Competition in UK electricity markets

Introduction

This article includes information relating to competition in the UK electricity market, formerly published as part of UK Energy Sector Indicators. The article examines the two parts of the industry where there is competition for provision: generation and sales. For both markets, the article describes the number of companies operating, and the market concentrations. The Herfindahl-Hirschman measure (see explanation at the end of this article) is used to provide the market concentration as it provides extra emphasis on the contribution of participants with the largest shares. For electricity sales, this article covers the major suppliers surveyed by BEIS comprising approximately 95% of the market.

Key points

- Major electricity suppliers[(1)] increased in number from 16 in 1989 before privatisation to 47 in 2017. In 2017, BEIS surveyed 12 new small suppliers to maintain coverage of the fragmented market, with one company discontinuing supply.
- Since 2010, electricity market concentration has slowly declined year-on-year across the domestic, commercial and industrial sectors, as more companies entered the market.
- The market share of smaller suppliers (outside the top nine) rose from 4.0 per cent in 2010 to 15.3 per cent in 2017, as new and smaller suppliers took market share from the large companies.
- Major power producers (MPPs) increased in number from 6 in 1989 to 54 in 2017.
- The top nine MPPs' share of generation decreased from 87 per cent in 2012 to 76 per cent in 2017. Their share of capacity decreased from 82 per cent in 2012 to 69 per cent in 2017 as new smaller generators entered the market.

Background to changes in the electricity market

Electricity generation

Following the restructuring of the electricity supply industry in 1990, the former nationalised companies were classified as major generating companies to distinguish them from autogenerators and the new companies set up to generate electricity. However, over the next few years, some new independent companies were beginning to make significant contribution to the electricity supply and therefore a new terminology "Major Power Producers" (MPPs) was introduced to signify those companies whose prime purpose is the generation of electricity. The breakup of the nationalised power suppliers into smaller privatised companies immediately increased market competitiveness, with new companies beginning to build their own Combined Cycle Gas Turbine (CCGT) stations from 1992. Major wind farm companies and major solar photovoltaic (PV) operators are now also included in the MPP definition.

Electricity supply

Competition was introduced to the electricity markets in three phases. First the upper tier of the non-domestic market (customers with a maximum demand of over 1 MW, comprising 30 per cent of the market) was opened to competition in March 1990. Next, the 100 kW to 1 MW tier (15 per cent of the market) was opened to competition in April 1994. Full competition for the remaining 55 per cent of the market (below 100 kW peak load) was introduced in stages between September 1998 and June 1999. This final phase covered domestic consumers who account for over a third of electricity consumed in the UK.

Competition in electricity sales

The number of electricity suppliers[(1)] rapidly increased, from 16 before privatisation in 1989 to an early peak of 32 in 2004. The number of companies reduced from 2004 to 2010 (23 companies), as despite new market entrants, other companies were either taken over or bought additional power stations to add to their portfolios. After 2010, the number of companies increased again, reaching their highest levels in 2017 of 47 companies. This was a net increase of 11 companies

(1) In this article electricity supplier refers to major suppliers surveyed by BEIS, covering approximately 95% of all UK electricity sales in 2017. Please see the BEIS Electricity statistics data sources and methodologies for more details.

from 2017, and reflects new market entrants and that BEIS engaged with new and smaller companies, to maintain coverage as the sales market fragments.

The number of companies supplying electricity to each sector is given for selected years between 1996 and 2017 in Table 1 (see overleaf).

Table 1: Number of companies supplying electricity (1)

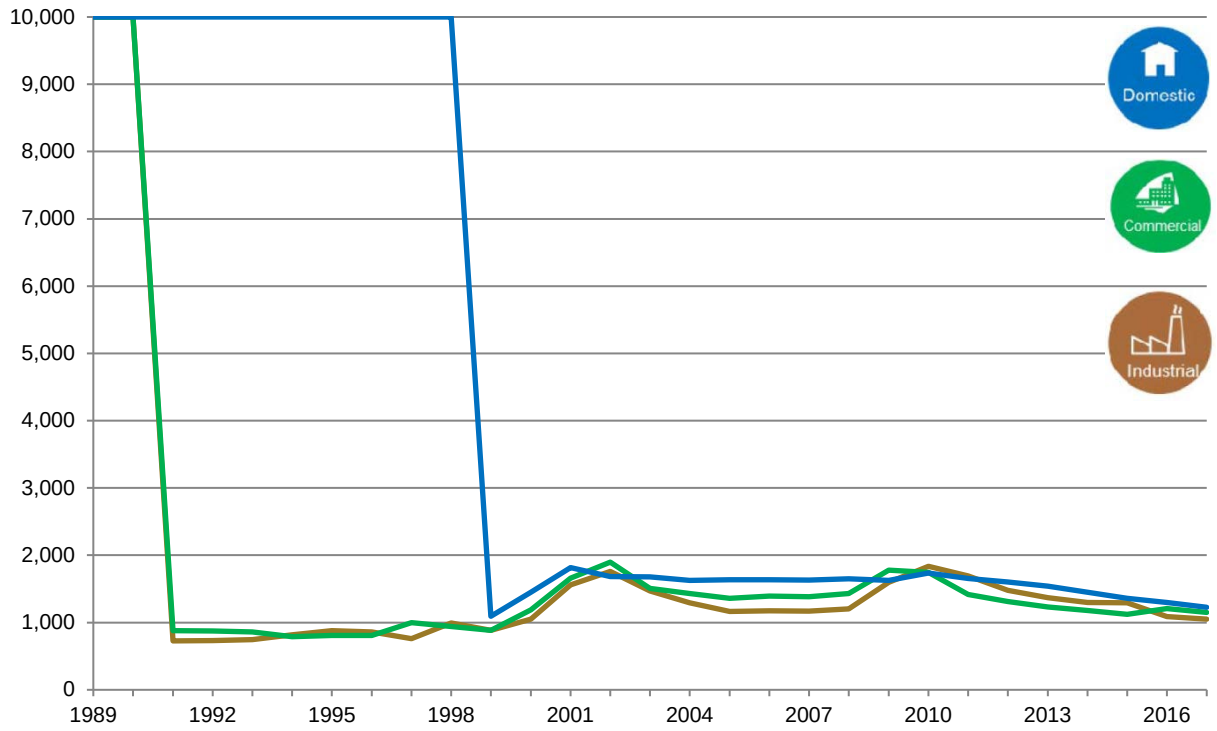
	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2017
Domestic Sector	1	1	11	7	11	10	11	13	17	23	20	32
Commercial Sector	17	16	14	14	18	15	15	15	21	28	27r	32
Industrial Sector	18	22	20	18	30	22	20	20	24	27	27r	26
Total	18	22	22	21	32	26	23	23	29	34	36	47

(1) Companies can supply into more than one market and are counted in each market they supply to.
Source: BEIS
(r) shows a revision to the data

In 2017, the 12 new electricity suppliers surveyed by BEIS all sold to the domestic sector, increasing the domestic total to 32. Six of these companies also supplied the commercial sector, increasing the net total to 32. None of the newly surveyed 2017 suppliers served the industrial sector. Across all sectors, there were 47 companies selling electricity in 2017; this is an increase of 24 compared to 2010. Although individually these new companies do not supply large amounts, the growth in the number and size of these new companies over the last 10 years is resulting in a decrease to market concentration.

Chart 1 below shows the market concentration as expressed through the Herfindahl-Hirschman Index. In the chart, higher numbers show more concentration while lower numbers indicate a more diverse market.

Chart 1: Herfindahl-Hirschman Index for electricity sales market concentration, 1989 to 2017



There was an initial sharp decrease in market concentration following privatisation, then a rise between 1998 and 2002, mainly due to a spate of mergers. The market concentration subsequently fell and stabilised between 2003 and 2008, as the number of industrial and commercial suppliers increased. In 2009 and 2010, market concentration increased again, as several closures reduced the number of market participants. Since 2010, electricity market concentration has declined annually across all sectors, as the market became more competitive; the largest concentration decreases occurred in 2012 and 2016. In 2017, the index fell further across all sectors and for each was at similar level to in 2000. This downward trend in market concentration resulted from increasing numbers of smaller suppliers entering the market and reducing the market share of bigger companies.

The domestic market was a regional monopoly before 1998, dominated by the Regional Electricity Company (REC). Following a decrease in market concentration in 1999 as domestic sales became more competitive, concentration rose until 2002 due to mergers between former RECs, and with other suppliers/generators. Similarly, market concentration rose for industrial and commercial sales over the same period. Between 2002 and 2009, the Herfindahl-Hirschman Index for the domestic sector was broadly stable. In 2010 the index increased, though subsequently the index has decreased annually. In 2017, the index fell to 1,226 – the lowest level since 1999 – reflecting the share of new entrants to the market.

The commercial market had 19 electricity suppliers in 2004/05 but this fell to 15 in 2010, causing an increase in market concentration. Since 2010, there has been a downwards trend in market concentration, as the number of commercial electricity suppliers grew. With 26 industrial electricity suppliers in 2017, the industrial market was less concentrated than in 2010, when there were 20 industrial electricity suppliers.

Electricity supplied to all consumers by aggregated shares.

Table 2 shows how the market share of the largest companies have changed since 2010. The market share of the top nine suppliers peaked in 2009 and 2010, but since has steadily fallen to 84.7 per cent in 2017. Between 2016 and 2017, the aggregated share of the top six suppliers fell a further 1.8 percentage points from 74.8 per cent to 73.0 per cent. When compared to 2010, the aggregated top six share for 2017 is 14.3 percentage points lower.

As the number of companies supplying electricity has increased, as evidenced in Table 1, the share of these suppliers outside the top nine has grown. The share of those outside of the top nine rose from 4.0 per cent in 2010 to 15.3 per cent in 2017. This reflects the fragmentation of the market from new entrants taking market share from the larger companies. This increase in share of suppliers outside the top nine further reflects the reduced market concentration as evidenced by the Herfindahl-Hirschman Index in Chart 1.

Table 2: Percentage of total electricity supplied to all consumers

	Market Share (%)							
Electricity Suppliers	2010	2011	2012	2013	2014r	2015	2016r	2017
Aggregated share of top 3 suppliers	50.9%	48.9%	47.2%	46.3%	47.4%r	45.1%	42.5%r	41.9%
Aggregated share of next 3 suppliers	36.4%	35.2%	36.7%	35.4%	33.5%r	32.7%	32.3%r	31.1%
Aggregated share of next 3 suppliers	8.8%	8.5%	8.0%	8.1%	8.9%r	10.1%	10.8%r	11.7%
Aggregated share of top 9 suppliers	**96.0%**	**92.6%**	**91.8%**	**89.8%**	**89.8%r**	**87.8%**	**85.6%r**	**84.7%**
Other suppliers	4.0%	7.4%	8.2%	10.2%	10.2%r	12.2%	14.4%r	15.3%

Source: BEIS
(r) shows a revision to the data

Electricity generation competition

Table 3 shows the number of companies that are counted as MPPs. The number of companies increased rapidly, from six before privatisation up to an early peak of 36 in 2001, before mergers caused numbers to fall back to 29 in 2006. Starting in 2007, several renewable generators were reclassified as MPPs, which led to an increase in the number of MPPs to 34, which remained stable to 2009. Since 2010, the number of MPPs has steadily increased as new generators began operations and reached a new peak in 2017 of 54.

Table 3: Number of Major Power Producers

Year	Number	Year	Number	Number producing at least 5% of total generation
1989	6	2001	36	6
1990	6	2002	36	7
1991	11	2003	34	6
1992	14	2004	32	7
1993	20	2005	30	7
1994	23	2006	29	7
1995	25	2007	34	8
1996	26	2008	34	9
1997	27	2009	34	8
1998	29	2010	39	8
1999	30	2011	41	7
2000	34	2012	44	7
		2013	44	7
		2014	47	7
		2015	53	6r
		2016	52r	5r
		2017	54	4

Source: BEIS
(r) shows a revision to the data

Table 4 shows the MPPs aggregated share of generation and aggregated share of capacity for 2012 to 2017. The market share of the top 9 generators in this period peaked in 2013 at 86.7 per cent but subsequently declined to 75.8 per cent in 2017, as new companies entered the market and reduced the share of total generation that the top 9 companies produced. The top 9 generators held a lower share of capacity (69.2 per cent in 2017) compared to generation. This indicates a greater proportion of their generation is from non-renewable sources, which have higher load factors i.e. they operate closer to full capacity.

Table 4: Percentage of total generation and total capacity by Major Power Producers

	Share in Generation (%)						Share in Capacity (%) (1)					
	2012	2013	2014	2015	2016	2017	2012	2013	2014	2015	2016	2017
Aggregated share of top 3 companies	51.7	50.9	48.5	48.6	48.9r	51.6	46.7	41.9	43.5	32.5	32.4	36.3
Aggregated share of next 3 companies	23.8	24.0	25.6	21.6	15.5	15.0	23.4	24.9	24.2	27.8	18.1	22.2
Aggregated share of next 3 companies	11.1	11.8	10.7	12.7	12.1r	9.1	12.1	12.6	13.1	15.2	14.6	10.7
Aggregated share of top 9 companies	**86.6**	**86.7**	**84.8**	**83.0**	**76.5r**	**75.8**	**82.2**	**79.4**	**80.9**	**75.5**	**65.1**	**69.2**
Other major power producers	13.4	13.3	15.2	17.0	23.5r	24.2	17.8	20.6	19.1	24.5	34.9	30.8

(1) Of the same companies in each band in generation terms
Source: BEIS
(r) shows a revision to the data

User feedback

We welcome all feedback from users; therefore, if you have any comments or queries regarding this analysis, please contact either Helene Clark or Chrissie Frankland using the contact details below.

Helene Clark
Electricity Statistics
Tel: 020 7215 1259

Chrissie Frankland
Electricity Statistics
Tel: 020 7215 5125

E-mail: electricitystatistics@beis.gov.uk

Herfindahl-Hirschman

The Herfindahl-Hirschman measure attempts to measure market concentration. It places extra emphasis on the contributions of participants with the largest shares. The measure is commonly used to assess whether mergers should go ahead and whether they will significantly affect the balance of the market in a particular sector.

It is expressed by the following equation: Herfindahl-Hirschman measure = the square of each participant's market share added together across all participants in the market.

Values vary between zero, which signifies a perfectly competitive industry, and ten thousand, for a pure monopoly.