



## Price transmission in the UK electricity market: Was NETA beneficial?

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### ABSTRACT

This paper explores the relationship between domestic retail electricity prices in Great Britain and their determinants in the context of the New Electricity Trading Arrangements (NETA) introduced in 2001. We employ a consistent comparison of wholesale power price series before and after NETA, alongside a difference-in-differences analysis based on using Scotland as a control. Despite NETA's stated intention of reducing wholesale and thereby retail prices, we conclude that its net effect, alongside other developments, instead merely rearranged where money was made in the system.

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### 1. Introduction

Our paper explores the relationship between domestic retail electricity prices in Great Britain and their various determinants, focussing on the effect of the New Electricity Trading Arrangements (NETA), a milestone in restructuring the GB electricity market. In common with most advanced economies, the mantra “competition where possible, regulation where not” (Littlechild, 2005) has led to an evolution of processes to inject competition into electricity generation and supply through introducing, encouraging and then reforming markets in these areas; the recent series of reforms relating to NETA started in 2001. The fact that reforms come swiftly one upon another proves a significant intellectual challenge. Our basic question is: Did end users benefit?

NETA was of course a reform of the wholesale market structure, aimed (and arguably successful) at reducing wholesale prices, but ultimately the test of this change in arrangements must be the impact on prices for final consumers. In our examination we exploit structural differences between the electricity and gas wholesale markets and in particular institutional differences between England and Wales and Scotland, which operated under a similar regime but without NETA until 2005.

Our question has policy relevance much more broadly. The UK has tended to be in the vanguard of reforms to energy industries, an exemplar to others. Yet both here and in Europe more generally, doubts have emerged concerning the benefits of market liberalisation.

Thus our analysis is not simply a statistical exploration with some economic interpretation – deregulatory strategies are being pursued worldwide in the electricity industry and there is a live policy interest that has at least a European dimension. Through NETA and BETTA the UK has chosen a particular deregulatory path that other countries may follow.

The major unregulated determinant of retail prices is wholesale electricity costs, so it might seem obvious that when wholesale prices fall, so too will retail prices. Yet we show this is not so, because of the implications of the reforms for retail market competition. More recently (e.g. Business and Enterprise Committee, 2008) there has been significant concern that the drivers of retail price rises are somewhat opaque. Their (2008) investigation was prompted by “mounting public concern over gas and electricity prices” (p.5) and both it and the OFGEM (2008) “Supply probe” announced shortly afterwards appear to accept that there are barriers into entering at the retail level, with no supplier of significance outside the big six.

Across Europe more generally, the European Commission sector inquiry in 2007 raised concerns about the presence of distorted competition in the energy sector, mostly as a result of high market concentration and instances of vertical foreclosure (European Commission, 2007). Similar issues were also raised by an OECD investigation into the German gas and electricity market (OECD, 2006).

Since the early 1990s, the British electricity market has changed substantially. The first major steps, involving vertical disintegration and the introduction of competition in generation together with a Pool mechanism for coordinating generation and supply, have been well studied. Key papers on the British experience include Green and Newbery (1992) and Wolfram (1999) and, as Sweeting (2007) points out, competition in generation has been enhanced in the sense that

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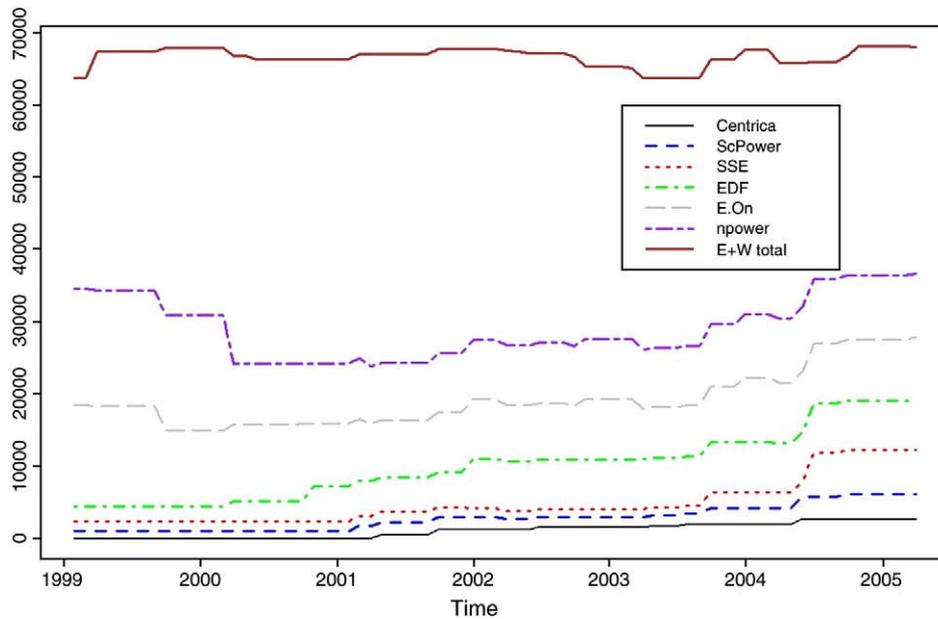


Fig. 1. Cumulative electricity generation capacity by company, England and Wales (MW). Source: OFGEM. Total includes independents.

the Herfindahl–Hirschman index in generation has been falling through divestiture, although he finds that the generators were nevertheless able to exercise considerable market power.

The wholesale market arrangement instituted in 1990 employed a power pool, where a system marginal price was set for each half hour period of the day by the network operator, based upon matching predicted demand with bids from generators. This system received criticism, for example that it was subject to manipulation by generators, was insufficiently cost-reflective and that it did not contain demand revelation elements (OFGEM, 2002a). As a result, the replacement arrangements known as the New Electricity Trading Arrangements (NETA) were introduced in March 2001. These applied to England and Wales only, whilst Scotland then had a more vertically integrated structure (although its wholesale prices were designed to track those across the border).<sup>1</sup> BETTA, a revision to incorporate the Scottish operators, was developed and became live in April 2005. The operating scheme under NETA and BETTA involves bilateral wholesale trades, hence a discriminating price auction, together with a small balancing market.

It is fairly clear that, at least in the initial years, wholesale electricity prices fell around the time of the NETA reforms, although the underlying mechanism has been subject to contention (see Fabra and Toro, 2003).<sup>2</sup> To our knowledge, the impact on the retail market has not been examined rigorously so far, although significant concerns have been expressed.<sup>3</sup>

One important feature of the GB market compared to other large economies is the extent to which the retail market is dominated by integrated players. The number of active residential power suppliers

has now effectively been reduced to six, who together control over 99% of domestic consumer supply.<sup>4</sup> Each has significant generation capacity and each competes in all 14 regions of the electricity industry.<sup>5</sup> The drive by retailers to vertically integrate back into generation started in 1998 and has continued.<sup>6</sup> As illustrated in Fig. 1, after an initial decline in the big six's share in generation capacity at market opening, by the end of the period they had regained their original total share to the detriment of independent generators. Out of the big six however some companies managed to increase their individual share, such as EDF, SSE and Centrica, while others, such as E.ON and npower, have registered a decline. At the same time the big six were also involved in merger activity at the retail level through the acquisition of former regional suppliers and independent companies.

Vertical integration, by itself, is likely to reduce wholesale, and possibly retail, prices. In addition to the vertically integrated firms, there are non-integrated generators, including Drax and International Power. Certain supply companies have interests in electricity distribution as well, but these activities are subject to separation and regulatory arrangements and can be viewed as separate.

Though an important topic to study, the experiment of introducing NETA cannot be considered as “clean”. Since one of the main tasks of suppliers in the market is, in effect, to absorb risk, the drive towards vertical integration across generation and supply and a simultaneous squeeze of independent supply companies may well in part have resulted from the NETA arrangements, or indeed the knowledge that

<sup>4</sup> We do not examine the industrial power market, where retail as well as wholesale prices are negotiated so that we do not have access to retail price series. Nor do we consider Northern Ireland.

<sup>5</sup> The companies are British Gas, E.ON (formerly Powergen), npower (RWE), EDF, Scottish Power (Iberdrola) and Scottish and Southern. Each is significantly vertically integrated across both generation and supply, principally in gas and coal fired production. E.ON and npower are the descendants of the old coal generating companies, British Gas is obviously the owner of a major input (and operates several power stations), EDF is a supplier to the market through the interconnector with France and its own power stations, and early in 2009 took over British Energy, the formerly independent nuclear generator. In addition the two Scottish firms both have a generation wing.

<sup>6</sup> The integration process started with a requirement on Powergen and npower to divest themselves of generation assets if they wished to acquire supply businesses in the East Midlands and Midlands areas respectively. Of course, in many other countries there have been trends towards vertical reintegration (Meade and O'Connor, 2009).

<sup>1</sup> Subsequently, over the 2001–2005 period “Scottish generation prices [were] administered and ... linked to NETA prices.” (OFGEM, 2002b).

<sup>2</sup> One possibility is that changes in market structure in generation were the main driver of lower wholesale prices (Bower, 2002; Newbery, 2003). Another is that there was an announcement effect relating to NETA which lowered prices (Evans and Green, 2003, 2005). There is also some theoretical exploration in Federico and Rahman (2003).

<sup>3</sup> Salies and Waddams-Price (2004) investigated retail prices, but did not examine wholesale prices as a determinant. OFGEM's (2008) supply probe did include some analysis in Appendix 5 that relates to the work on which we report here, although they focus on the period from September 2002 onwards and do not explicitly consider the impact of NETA. Unlike us, they use hedged wholesale prices and impose coefficients of unity on certain costs.

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