

## BUSINESS TRENDS IN THE EUROPEAN POWER INDUSTRY: A REVISION OF THE ECONOMIC SITUATION OF THE ELECTRICITY DISTRIBUTION BUSINESS

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### ABSTRACT

*This paper provides a summary of a EURELECTRIC report[1] which examined the economic performance of the European electricity distribution business over the period 2002-2007. Its aim is to provide a thorough analysis of the value creation/destruction trends of European DSOs.*

### INTRODUCTION

The current regulation, to which most European Distribution System Operators (DSOs) are subject, incentivises DSOs to increase their cost efficiency through reductions in operating expenses. However, after many years of ongoing endeavour to reduce operating expenses, DSOs' profitability is starting to be severely undermined by their current financing model and this comes precisely at a moment when important capital-investment projects are needed. EURELECTRIC's Focus Group on Finance & Economics therefore decided to launch a study in order to reach a common view with regard to the economic performance of the electricity distribution business in Europe.

Accordingly, this report examines the economic performance of the electricity distribution business over the period 2002-2007. It begins with an analysis of a sample of European electricity distribution companies to establish whether they are creating or destroying value, and seeks an explanation for the findings. The survey focuses firstly on the evolution of turnover and operating costs in electricity distribution and secondly on the investment effort made by the distribution companies, indicated by the Capital Expenditure/Ebitda ratio. Finally, the study attempts to estimate the future needs for investment in electricity distribution on the basis of the estimated relationship between capital expenditure and electricity distributed.

### METHODOLOGY

The analysis was carried out on the basis of financial information provided by 45 DSOs based in 14 European countries. Most data gathered was publicly disclosed information in the form either of annual account figures or a summary of regulatory accounts published in some countries. In some cases, where public information was unavailable, some companies decided to provide the missing information from their internal accounting under

anonymity. Consequently, the countries that are missing from the list below either did not have public information on the distribution business or else have not been able to provide sufficient sound information for the purposes of this study.

45 COMPANIES ANALYSED FROM 14 EUROPEAN COUNTRIES	
<ul style="list-style-type: none"> <li>• UNITED KINGDOM</li> <li>• GREECE</li> <li>• LUXEMBOURG</li> <li>• ITALY</li> <li>• SPAIN</li> <li>• PORTUGAL</li> <li>• NORWAY</li> </ul>	<ul style="list-style-type: none"> <li>• HUNGARY</li> <li>• FINLAND</li> <li>• FRANCE</li> <li>• SWEDEN</li> <li>• NETHERLANDS</li> <li>• IRELAND</li> <li>• AUSTRIA</li> </ul>

Table 1: Sample of the Study

As a starting point, we studied the relationship between the return on distribution assets and the assumed cost of capital. The cost of capital has been assumed applying the Capital Asset Pricing Model (CAPM) to estimate the equity cost rate. The assumptions for the different parameters, both for estimating equity and debt cost rates are shown in the following tables:

COST OF CAPITAL ESTIMATION (nominal pre-tax)	
Debt cost rate	5,6
Pre tax cost of debt ( i )	5,6
Equity cost rate ( $r + ( \text{beta} \times s ) / (1-t)$ )	13,2
Average five year bond return ( r )	4,4
Beta	0,87
Market risk premium ( s )	5,5
Tax rate ( t )	30
<b>WEIGHTED AVERAGE COST OF CAPITAL (WACC)</b>	<b>10,7</b>
Market capitalisation	0,67
Debt	0,33

Table 2: Weighted Average Cost of Capital estimation (pre-tax)

COST OF CAPITAL ESTIMATION (nominal post-tax)	
Debt cost rate	3,9
Pre tax cost of debt ( i )	5,6
Tax rate ( t )	30
Equity cost rate ( r + ( beta x s ) )	9,2
Average five year bond return ( r )	4,4
Beta	0,87
Market risk premium ( s )	5,5
<b>WEIGHTED AVERAGE COST OF CAPITAL (WACC)</b>	<b>7,5</b>
Market capitalisation	0,67
Debt	0,33

Table 3: Weighted Average Cost of Capital estimation (post-tax)

### VALUE CREATION OR VALUE DESTRUCTION?

In the latest two years, more than half of the companies showed returns below their weighted average cost of capital. More specifically, in 2007, despite a surge in the return on invested capital, most of the companies are still seeing a return below their cost of capital. The difference between the return on and the cost of capital has diminished for many companies, but there is still a clear majority that are obtaining returns below their WACC.

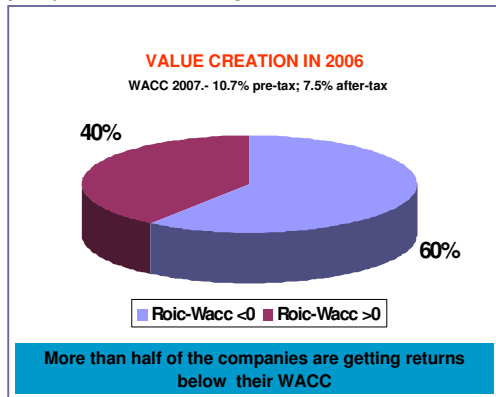


Figure 1: ROIC – WACC in 2006

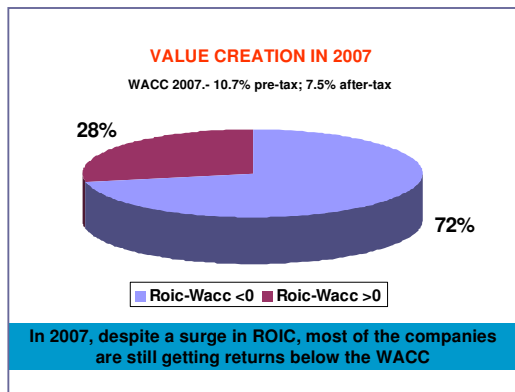


Figure 2: ROIC – WACC in 2007

### REASONS FOR VALUE CREATION AND DESTRUCTION

The electricity distribution business is considered to be a natural monopoly. Its remuneration is determined by an independent regulator, who is supposed to guarantee the distribution companies an adequate return. A return is considered adequate when it entails efficiency incentives to reduce costs and when it is sufficiently stable and fair to ensure that distribution companies make the investments necessary for a reliable service.

Therefore, distribution rates are typically set every four or five years on the basis of the expected costs and the revenues are updated annually under a RPI-X formula. X is an efficiency target for the whole period and, provided that distribution companies are able to reduce their costs below the efficiency target, they are entitled to keep those cost savings until the next revision period. In that way, they have incentives to find ways to reduce their current costs and raise their margins.

Consequently, distribution companies will be able to increase their margins and their returns as long as they manage to reduce their operating costs between rate revision dates. They will also be able to increase their return on assets if their revenues are increased in those rate revision processes in accordance with expected costs, investments and requirements for quality of service. In figure 3, the ROIC-WACC figures of the distribution companies in 2007 are represented on the Y-axis. The 2002-2007 cumulative annual growth rate of operation costs (depreciation excluded) is shown on the X-axis.

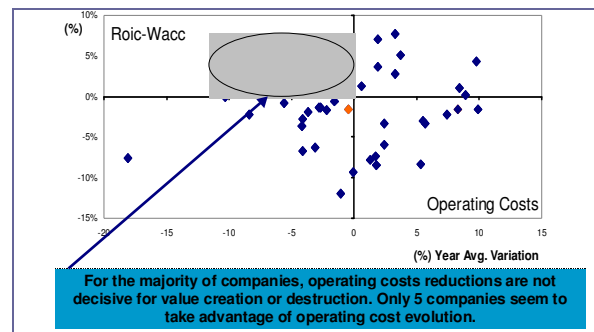


Figure 3: ROIC-WACC and operating cost evolution

The purpose of this graph is to analyse to what extent the value creation or destruction at the end of the period under analysis can be the result of reductions in operating expenses. The link between value creation and the evolution of operating expenses is based on one of the fundamentals of distribution regulation: the idea that efficiency gains benefit both consumers and distribution companies. The outcome of an ongoing operating cost reduction should be a value creation situation.

However, we observe that operating cost reductions are not decisive for value creation or destruction for the majority of companies. Under incentive regulation, data should be skewed towards the bottom right hand corner or the upper left hand corner. Yet only five companies (those shadowed on the graph1), seem to have taken advantage of the operating cost evolution. On the contrary, a significant number of companies seem to be rather insensitive to operating cost evolution, in that they show up as “value-destroying” companies despite reductions in their operating costs or as “value-creating” companies despite having experienced significant cost increases.

In a further step, we analysed to what extent the companies have been able to control operating expenses. The relationship between the average annual amount of operating costs and the GWh distributed (shown in figure 4) represents the effort that the companies have made to control these costs. Results show the ratio continuously increasing, though the increase has slowed down in recent years.

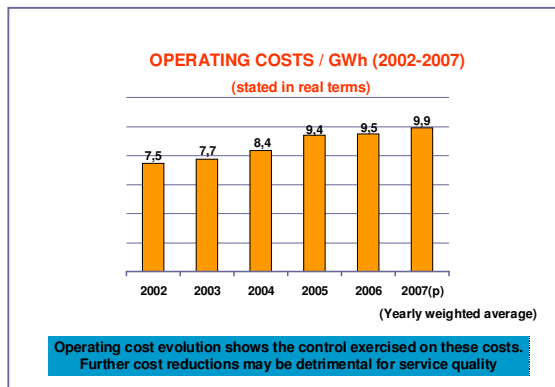


Figure 4: Annual average operating costs per GWh in constant prices

Figure 4 shows that higher operational efficiencies are becoming more difficult to achieve after years of cost control and efficiency efforts. Cost reduction strategies have their own limitations over time. Very demanding efficiency requirements may lead to a vicious circle of value destruction. More operational innovations may be needed but they do not usually arise in the very short term. A strategy based on further cost reductions may only succeed at the expense of quality of service.

Figure 5 analyses whether turnover evolution may be the explanation for value creation or destruction. Similar to the relationship between operating cost evolution and value creation, we checked to see whether the achievement of value creation at the end of the period is the conclusion of a continuous process of turnover growth. The graph

indicates that some companies do follow the assumed direct relationship between turnover growth or decrease and value creation or destruction. However, it is also apparent that turnover increases between zero and 6% have been insufficient for some companies (those shaded on figure 5) to create value. It therefore appears that neither operating expenses nor turnover hold the key to explaining value creation or value destruction in distribution companies. In dealing with capital-intensive companies, the evolution of investment, the analysis of capital costs, and how these costs are affecting incomes should shed more light.

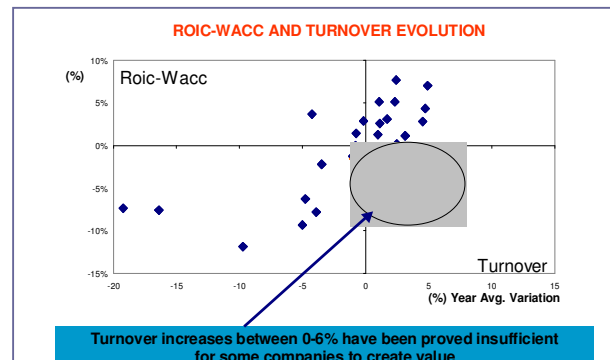


Figure 5: Value creation or destruction and turnover evolution (2002-2007)

### INVESTMENTS AND VALUE CREATION/DESTRUCTION

The investment effort made by the distribution companies has been assessed by relating the earnings before interests, taxes and depreciation (Ebitda), as an indicator of the capacity of the companies to generate cash-flow from operations to capital spending.

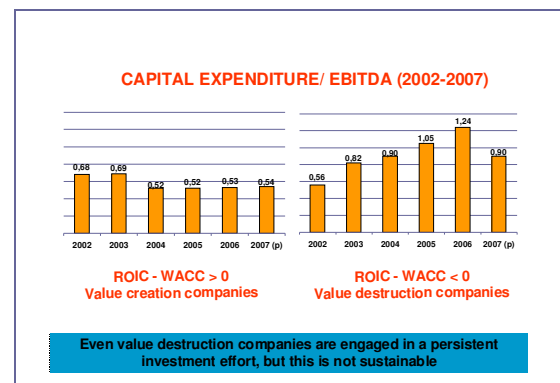


Figure 6: Investment effort (Capital spending / Ebitda) and Value Creation or Destruction (2002-2007)

This relationship focuses on the differential factor regarding investment which exists among the group of companies currently creating value and the group of

companies destroying value. The purpose of this analysis is to judge whether the investment effort made by the companies might be the determining factor for value creation or value destruction. For this purpose, we classified the companies in accordance with their value creation or destruction. This resulted in two groups classified according to the measured investment effort.

The chosen indicator for the investment effort is higher for value-destroying than for value-creating companies. This clearly means that investment remuneration is crucial for value creation/destruction. As a result of the universal service role that they have to play and the service quality requirements they have to meet, distribution companies are forced to invest whether they want to or not. Thus, even value-destroying companies may be engaged in a persistent investment dynamic, even where it is not sustainable. Fair treatment of distribution investments by regulators is then a key issue for value creation/destruction.

In this regard, it is also necessary to highlight the increasing relevance of capital investment in the distribution activity and, as a consequence, how crucial is fair investment remuneration in the framework of the regulation of the electricity distribution business. Figure 7 shows the growth of the invested capital required to distribute one kWh.

As a result of electricity demand growth, the increase in quality of service, replacement of ageing networks and the need to accommodate new renewable power generation plants, the amount of net distribution assets required per GWh is continuously increasing.

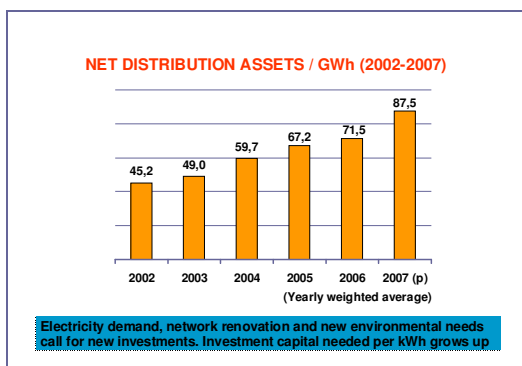


Figure 7: Net invested value per GWh

## CONCLUSIONS

EURELECTRIC's survey reveals that current regulation of distribution investment does not allow most European DSOs to recover their investments at a market rate. In other words, for the majority of the companies included in

the sample, their return on investment is lower than their cost of capital.

The current incentive-regulation in most European countries aims for efficiency gains through reductions in operating expenses. However, after many years of ongoing endeavour to reduce operating expenses, it is deeply questionable whether additional cost reductions can still be achieved. Indeed, further pressure on cost reductions may result in some loss of service quality.

In recent years, European DSOs have made increasing capital expenditure, mainly due to growth in electricity demand and the need to replace ageing distribution networks. The same tendency is very likely to be observed in the coming years since the proliferation of decentralised renewable power plants, the introduction of "smart" technologies that permit better demand management and the increasingly stringent service quality requirements will drive investments upwards. These new investment drivers demonstrate the need for a thorough revision of the remuneration of electricity distribution investments. EURELECTRIC underlines that this regulatory revision must be made in line with the needs of an energy-efficient power system. A strategy based purely on ongoing cost reductions can only be carried out at the expense of service quality.

## REFERENCES

- 1] EURELECTRIC Report 2009, *Business Trends in the European Power Industry: A Revision of the Economic Situation of the Electricity Distribution Business*.