ahead and intra-day trading timeframes, which are expected to carry and settle most of the wholesale electricity trading. This, all else being equal, will permit the substantial baseload generation capacity on the island to compete commercially for baseload operation, helping to put downward pressure on wholesale prices.
4. The I-SEM reforms are accompanied by the DS3 Programme which is aimed at maximising and optimising the utilisation of wind/renewable sources of generation in the overall wholesale system – thus putting downward pressure on wholesale costs.

3.1.1 Points to Note – Wholesale factors

- ***Given the significance of the wholesale component in final end prices, wholesale costs are an important factor of absolute price levels and of price relativities.***
- ***Commodity costs and therefore the fuel mix (i.e. gas, coal, renewables, wind, hydro, etc) are in turn a significant factor influencing wholesale costs, absolute price levels and price relativities. It is important and positive to note that the SEM System Marginal Price tracks closely the price of gas, which in 2015 made up 42% of the fuel mix.***

- *Comparisons of wholesale prices can be difficult given such differences as market design, market size, market location etc. The data to hand indicates that SEM prices have been historically high relative to GB levels, and both in turn are high relative to EU levels. SEM prices have now fallen and now are broadly equivalent to GB wholesale prices.*
- *Factors which contribute to SEM prices being higher than EU comparators are: the small size of the SEM market relative to other European Countries; its location at the extremity of Europe and its relative isolation; the aim of its generation mix (alongside the level of network constraints) which then requires a larger reserve factor to ensure security of supply. Due to the higher level of volatile renewable wind energy on the system, there is a need in SEM to have sufficient available backup generation to ensure security of supply. It is however important to note that the gap between SEM prices and GB's BETTA wholesale prices has narrowed with a number of instances where the SEM price has fallen below the GB BETTA price.*
- *The structural disadvantages of being a small peripheral wholesale market can be best offset by optimising the level and use of wholesale electricity interconnection and coupling trading with larger neighbouring jurisdictions. This can help overcome, in particular, economy of scale and capacity constraint limitations within the current SEM market.*
- *The move from SEM to the new I-SEM market in late 2017 represents a fundamental wholesale market re-design on the island and we expect this reform to put downward pressure on wholesale prices.*

3.2 Network costs

Whilst the wholesale/generation element of end prices described in section 3.1 will fundamentally drive price comparisons between jurisdictions given their weight in end prices, network and associated policy cost levels can also affect end price comparisons. Network cost issues are an important factor in electricity end prices as they make up around 20-30% of the total electricity prices. Further, as we will show, they can move individual customer groups up and down the comparisons “league table”. This may depend on how those costs are allocated between different consumer types (e.g. “domestic” cost allocations, versus “larger business” cost allocations).

Following detailed analysis undertaken in 2013 for NI, RoI and GB, we have good/detailed information relating to network cost levels, and their allocation between different customer groups. European data source comparators are published for UK and RoI, but not specifically for NI. As well as “pure” network related costs, we also include in the analysis below those policy-related costs, which are often collected via the network charging regime.

It is important to consider separately as well as together:

- I. The absolute level of network and policy costs; and
- II. The allocation of those costs between customer groups/size bands.

i) Network cost comparisons between NI, GB and RoI

The UR commissioned detailed comparisons of the overall level of transmission and distribution network and related charges in each of NI, RoI and GB⁹. The report¹⁰ is briefly summarised below.

Alongside normal “pure” Use of System (UoS) costs, the other “policy costs” (i.e. specific levies and charges) were included in the analysis and brought in the three charges included in network tariffs:

- the System Support Services (SSS) levy;
- the Collection Agency Income Requirement (CAIR) charge; and
- a Public Service Obligation (PSO) levy.

In addition, the study also examined:

- renewable obligation certificates (ROCs); and
- the Climate Change Levy (CCL).

The key report findings were as follows:

⁹ The GB jurisdictions and / or distribution network areas with which NI charges were compared were the South West and South Wales areas operated by Western Power Distribution (WPD). These were felt to be broadly comparable to NI in terms of rurality of population and hence impact on electricity grid requirements.

¹⁰ <http://www.niassembly.gov.uk/assembly-business/committees/archive/enterprise-trade-and-investment/reports/report-on-the-committees-review-into-electricity-policy-part-2-electricity-pricing/>

NI compared to the RoI

- Network cost levels are much lower in NI than RoI. Network costs per unit of electricity sold are materially higher in the RoI than in NI (or in GB comparators). The 2013 study calculated the figure at + 30%. This may be due to objective factors in the RoI (such as greater rurality of lines in the RoI) or policy-amenable factors such as poorer levels of efficiency in the RoI network system.
- Given this large “network cost per unit of electricity” difference, and given the same wholesale market is in operation in both regions, one would expect electricity prices to be lower in NI than in RoI for all customers. However this effect on prices is only seen in the much higher final domestic charges in RoI compared to NI, and slightly higher small business prices in the RoI (see Figures 3 and 4). Network cost allocations are fundamentally different in RoI compared to NI and GB. The RoI costs are allocated proportionately more to domestic and small business customers, and away from the larger energy user I&C customers.
- All RoI customers (domestic and I&C) also benefit from having a relatively low level of “other/add-on” policy costs in comparison to NI (and even more so than in GB, where policy add on costs are high and growing).
- Moreover, RoI again allocates these policy-related costs to the benefit of larger I&C customers, and to the relative detriment of their domestic customers.
- Consequently, RoI domestic customers face higher network and other costs than their NI (and GB) counterparts. Larger I&Cs in the RoI enjoy lower network/other costs than their NI (and even more so GB) counterparts.
- All the above points explain to a large degree the much higher prices for domestic and small I&C customers in RoI relative to NI (and GB); but the lower prices for I&C customers in the RoI relative to NI (and GB).

NI compared to GB

- NI and GB have similar levels of pure network charges. In other words, NI and GB comparator region network costs per unit are broadly equivalent.
- GB has higher levels of other/add-on policy related costs. This has caused some concern in recent years in GB in relation to the impact on prices. These policy related cost impacts in GB are unlikely to abate in coming years, and indeed commentators now suggest that this effect may worsen as the impact of the new Electricity Market Reforms (EMR) in GB feed into end prices.
- GB tends to allocate more costs towards (larger) I&C customers than in NI, the reverse of the RoI pattern.

ii) Network cost comparisons with Europe

Turning to the issue of **network cost charges across Europe** – we note that this is the subject of some debate from commentators across the EU, including for example the network companies themselves¹¹. The graphs below are from Eurostat and relate to the second semester of 2015 (July to December).

Figure 12 I&C Network Costs by size band (S2 2015)



Source: Eurostat¹²

¹¹ http://www.eurelectric.org/media/80239/20130409_network-tariffs-paper_final_to_publish-2013-030-0409-01-e.pdf

¹² Note that no 2015 data was available for Greece, to maintain a comparative index with the remaining EU15 the 2014 data was used.

The highlighted bars of these graphs show where the UK and Ireland are in comparison to the EU average. Eurostat do not publish data for NI, however we know from our previous analysis of network cost levels that our network costs are broadly similar to GB comparators. In terms of how these are allocated across the customer groups, GB tend to allocate more costs towards larger I&C customers (the reverse of the RoI allocation). As the RoI allocate their network costs to domestic and very small customers and away from the large customers, in these graphs these customers move from being above the UK to below the UK.

It is interesting to note the “swing” in the position of the UK in the above charts. The smallest non-domestic customers have low comparative network cost levels, but the larger non-domestics have the highest in Europe. Note that this diverse pattern is not matched by the RoI, where network costs broadly remain close to the EU average across all the customer size bands (bar the very largest users). This again is a sign of the greater relative allocation of costs in the UK towards higher users. We return to the impact of this network cost pattern on customers’ electricity prices in the conclusions section.

Network and policy costs are clearly allocated by EU jurisdictions in very different ways across consumer groups. In some jurisdictions domestic customers pay more, in others non-domestic customers pay more (sometimes the larger I&C, sometimes the smaller I&C).

iii) Policy costs in GB

We included in the above descriptions the impact of “policy” costs on end price relativities between NI, RoI and GB. There is much comment that these policy costs are increasing significantly in GB due to the impact of social and environmental requirements, including Electricity Market Reform (EMR). We mention it here to note that these costs impacts may worsen GB price relativities, for both domestic and non-domestic consumers, in the coming years. For example, a recent publication¹³ by Cornwall Energy outlined how policy costs to support renewable electricity and security of supply in GB will increase sharply over the next couple of years, despite some reductions to environmental-related subsidies.

Cornwall anticipate that GB households will, by 2017-18, be paying significantly more for four key government policies than they were two years earlier. These being:

- The Renewables Obligation;
- The Small-Scale Feed-in Tariff scheme;
- Contracts for Difference; and
- The Capacity Market.

Cornwall estimate that the increase will push the cost of the four schemes to over £86 (in 2015-16 prices) for the average household bill by 2017-18 (representing around a +7% increase in bills). As the last renewable electricity projects become operational with subsidies from the Renewables Obligation, the first developments will come online under the new Contracts for Difference scheme that was implemented by the coalition government.

¹³ <http://www.cornwallenergy.com/Opinion/Consumers-facing-84percent-hike-in-cost-of-energy-subsidies-by-2018>

The consequent pressure on bills will be further steepened by the government's decision to exempt energy-intensive industries from the cost of renewables policies from 2017, with households and other businesses taking on consequently higher charges.

Customers will also begin paying for the government's GB energy security of supply related scheme, the Capacity Market, from 2017-18. This follows the decision to bring the scheme forward by a year in order to ease concerns over Britain's tightening electricity generation security picture.

3.2.1 Points to Note – Network and related policy costs and allocations:

- *Network cost and associated policy cost issues can help to explain the level and pattern of final electricity prices paid.*
- *Absolute levels of network costs are not disadvantaging NI consumers, either domestic or non-domestic. We have similar cost levels to comparator GB regions, and substantially lower network cost levels than in the RoI.*
- *RoI domestic customers have high prices relative to NI and GB, and some of the highest domestic prices in the EU. This is driven by both the level of higher network costs in the RoI, and also crucially by the greater allocation of those costs in the RoI to domestic and small business customers (away from larger customers).*
- *NI domestic consumers have lower network/other costs to pay than their GB counterparts – due to lower policy rather than pure network costs. However, in terms of final prices, the lower wholesale prices in BETTA historically offset this difference and resulted in GB domestic customers paying slightly less than those in NI.*
- *Given recent increases in policy related costs in GB,(together with most recent data indicating that SEM wholesale prices are now at or below those of the GB BETTA market), NI final prices have now moved to a par with those in GB for domestic users and below those of large business users.*
- *The largest business customers in NI, and even more so in GB, pay more than their RoI equivalents. GB network charges appear to be allocated to their larger users proportionately more than in NI and, even more so, in the RoI. GB large users pay some of the highest network charges in the EU.*
- *RoI large users pay less than their NI and GB counterparts. This is due to a higher level of policy costs in GB and the allocation (relatively speaking) of network/policy costs away from the larger business customers in the RoI.*
- *However, this is “paid for” by domestic and small business users in the RoI, whose prices are materially above those in NI and GB (as discussed earlier).*
- *Policy costs in GB look set to increase significantly over the coming years.*

3.3 Supply costs

The Supply (or Retail as it is often referred to) element of electricity prices accounts for the smallest portion of final electricity price (c 5-10%).

The current regulatory regime for dominant suppliers in NI ensures that those customers who are supplied by the regulated incumbent are well price protected. This is attributable to the fact that the UR control the costs and prices of the dominant electricity supplier in NI (Power NI) and ensure that the supply element of final prices is kept as low as possible. Domestic and small business customers (<50 MWh) can avail of the resulting regulated electricity prices¹⁴. Due to the nature of the market in NI and the regulatory framework in place, we have supply margins in NI that are close to or below the typical margins quoted in the GB market.

NI is unique among its neighbouring jurisdictions in that we currently set the margin and the running cost allowance for Power NI's (PNI) small I&C (<50MWh) and domestic connections. The growth in supply market competition illustrates how other suppliers effectively benchmark to PNI's regulated tariff, therefore the PNI tariff which is regulated almost acts like a price setter for the supply element of the price.

As part of the PNI price control the UR reviews their proposed tariff and their submitted costs. This gives the UR full visibility of each component of the regulated supply tariff, whereby we review the makeup of the tariff for reasonableness while being cognisant that the supply cost and margin element are fixed as they are set at the price control.

Given that the dominant market supplier is price controlled this ensures that domestic and small business users are not susceptible to greater fluctuations whereby suppliers retain higher prices if wholesale costs fall, as has been the case in GB. The key to this is the clarity we have around Power NI's tariffs and because it forces other suppliers to behave in a certain way if they want to remain competitive and win customers

The NI supply market framework is often referred to as a hybrid model given that the large majority of domestic and small I&C volumes delivered in NI are still subject to price regulation. Price controls have been set to put pressure on supplier prices and this has consequential impacts tariffs offered by new entrant suppliers, especially given the similar costs faced by all suppliers. These features are based on a mix of measures to promote competition, with residual consumer protection through price controls and non-discrimination licence conditions. Consequently the blend of the two is, and will continue to be, somewhat different from regulatory policies exhibited in larger, more established markets with multiple competitors.

The NI experience strongly suggests that regulation and competition can usefully co-exist. Some form of direct price regulation is often necessary to deliver and sustain competitive entry until it is well-established. Even in an effectively competitive market, consumers cannot be protected in all respects at all times. As we have seen in the GB market, the removal of price control does not

¹⁴ The PowerNI price control is due to end in 31 March 2017. The current consultation for the new price control has proposed that the scope of the customer coverage of the control is reduced so that the control would cover only domestic customers (and removed the small I&C <50MWh). The decision paper is due to be published by the UR in November 2016

invalidate regulatory intervention, indeed in the case of GB the rate and degree of interventions has increased dramatically since 2008. A hybrid market can provide the dual benefits of competitive offering and regulated prices to ensure excessive profits are avoided, and there is transparency with regards pricing for regulators, government and customers.

Where prices are no longer regulated in NI (i.e. currently larger non-domestic customers), we believe that competitive electricity supply is working effectively and adequately protecting customers in the NI Supply markets. The Retail Energy Market Monitoring (REMM) project which has just transitioned from the testing phase to the enduring regime will ensure the consistent and accurate reporting of supplier and network company data. REMM enhances our current market monitoring framework and provides increased transparency in NI's retail energy markets, particularly on key indicators such as margins and pricing data.

3.3.1 Points to Note – Supply costs

- *The retail element of electricity prices accounts for the smallest portion of final electricity prices (c5-10%).*
- *NI is unique among its neighbouring jurisdictions in that we currently set the margin and the running cost allowance for the dominant domestic and small business supplier.*
- *The growth in supply market competition illustrates how other suppliers effectively benchmark to PNI's regulated tariff, therefore the PNI tariff which is regulated almost acts like a price setter for the supply element of the price.*
- *Where prices are no longer regulated in NI (i.e. currently larger non-domestic customers), we believe that competitive electricity supply is working effectively and adequately protecting customers in the NI Supply market but we will monitor that closely.*
- *The hybrid model present in NI provides the dual benefits of competitive offering and regulated prices to ensure excessive profits are avoided, and there is transparency with regards pricing for regulators, government and customers.*

4 Summary

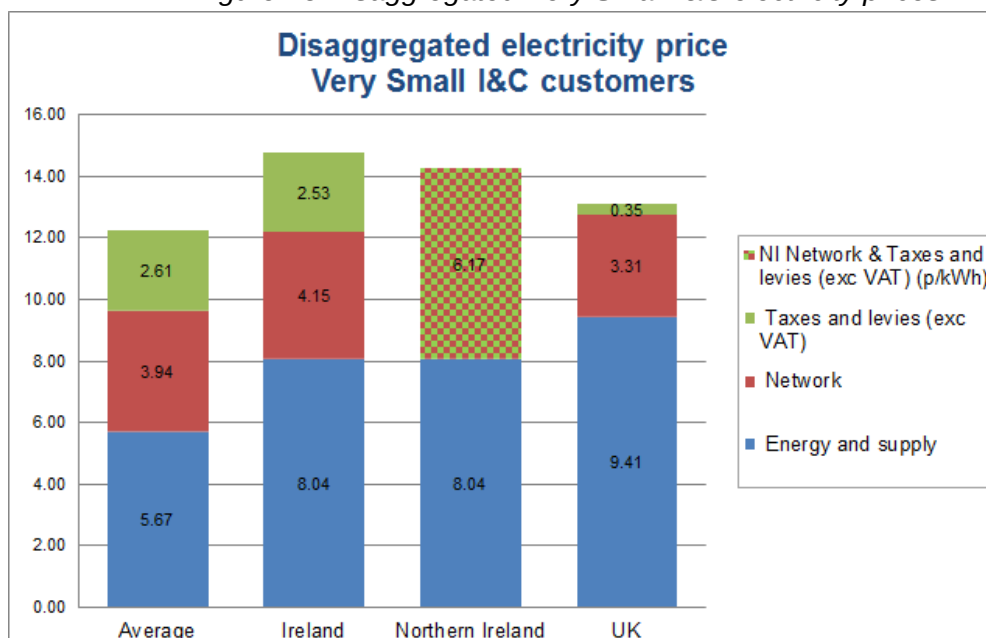
This paper highlights the main points that need to be understood from the data investigated when comparing electricity prices in NI with other jurisdictions quoted. They draw out the key issues, by type of customer, that drive both the levels and relative comparisons of NI prices with other regions. This paper has presented basic facts and analysis on electricity price levels – the factual analysis of the cost elements of electricity prices helps to explain where and how we compare to the RoI, GB and EU.

As a final overall summary piece, the Figures 13, 14 and 15 below, based on Eurostat data, stack the wholesale and network costs together and also add on “taxes and levies” related to energy prices. These figures illustrate how the final end prices compare between NI, UK, RoI and Europe for domestic customers, for the smallest and the largest non-domestic customers. As mentioned previously the Eurostat data set does not separate the NI data from the GB data. For the purposes of this illustration we have included the NI equivalent price, however this does not have the same split as the Eurostat data.

They are useful charts to bring a lot of the above more detailed analysis together, and show the impact of all the factors detailed in the paper:

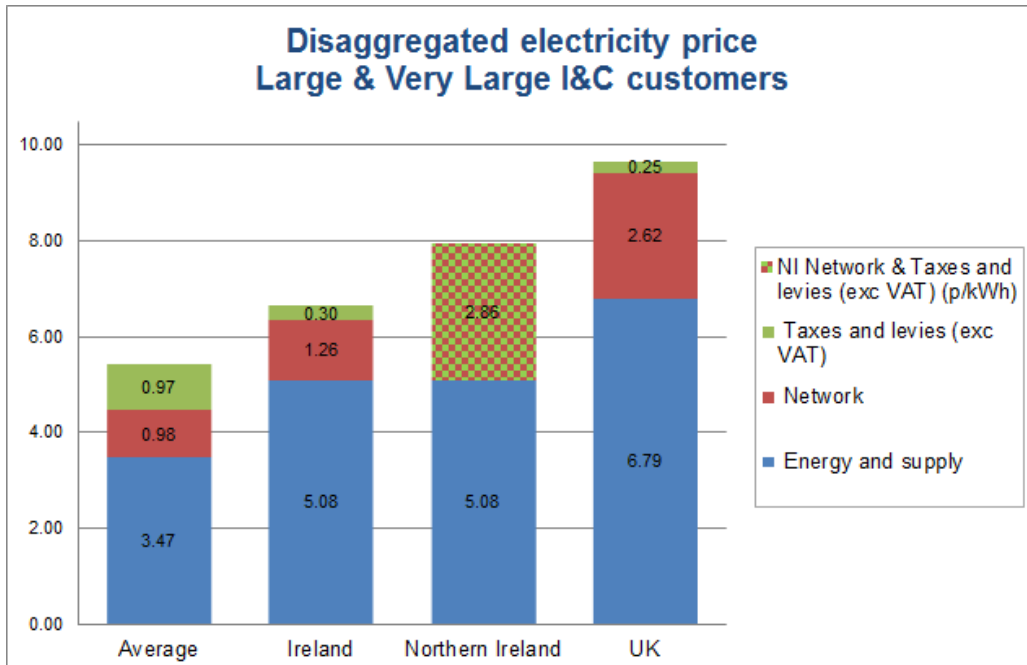
- The higher than EU average wholesale prices on these islands (both SEM and BETTA);
- The fact that wholesale (+supply) price components in UK now lie above NI and RoI;
- The higher domestic and small business prices in RoI - driven by network/policy cost allocations;
- The consequent lower larger I&C prices in RoI; and
- The high large user prices in the UK, driven by high wholesale costs on top of a greater level and allocation of network/policy costs to larger users.

Figure 13 Disaggregated Very Small I&C electricity prices



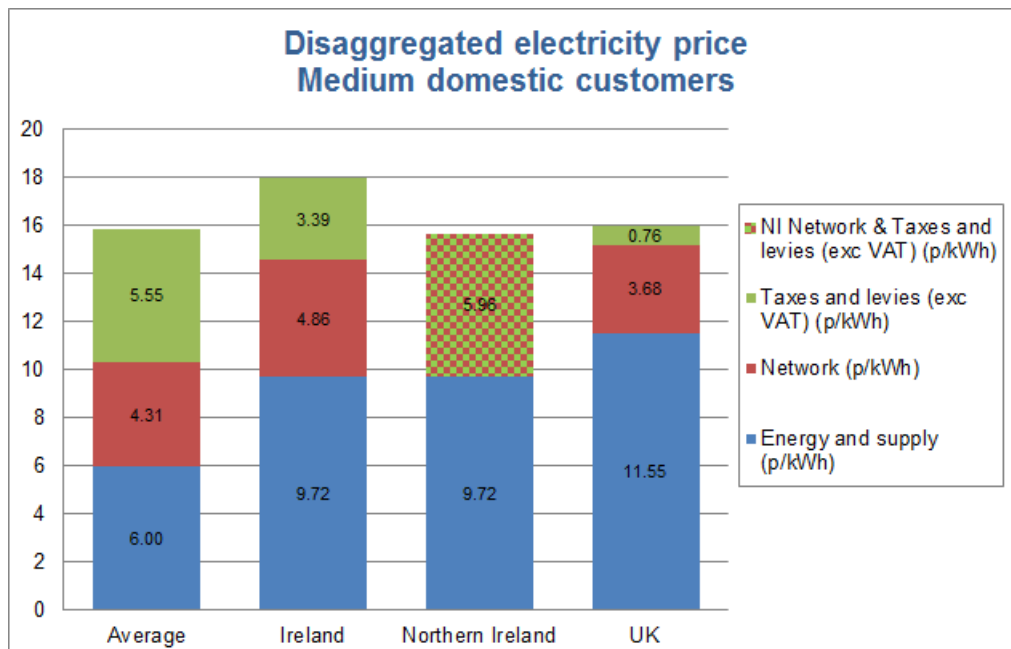
Source Eurostat and UR internal estimates, S2 2015

Figure 14 Disaggregated Large & Very Large I&C electricity prices



Source Eurostat and UR internal estimates, S2 2015

Figure 15 Disaggregated domestic electricity prices



Source Eurostat and UR internal estimates, S2 2015

Table 2 below shows the dispersion of final electricity prices between different customer groups across four territories (EU median, NI, RoI and GB). In this analysis, domestic prices were set at 100% and other non-domestic prices indexed to the domestic charges in each territory to show the relativities. This “dispersion” analysis shows the impact (at a high level) on end bills of the

various policy, network/other cost allocations, customer charging regimes and supply charging systems in the jurisdictions.

Table 2 Inter-customer price relativities based on domestic prices S2 2015

Size of customer	EU median spread	NI spread	Rol spread	UK spread
Domestic	100%	100%	100%	100%
Very small I&C	80%	91%	82%	82%
Small I&C	65%	79%	66%	76%
Small/Medium I&C	49%	71%	54%	68%
Medium I&C	41%	60%	45%	63%
Large & Very Large I&C	34%	51%	37%	60%

Source: Pricing information from NI electricity suppliers, Eurostat and UR internal calculationⁱ

The table shows that the dispersion of end electricity prices across customer groups in NI lies somewhere between that of the UK and the EU. This reflects the previous network/policy cost allocation discussions throughout this paper.

The table indicates that large & very large energy users in the UK pay price levels around 60% of those paid by domestics. In NI, the comparable figure is 51%.

The table also indicates that the difference between domestic and large business user prices is much more pronounced in the Rol and other European countries, relative to NI and GB. Large users in the EU median pay just 34% of the EU median domestic price; whilst the Rol achieve a figure of 37% (due to the fact that their network/policy cost allocations are more comparable to EU averages than to NI and less comparable to the UK large users).

4.1 Conclusion

We have developed this paper to help inform readers on NI electricity price data, on the drivers of those prices and on their comparisons with other jurisdictions. Whilst the issues can appear complex, we hope the information on the associated issues leads to an informed debate on future policy interventions that affect NI electricity prices.

Prices do not remain static, and as a result we will continue to update our pricing information on a quarterly basis via our QTR publications and develop further workstreams to add to our analysis.

Glossary

BETTA	British Electricity Trading and Transmission Arrangements
CAIR	Collection Agency Income Requirements
CCL	The Climate Change Levy (CCL) is a tax on electricity, gas and solid fuels delivered to I&C consumers. Its objective is to encourage businesses to reduce their energy consumption or use energy from renewable sources. The rate changes every year.
CER	Commission for Energy Regulation
CPM	Capacity Payment Mechanism
CRM	Capacity Remuneration Mechanism
DfE	Department for the Economy
DS3	Delivering a secure, sustainable electricity system
EMAG	Energy and Manufacturing Advisory Group
EMR	Electricity Market Reforms
ENTSO-E	European Network of Transmission System Operators for Electricity
ERGEG	European Regulators' Group for Electricity and Gas
ETI	Enterprise Trade and Investment
EU	European Union
EU ETS	European Union Emissions Trading Scheme
Eurostat	Statistical office of the EU. Its task is to provide the EU with statistics at European level that enable comparisons between countries and regions
GB	Great Britain
I-SEM	Integrated Single Electricity Market
I&C	Industrial and Commercial
kVa	Kilo volt-ampere
kWh	Kilowatt hour. Unit of energy equivalent to one kilowatt (1kW) of power expended for one hour (1h) of time. 1,000kWh = 1MWh. 1,000MWh = 1GWh.
MWh	Megawatt hour
NI	Northern Ireland
NRAs	National Regulatory Authorities
LEU	Large Energy Users
Ofgem	Office of the Gas and Electricity Markets
PNI	Power NI
PSO	Public Service Obligation
QTRs	Quarterly Transparency Reports published by the UR at the end of the second month after each calendar quarter (at the end of Feb, May, Aug and Nov).
REMM	Retail Energy Market Monitoring
ROCs	Renewable Obligation Certificates
RoI	Republic of Ireland
SEM	Single Electricity Market
SEMC	Single Electricity Market Committee

SME	Small and Medium Enterprises
SMP	System Marginal Price
SSS	System Support Services
SVT	Standard Variable Tariffs
UR	Utility Regulator
UoS	Use of System
VAT	Value Added Tax
