Measuring Potential Gains from Mergers among Electricity Distribution Companies in Turkey using a Non-Parametric Model

September 2006

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CCP Policy Briefing

KEY FINDINGS

- Analysis of proposed mergers of Turkish electricity distribution companies indicates potential for considerable efficiency gains from the proposed mergers, with the possibility of saving 16% of inputs if the mergers induce best practice. In the analysis, the majority of the savings come from harmonisation which eliminates the slack in input usage. This could be achieved by means other than the merger process, such as the development of an internal market mechanism or joint ventures.
- The distribution firms that operate in the relatively more industrialised and developed part of western Turkey have noticeably higher average relative efficiency scores with performance deteriorating towards eastern Turkey. Interestingly, Anatolian Istanbul is served by a company that has been nationalised, with no apparent effect on its efficient performance.
- Having assessed the efficiency improvement potential within the industry, the findings of the analysis identify which of the businesses are at efficiency frontiers relative to others. 50 out of the 82 distribution firms have more transformers than necessary which suggests that there may be some stranded assets post-privatisation or that it may affect the way in which those firms with the surplus transformers are valued. 42 of the distribution firms have slack capacity within the transformer capacity. 39 of the distribution businesses could maintain their output with fewer staff than they currently have. It should be remembered however that, since the analysis is based on best current practice, further efficiencies, beyond those that are relative and identified by this analysis, may be possible.

BACKGROUND

- Over the past 20 years many countries have privatised and liberalised their electricity and other state-owned industries. Turkey is embarking on such a programme as part of the process for joining the EU.
- Knowing whether or not the programme is likely to deliver efficiency gains is necessary but often difficult to establish. This research provides a means to assess whether efficiency gains, given the appropriate incentives to achieve them, are likely from proposed mergers of distribution companies. The approach of this analysis differs from related studies since it focuses on the scope for technical efficiencies rather than their value or the creation of market power.
- The path of reform in Turkey has not been smooth – while it began relatively early, there has been little real progress. The country had struggled with unfavourable economic conditions: high inflation, chronic budget deficit and foreign and domestic debt problems which have all disrupted its ability to make public investments.
- In the past, Turkey's focus on reform has been to increase generation capacity at the expense of investment in distribution. As a result, network losses rose to an alarming level of 25%, on average, between 1999 and 2003.
- The reform programme began in the mid-80s but gathered momentum in 1999 when Turkey was recognised as an official candidate for EU membership. As part of its reform programme Turkey has, rather unusually, nationalised 3 of the 4 private distribution operators because of improper market activities.
- In 2004, the Government set out its final proposals to privatise the electricity market, which included the creation of 21 distribution firms. 18 of these are to be created through the merger of 79 separate distribution organisations which are currently owned by the public utility, the Turkish Electricity Distribution Company.

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- The reform programme is due to be finalised by the end of 2006 and seems to be on target. The legal framework was completed in July 2006 with the approval of the licences and tariffs of the distribution firms by the Energy Market Regulatory Authority.

METHODOLOGY

- The research uses a model developed by Bogetoft and Wang[1] to compare the existing structure of electricity distribution in Turkey with the planned merger structure.
- Using a series of inputs and outputs acquired from data covering the period 1999 to 2003, the model was used first to identify the potential for efficiency improvement within the electricity distribution industry as it currently stands, and then the potential for efficiency gains from the proposed mergers.
- The model focused on inputs to the businesses (network losses, employee numbers, and transformer capacity) because these are within their control.

POLICY ISSUES

- Identifying the capacity for efficiency savings does not mean that they will be delivered, so an effective programme of incentive design is needed. Inevitably, shareholders will want to see that the company they have invested in is profitable so it will be important to align managers' incentives with shareholders which should see the company run more efficiently.
- The firms will be local monopolies and will therefore be subject to economic regulation to prevent monopoly exploitation. Theory and practice suggests that there will be an information asymmetry favouring the firm. The analysis in this paper could be used as a tool by the regulator to help address the imbalance. For example it would enable the regulator to determine the appropriate level for the regulatory formula from the beginning, thus avoiding regulatory shocks as unexpected information (e.g. as a consequence of further mergers) becomes available which show the capacity for further efficiency gains.
- It must also be remembered that this methodology only provides an indication of the efficiency savings that are available relative to the rest of the industry. This does not mean that it can identify the optimal efficiencies that are available. However the increasing co-operation between national regulators may mean that more and more international data becomes available, allowing the tool to be expanded to new efficiency frontiers.

THE CCP

The ESRC Centre for Competition Policy (CCP), at the University of East Anglia, undertakes competition policy research, incorporating economic, legal, management and political science perspectives, that has real-world policy relevance without compromising academic rigour.

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The full working paper (CCP Working Paper 06-13) and more information about CCP and its research is available from our website: www.ccp.uea.ac.uk

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[1] Bogetoft, P. and Wang, D. (2005) Estimating the Potential Gains from Mergers *Journal of Productivity Analysis* 23: 145 - 171

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