Setting the WACC amid high inflation

Presentation to ERRA Electricity Markets and Economic Regulation Committee (EMER COM)

30 September 2022

ECONOMIC
CONSULTING
ASSOCIATES

www.eca-uk.com

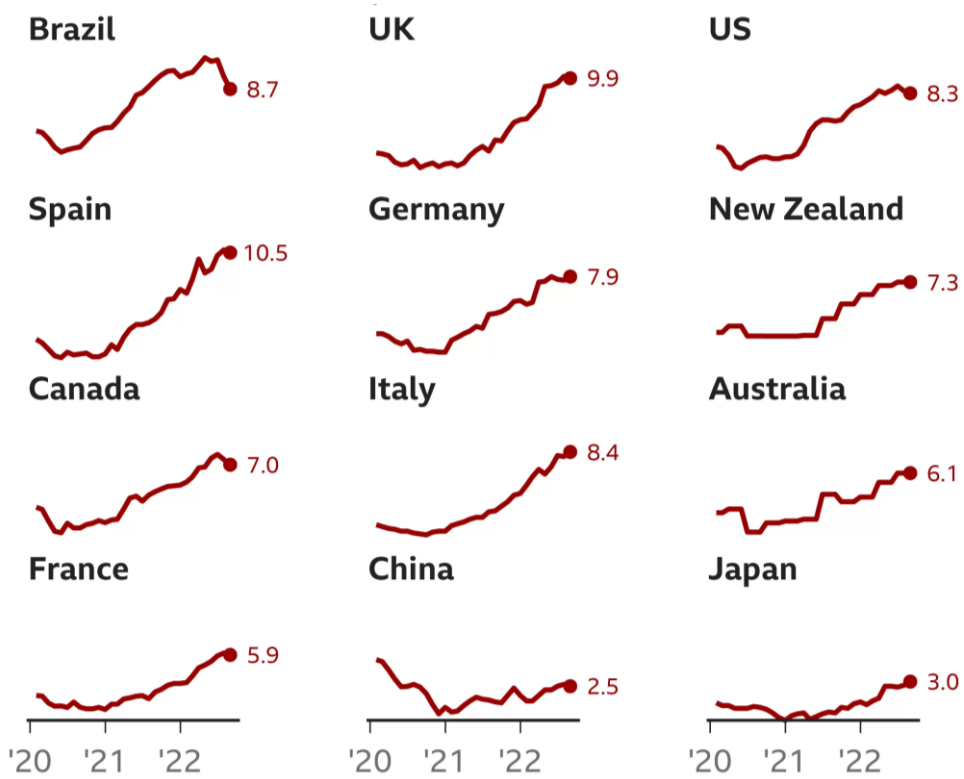
Presentation outline

- Overview of recent inflation and interest rate trends
- Calculating a nominal WACC and a real WACC
- Options to account for inflation in allowed returns / revenues
- What protections and risks from inflation do regulated utilities typically face?

Inflation rates are currently high in most countries …

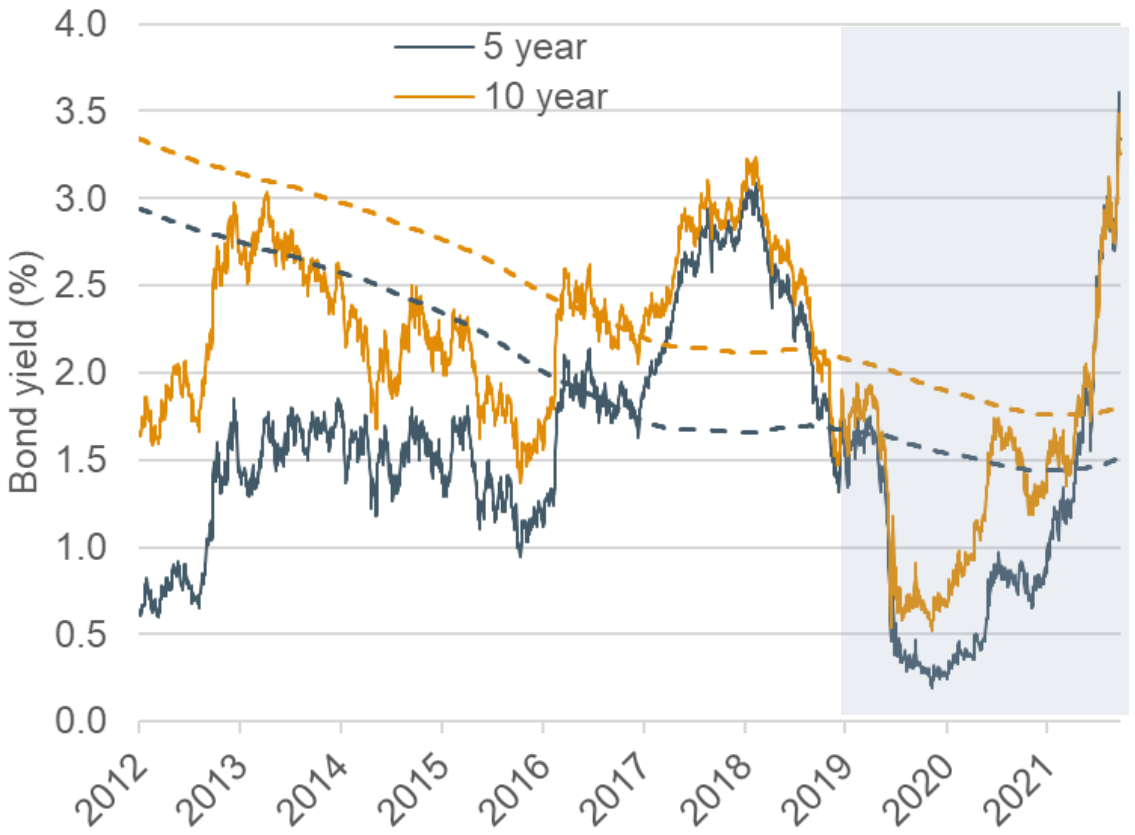
… as are interest rates

Global inflation rates - Sept 2022



Source: BBC

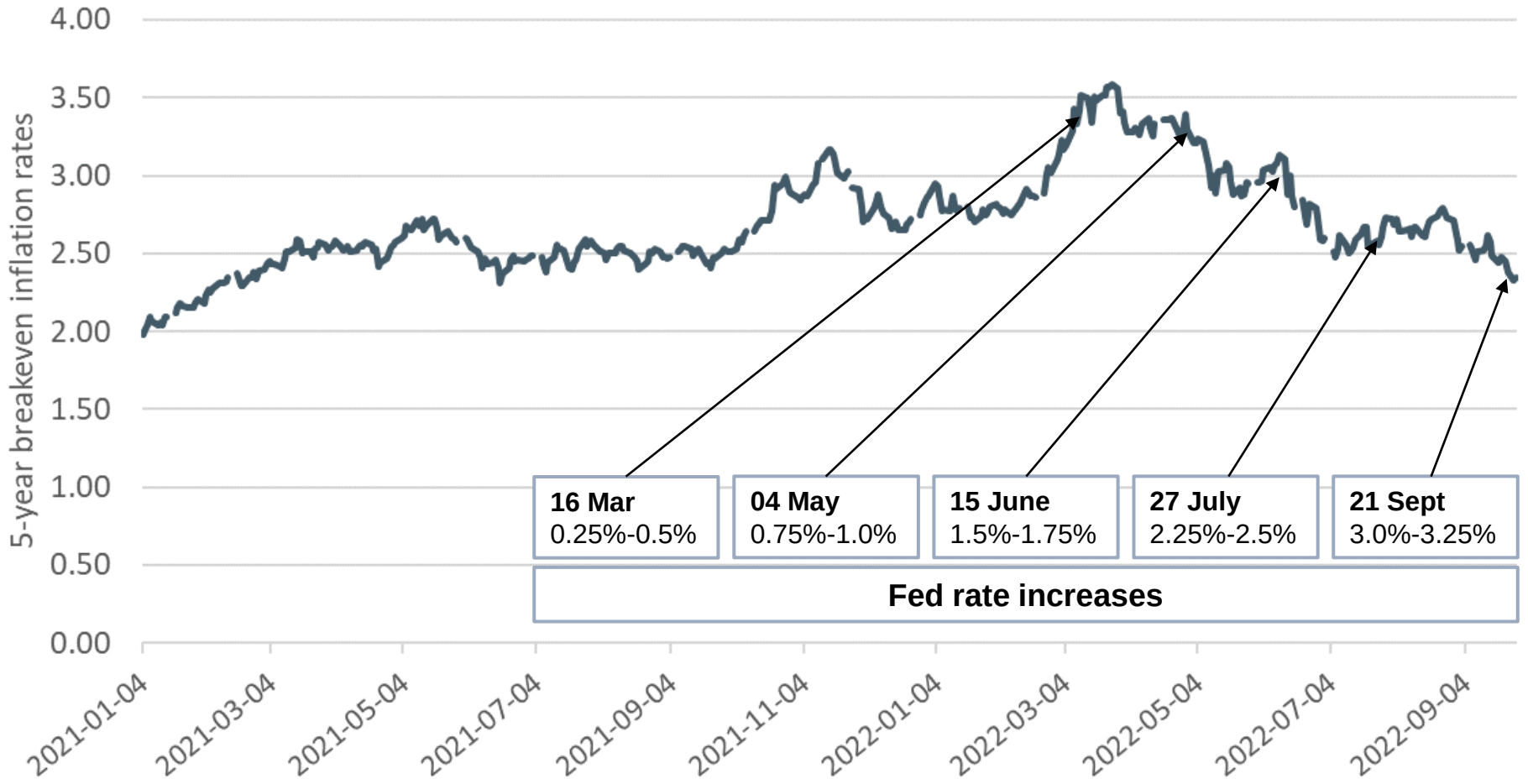
US nominal risk-free rate (10yrs to 27 Sept 2022)



Source: ECA calculations from US Treasury data

Monetary policy links inflation and interest rates

US breakeven inflation rate and Fed rate rises (up to 27 Sept 2022)

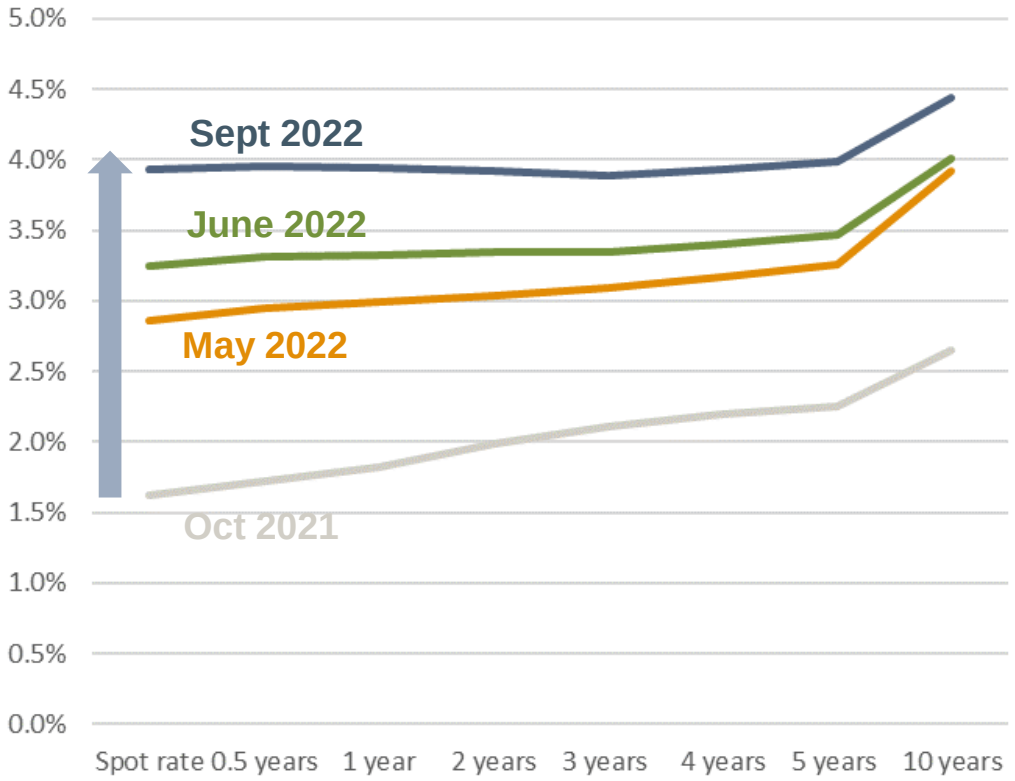


Source: Federal Reserve Economic Data (FRED)

Periods of high inflation often coincide with wider economic uncertainty

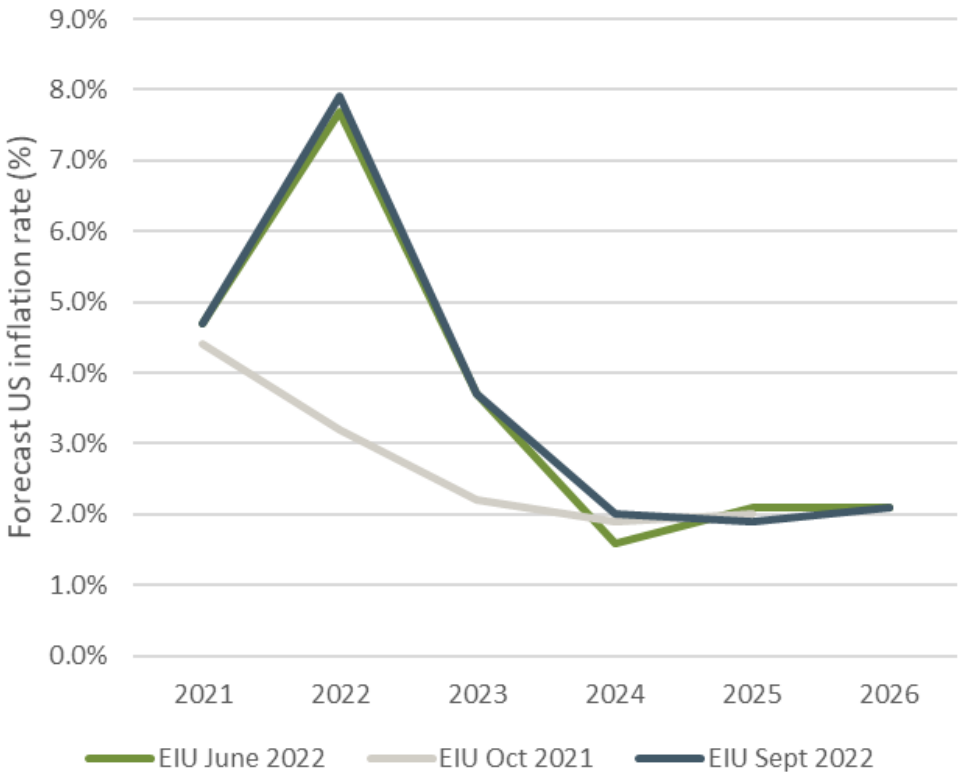
… creating challenges for setting WACC and risks in ongoing price controls

Forward curve of 10-yr US bonds



Source: ECA calculations from US Treasury data

EIU US inflation forecasts – various dates



Source: EIU

Most financial data are expressed in nominal terms …

… so an inflation value is needed to set a real WACC

Nominal WACC = g * R_d + (1 - g) * R_e

g = gearing ratio = debt / (debt + equity)

R_d = nominal cost of debt

R_e = nominal cost of equity, which under CAPM **$R_e = R_f + \beta * MRP$**

Rf = nominal risk-free rate

β = measure of systematic market risk

MRP = market risk premium

Real WACC = (1 + nominal WACC) / (1 + inflation) - 1

- Whist there are incorrect ways to calculate the WACC and to treat inflation, there is no single correct way – the most appropriate approach can depend on circumstances.

The Weighted Average Cost of Capital (WACC) is used in conjunction with the Regulatory Asset Value (RAV) to determine allowed returns

- **Investors care about their real return** so allowed returns (RAV * WACC) should account for inflation
- There are **two main approaches to accounting for inflation** in allowed revenues (including allowed returns). These are equivalent over the long-term, but there are differences in the profile of allowed revenue:

	Approach to treatment of inflation	
	1. Calculate nominal revenues	**2. Calculate real revenues and index them to inflation**
Return calculation	Nominal return = nominal RAV * nominal WACC	Real return = real RAV * real WACC
RAV	The RAV is calculated in nominal terms, with capex added in "dollars of the day" to the previous year's RAV balance without any inflation adjustment.	With real tariffs are indexed to inflation, the RAB is implicitly adjusted by inflation and holds its value over time.
WACC	The WACC is expressed in nominal terms, i.e. including inflation.	The WACC is expressed in real terms, i.e. excluding inflation.
Inflation	Inflation expectations are included in the ex-ante calculations. Ex-post adjustments can be made for actual inflation.	Inflation expectations are used to set the WACC. Actual inflation (with a lag) are used to index revenues and RAV.
Revenue profile	Brings cashflows forward, as nominal WACC is higher than real WACC	Delays recovery of cashflows as part of the allowed return is provided via RAV growth over time

What effects can (unexpectedly) high inflation have?

- There are several **protections for regulated utilities** arising from a **real regime**:
  - Allowed revenues are indexed to *actual inflation* in the regulatory period, i.e. revenues increase with inflation
  - The RAV is adjusted for *actual inflation* at the end of the regulatory period
  - Costs of actual debt taken out in a regulatory period can be used to set the cost of debt for the next regulatory period – meaning the deviations between the allowed cost of debt and actual cost of debt are only borne for the duration of a regulatory period.
- But there are **risks from, or associated with, (unexpectedly) high inflation** in a typical real regime:
  - These arise mainly from the cost of debt which, unlike the cost of equity, is an actual cash outgoing
  - The primary cash flow risk is, arguably, not from inflation, but that borrowing costs (on new debt) unexpectedly increase (which may happen under the uncertainty that often occurs in high inflation periods):
    - The following slide considers how to set a cost of debt allowance to mitigate this risk
  - There is potential cash flow risk, as the above adjustments for actual inflation are subject to a lag (this is a feature of most 'true-up' / 'adjustment' mechanisms as they can only happen once actuals are known).

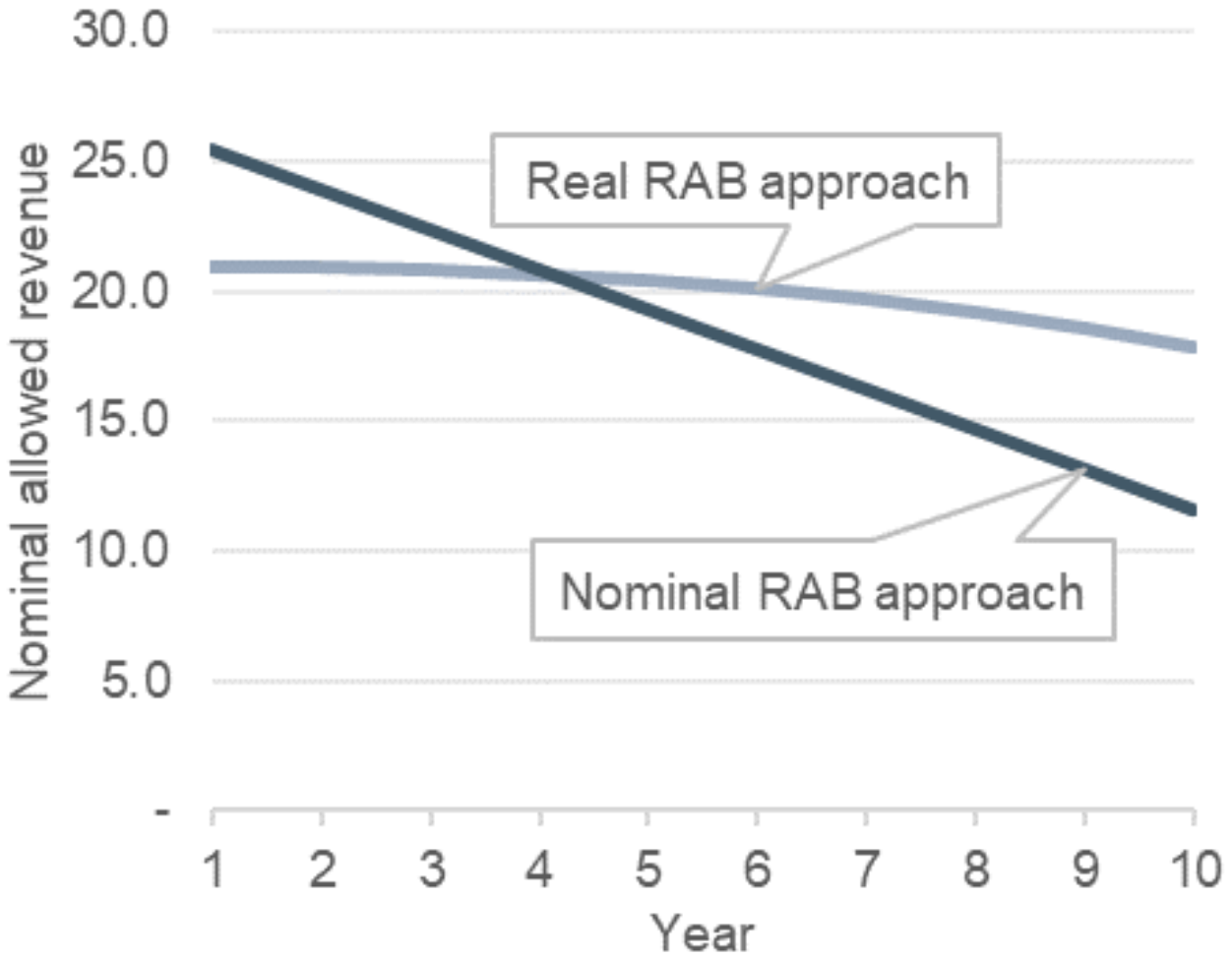
Options for setting a cost of debt allowance

Incentives, risks and indexation

- Traditionally, regulators have set **a cost of debt fixed for the duration of price controls, which:**
  - **Incentivises companies to beat the fixed cost of debt**, as they carry the risk on changes in the actual cost
  - **Protects consumers from changes in the actual cost of debt** that result in it exceeding the fixed cost
  - **Provides more revenue stability / certainty** – which may be of value to both consumers and the company
- More recently, some regulators have set **a cost of debt that varies in the price control period** linked (or indexed) to an independent, efficient cost of debt index – Ofgem and Ofwat in the UK both use this approach, which:
  - **Removes the risk of the regulator setting the cost of debt "too high"** (or "too low") – with the benefit of hindsight
  - **Transfers risk to customers**, from companies, on changes in the actual cost of debt
  - Incentivises companies to beat the cost of debt index
  - Reduces revenue certainty / stability
- Some points to note on the cost of debt indexation approach:
  - It was introduced against a backdrop of (generally) falling debt costs, with regulators over-estimating the cost of debt
  - It requires a debt cost index that is accurate, simple, transparent, credible, and robust (i.e. fully mechanistic, not subjective, cannot be manipulated)
  - It is not a "true-up" for inflation. For example, Ofgem uses an inflation expectation / forecast to convert the cost of debt from nominal to real – actual inflation is not used.

Appendix

Illustration of revenue profiles under the nominal and real revenue approaches



ECONOMIC
CONSULTING
ASSOCIATES

www.eca-uk.com