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The scale and patterns of abnormal returns to equity investment in UK electricity distribution

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Abstract

This article explores the scale and behaviour of abnormal equity returns for 12 regional electricity companies (RECs) in the UK. Using the Capital Asset Pricing Model (CAPM) and the Kalman Filter, we estimate time variation in abnormal returns (alpha) and in systematic risk (beta) coefficients. Substantial time variation in both returns and risk is demonstrated, with strong evidence of regulatory and political impacts. The article confirms that significant excess returns have been generated in privatised electricity distribution in the UK. It also suggests that overestimation of systematic risk faced by investors may imply further excess returns in the next regulatory review period. © 2002 Elsevier Science Inc. All rights reserved.

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1. Introduction

Since privatisation of the UK electricity supply industry in 1990, there has been lively debate about the regulation of the industry and the resulting levels of returns experienced by investors. In 1997, a major plank of the new UK government's election manifesto was the levying of a 'Windfall Tax' on privatised, regulated utilities to claw back returns that were seen as unnecessarily high and undeserved. In this article, we address how returns can be

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modelled and the levels of any abnormally high or low returns assessed. We also seek to link the levels and pattern of such returns with the regulation of the electricity industry.

We begin from the perspective that assessment of the levels of returns can only be achieved by reference to the risks taken by investors and by reference to how these risks behave over time. UK utilities are generally not regulated directly by rate of return but rather by price caps based on the RPI-X principle (see, for example, Beesley & Littlechild, 1989; a recent discussion is found in Bernstein & Sappington, 1999). In establishing the level of X in the price cap, the regulator must assess what revenue stream is required to provide adequate compensation for the investment in the utility's assets, considering the time and the risk involved in financing the utility. This determination of the cost of capital critically affects the size of utilities' customers' bills.¹

There has been active and prolonged debate about the cost of capital (unsurprisingly, utility companies tend to argue that it is higher than is estimated by regulators; Offer, 1994, p. 63). The estimation of the appropriate rate in the UK has been dominated by modelling through the Capital Asset Pricing Model (CAPM), which has gained ascendancy and become institutionalised, through its use by regulators and by the UK Monopolies and Mergers Commission (now the Competition Commission, but hereafter MMC) (MMC, 1995; 1997). Contemporary rivals to the CAPM, in particular the Arbitrage Pricing Theory (APT) approach, have attracted speculative comment, but outside the US have gained no allegiance.²

This article uses the CAPM to generate estimates of the levels of systematic risk presented to investors in UK electricity distribution and thence to measure the scale and behaviour of the returns delivered to shareholders. We consider explicitly, however, the variation in both returns and risk over time, since both are present within the data on returns experienced in the life of these privatised companies' equities.

To estimate returns, we need to first address issues in the estimation of risk. Firstly, whether the riskiness of the business is constant over time.³ Secondly, whether any change over time in the risk of a regulated business is endogenous with regulation itself. Then, having modelled and estimated the risk of these UK network utilities, can we assess whether their shareholders have received abnormally high or low returns during the postprivatisation period? This latter question addresses whether the regulation of network utilities, through the RPI-X system, has succeeded in balancing the needs of investors to receive risk-adjusted returns with the interests of the networks' consumers in receiving the benefit of producers' efficiency gains, without the discipline of the perfect market.

¹ The regulator (the Office of Electricity Regulation, or Offer) estimates returns on capital as 19% of distribution revenues in the UK, suggesting that a 1 % change in the cost of capital translates into a two-thirds percent change in the average level of domestic bills (Offer, 1999, p. 6).

² This would appear to be by reason of the problems of parameterisation and implementation of the APT, even where applied to assets such as utilities' equities where there are runs of market data and detailed published accounting information (see, for example, Offer, 1999, p. 84; Ofwat, 1999, p. 133; MMC, 1993; for one US study using the APT, see Elton, Gruber, & Mei, 1994).

³ Critical academic commentary has been predicated upon beta estimates being well-behaved and nontrended, but risk measurement is increasingly recognised as problematic (see UK discussions in Cooper & Currie, 1999; Cooper & Grout, 1993; Robinson & Taylor, 1998).

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