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Institutional Evolution and Energy Reform in the UK

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1 Introduction

Over the last twenty-five years, the UK’s energy utilities of electricity and gas have been completely transformed. Publicly-owned monopolies have been replaced by competing private companies. In gas, the formerly integrated vertical stages have been separated, and the nature of vertical integration in the electricity industry has also changed. New regulators are responsible for overseeing key parts of the industry, and new markets have been created.

The transformation was not planned as such from the start. The first attempt to create competition did not include any institutions to support competition, and was an utter failure. The first privatization, of the gas industry, was accompanied by the creation of a new regulator, but this regulator was not given enough powers to ensure the development of competition. It was a decade later that the gas incumbent decided to split itself on vertical lines. The structure chosen for the electricity privatizations in England and Wales took the lessons from the gas industry into account, with vertical separation, a regulator with more powers, and a centralized wholesale market operating from the start. Even in this case, however, the way in which the regulator used its powers evolved over time, and the government eventually decided to replace the original wholesale market with a completely new design.

These institutional features – vertical structures, regulators, and wholesale markets – are the subject of this chapter. ‘Institutional design’ is the phrase most often used to describe the way in which governments or other agencies have attempted to transform the way in which an industry operates. In this case, however, the industries have moved so far from the institutions created at privatization that the phrase places too much weight on the initial changes, compared to what came later. ‘Institutional re-design’ would focus

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attention on the subsequent changes. Many of those changes were gradual, however, and made by regulators or companies without direct stimulus from the government. ‘Institutional evolution’ is a phrase that tries to capture this, without losing the ideas of design and re-design.

The chapter will use three case studies to draw out some general themes. The issue of an industry’s vertical structure is discussed with reference to the gas industry, which moved from an integrated monopoly to a structure which now has less vertical integration than the electricity industry. The evolution of regulation is discussed with reference to the electricity industry and ways in which price controls on network charges are set. Wholesale markets and their rules are also discussed in the context of the electricity industry. Before moving on to these case studies, however, the chapter starts with some background on the industries’ characteristics, structures under public ownership, and privatizations. There is only space for a brief overview here, and there is more information in Vickers and Yarrow (1988), Armstrong, Cowan and Vickers (1994) and Newbery (1999).

2 Background

Both electricity and gas are network utilities – for practical purposes, they have to be delivered to consumers through a network of wires or pipes. These networks are natural monopolies – it would be prohibitively expensive to build two separate networks to supply the same group of consumers. Furthermore, it is essential to coordinate the flows over those networks to ensure that they continue to operate within safe limits. In the gas industry, the ability to change the pressure within the pipeline system allows a lot of leeway on an hour-to-hour timescale, but inflows and outflows must match from day to day if supplies are not to be interrupted. If supplies are disrupted, the task of restarting them must be undertaken very carefully – explosions can be the result of allowing air into the system. Compared to gas, electricity is perhaps safer, and certainly harder to control. A power failure (as opposed to the failure of devices that rely on electricity) will not directly cause casualties, although the power surges that often cause the failure can be dangerous. The problem with electricity, however, is that flows have to be managed from second to second, but cannot be directly controlled. Electricity follows Kirchhoff’s laws to flow over a network in inverse proportion to the resistance (or rather impedance) on each route, and the flows will immediately redistribute themselves if the failure of one component changes the routes available. The timescales are too short for human intervention, and so every important piece of equipment has circuit-breakers to protect itself automatically in the event of a power surge, while system operators must ensure that the network is always in a state that would allow its continued safe operation, even if any one component were suddenly to fail.