

STEP 2

Hybrids and Options

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Step 2. Designing Hybrid Plans

- A. Consider modifications to pure price cap regulation (PCR) that may improve its performance.**
- Earnings sharing.
 - Revenue sharing.
 - Allowing corrections for unanticipated, exogenous shocks.
- B. Examine the merits of presenting the firm with a choice among regulatory plans.**

Modifying Pure Price Cap Regulation

- 1. Unlike PCR, rate of return regulation (RORR) can facilitate:**
 - **Earnings stability; and**
 - **Ongoing corrections to inaccurate initial forecasts.**
- 2. It is possible to build these attractive features of RORR into PCR.**
 - **Doing so is not costless, as the disadvantages of RORR accompany the advantages.**
 - **Disadvantages include reduced incentives for cost-reduction, higher regulatory costs, etc.**

Earnings Sharing

A Common Formulation

- **A band is established around the target rate of return.**
 - **All earnings within this band accrue to the firm.**
 - **The band is often 200 – 300 basis points above and below the target rate of return.**

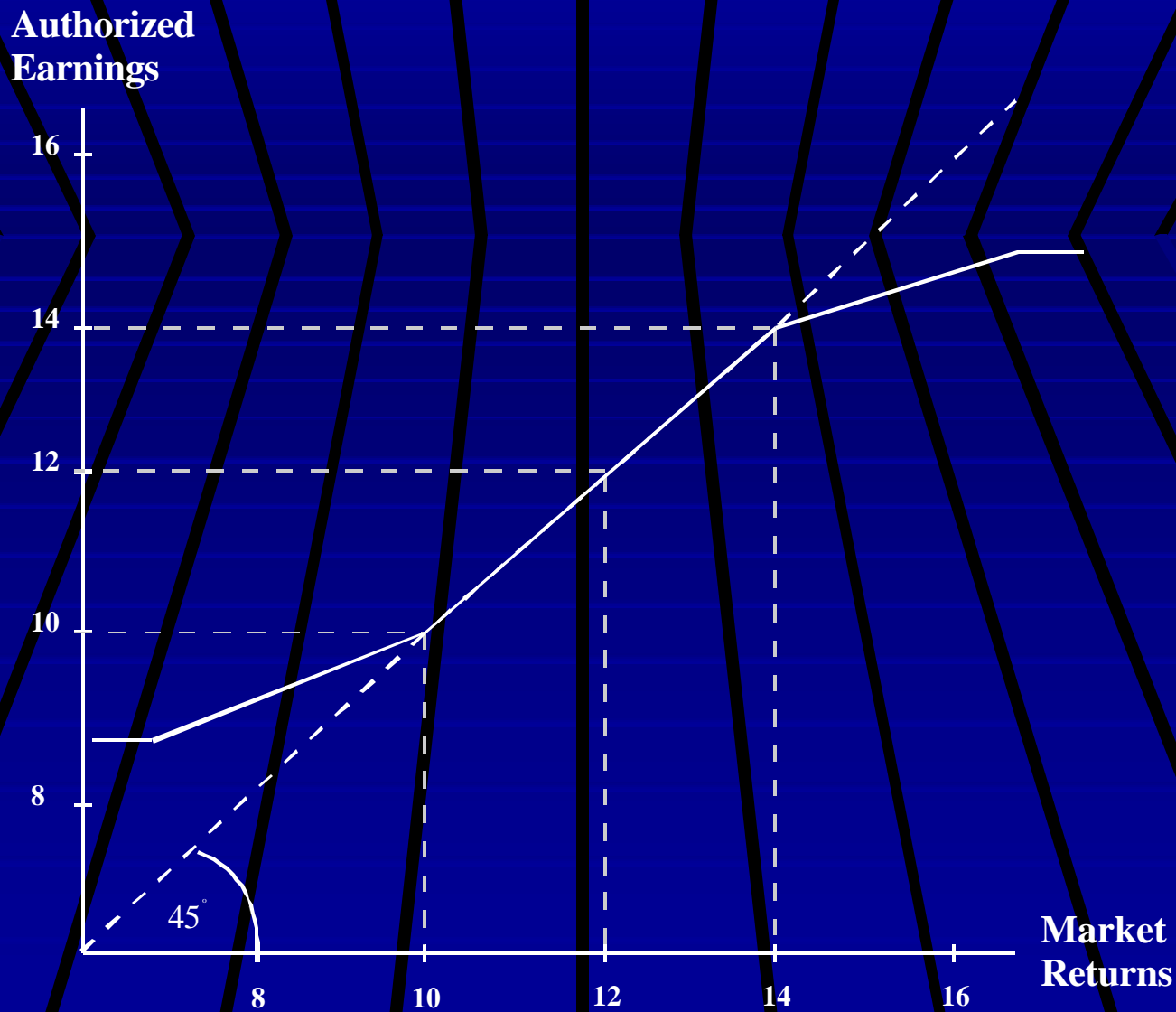


Figure 1. A Common Earnings Sharing Plan.

How Can the Sharing be Implemented?

- 1. Direct annual payments to customers.**
 - **“Dividend checks”.**
- 2. Price adjustments.**
- 3. Network expansion.**
- 4. Network modernization and service quality improvement.**

Benefits and Costs of Earnings Sharing

Benefits.

- **Guards against exceptionally high or low earnings.**

Costs.

- **Dulls incentives for cost reduction and innovation.**
- **Can provide incentives for shifting costs from unregulated to regulated activities.**
- **Requires earnings monitoring.**

Revenue Sharing

- 1. Can ensure more stable earnings without reducing incentives to minimize production costs.**
- 2. Can limit incentives for demand-enhancing activities, such as quality improvement.**
- 3. Entails the sharing of revenues, rather than earnings, above a specified level.**

Examples:

A. Chile: Road concessions.

B. Oregon: Telecommunications industry.

Authorized
Revenues

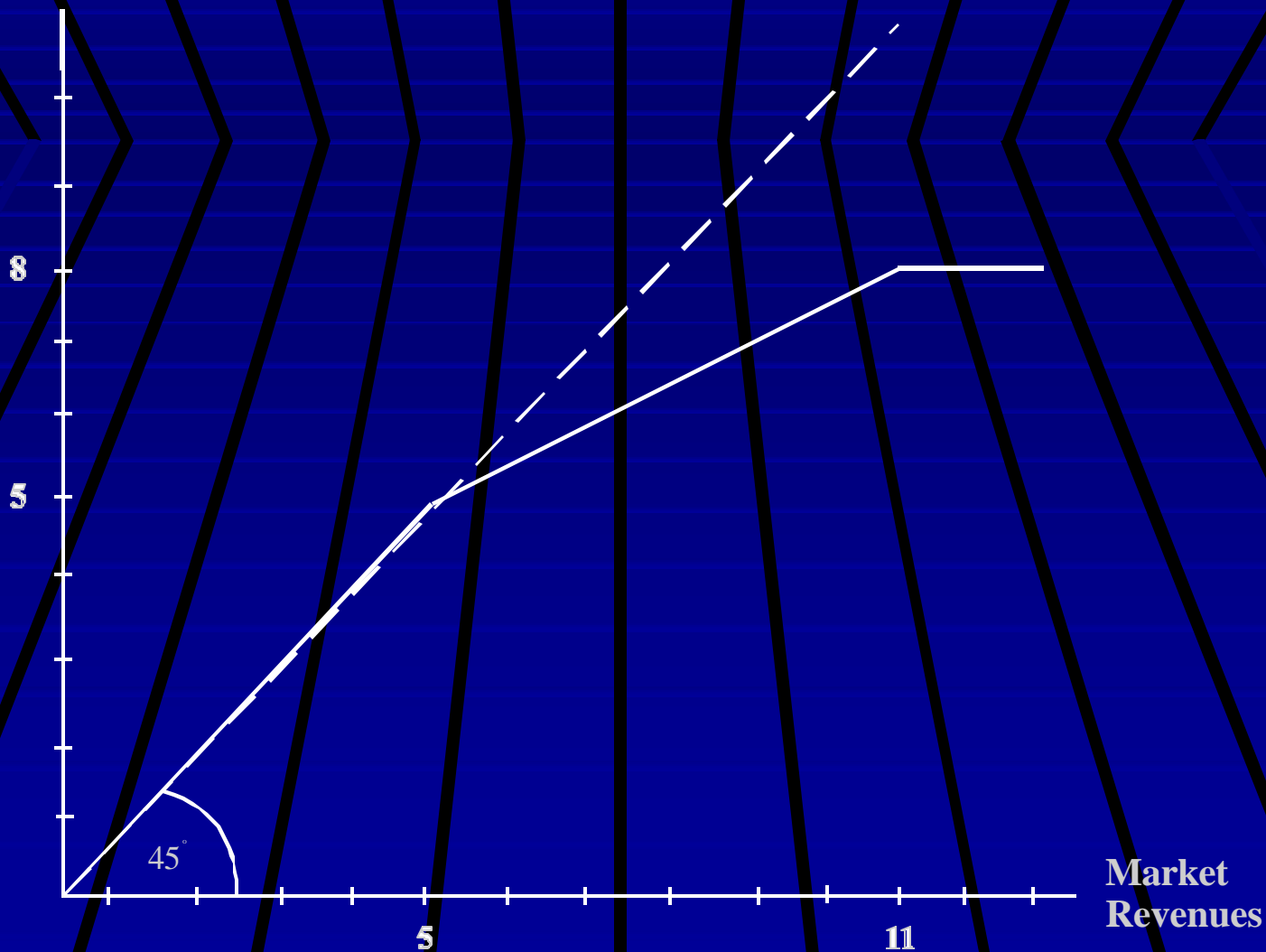


Figure 2. Revenue Sharing.

Exogenous Factors

Question.

Should PCR plans include automatic adjustments for the financial implications of unanticipated industry shocks?

Answer.

Such adjustments can be advisable, if they are employed sparingly.

Accounting for Exogenous Events: The Z Factor

- $\% \Delta p^R = I - X + Z.$
- **The Z factor reflects the financial impact of unanticipated, exogenous shocks.**
- **A positive Z factor reflects an adjustment for higher costs or lower revenues.**
- **A negative Z factor reflects an adjustment for lower costs or higher revenues.**

Characteristics of Events that Should Trigger Adjustments to the Price Cap

1. Exogenous.

- **The event is beyond the control of management.**
- **The financial impact of the event should also be largely beyond management's control.**

2. Pronounced magnitude.

- **To prevent excessive regulatory hearings.**

3. Affect regulated suppliers disproportionately.

- **Avoids double counting.**
- **Economy-wide shocks are reflected in I.**

Examples of Exogenous Factors

- 1. Taxes imposed by the government that fall disproportionately on the regulated firm.**
 - **A special profit tax on the regulated firm.**
- 2. Investment mandates imposed by the regulator.**
 - **Infrastructure modernization.**

3. Pronounced change in input prices for crucial factors of production.

- **Automatic fuel adjustment clauses can be designed to avoid frequent regulatory hearings in the electric power industry.**
- **Full pass-through of actual cost changes is not recommended, in order to provide incentives to search for lower input prices (and to avoid double counting).**
 - **Link pass-through to world prices.**

The Basic Trade-Off

- **By excluding corrections for most or all exogenous factors, the regulatory process can be streamlined, and the regulated firm can be forced to become accustomed to the harsh realities of the marketplace.**
- **By including corrections for relevant exogenous factors, the regulatory process becomes more like rate-of-return regulation, but the firm does not suffer or gain because of events that are beyond its control.**

Summary

- **Adjustments for a limited set of important exogenous factors can capture some of the advantages of RORR without introducing too many of its disadvantages.**
- **The range of possible exogenous factors should be extremely limited, to prevent excessive regulatory hearings.**

Regulatory Options

- **A regulator need not limit him/herself to choosing the best single regulatory plan.**
- **Different plans can be grouped together as a set of options, and the firm can be permitted to select one of the options.**
- **Greater gains can be secured for consumers when the regulated firm is permitted to select a single plan from a carefully-designed set of options than when no choice is permitted.**

Illustration: PCR vs. RORR

- **Suppose a regulator would like to implement price cap regulation (PCR).**
- **However, the regulator is not certain of the firm's ability to reduce its operating costs.**
 - **If the regulator requires inflation-adjusted prices to decline too rapidly, the firm will suffer financial distress.**
- **To avoid such distress, the regulator may set a modest X factor if he/she has decided to implement PCR for sure (i.e., if the firm is not permitted to select a different plan).**

PCR and RORR as Options

- An alternative is to present the firm with a choice between PCR and RORR.
- If the firm knows the maximum X factor it can bear without suffering financial distress, the regulator can set a high X factor under the PCR plan without fear of causing financial distress.
 - The firm will select RORR if the X factor under the PCR plan is too challenging.
- The downside risk from too high an X factor now is an increased likelihood of operating under RORR ... not financial distress.

Example

- **The regulator knows that the firm is capable of reducing inflation-adjusted prices, on average, by somewhere between 1 and 5 percent annually.**
 - **The firm knows its capabilities precisely.**
- **If it can only implement a single pure price cap plan, the regulator may set X close to 1 (e.g., 1.5) to avoid financial distress.**
- **If RORR is available to the firm as an option, the regulator can afford to set a more challenging X factor (e.g., 3), without the risk of financial distress.**

Implications

- **By allowing the regulated firm to choose among regulatory options, a PCR plan that is more favorable to consumers can be secured when PCR is implemented.**
 - **The regulator can afford to implement a more demanding PCR regime if the RORR “safety net” is retained.**
- **The cost of the option is that RORR may be implemented.**
- **But the expected gains under PCR generally outweigh the expected costs under RORR, rendering the use of options an attractive alternative in many situations.**

Observation

- **Options can be particularly valuable if regulation is being imposed on multiple firms.**
 - **One size may not fit all.**
- **The set of options presented to the firm need not be restricted to RORR and pure PCR.**
 - **Pure PCR and an earnings sharing plan may constitute a reasonable set of options.**
 - **The FCC implemented such a set of alternatives between 1995 and 1997.**

Table 1

Earnings-Sharing Options in FCC Regulations for Interstate Access Charges, April 1995

Option	Minimum Earnings	50/50 Sharing of Returns	Maximum Earnings
Option A: 4.0% <i>X</i> factor	10.25	12.25 - 14.25	13.25
Option B: 4.7% <i>X</i> factor	10.25	12.25 - 20.25	16.25
Option C: 5.3% <i>X</i> factor	none	none	none

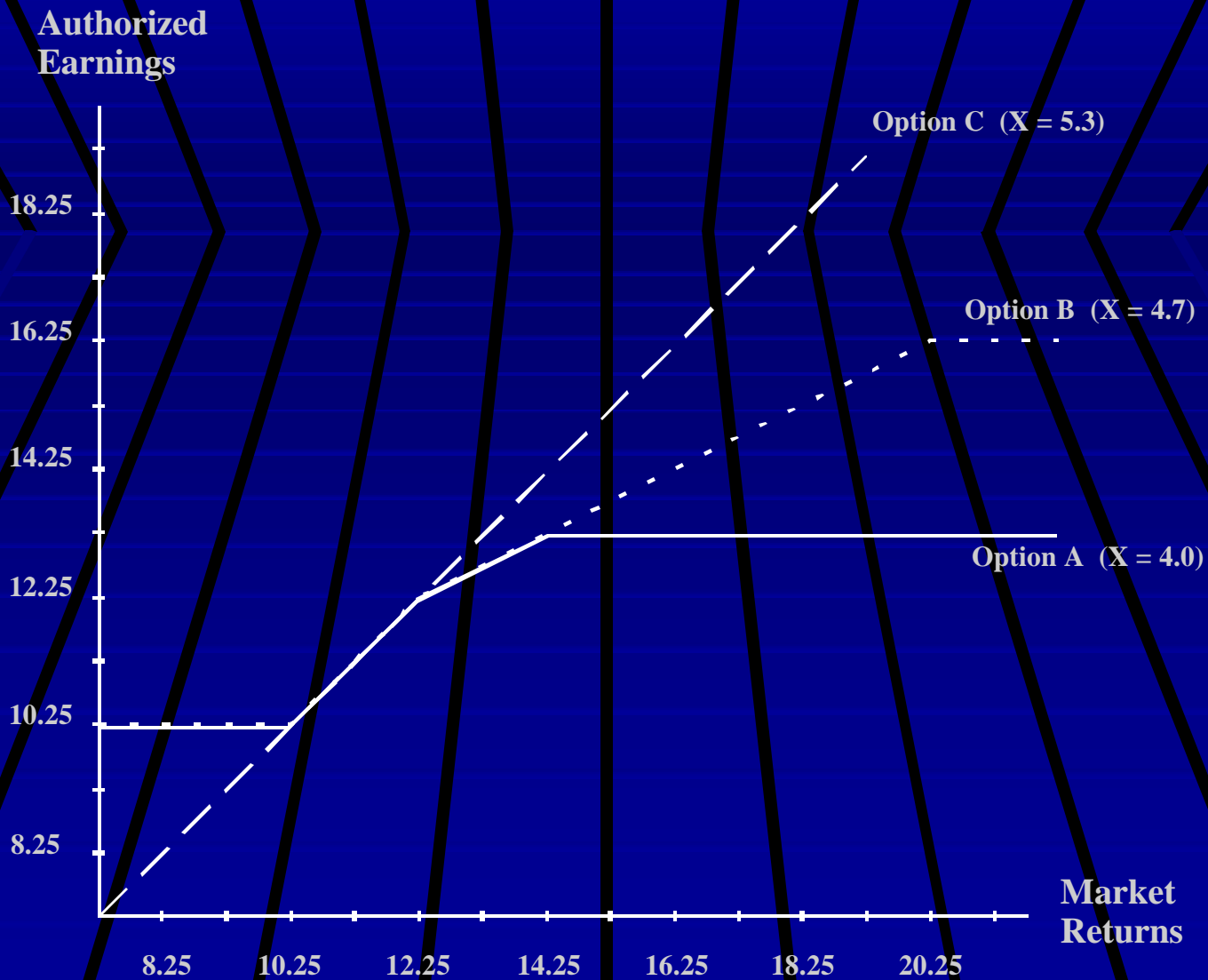


Figure 3. Regulatory Options Under the FCC's 1995 Plan.

Observation

- **The FCC eliminated the three options for the LECs in April of 1997.**
- **Pure price cap regulation became the only option for all LECs.**
- **The X-Factor was set at 6.5.**

Additional Observation

It may be wise to restrict the regulated firm's freedom to choose among regulatory options over time.

- **Unrestricted freedom to switch among regulatory options can invite strategic behavior by the firm.**
- **The firm might conserve on costly undertaking (e.g., maintenance) when it is under PCR, with offsetting increases in these costly undertakings when it is under RORR.**
- **To limit such behavior, the firm may be required to incur financial losses of a specified magnitude or duration under PCR before it can switch to RORR.**

Summary

- 1. It may be advisable to combine distinctive features of different incentive regulation plans. To illustrate, price cap plans might incorporate:**
 - **Z factors.**
 - **Earnings sharing.**
 - **Revenue sharing, etc.**
- 2. The ideal combination of features will depend upon regulatory goals and resources and upon market conditions.**

- 3. Earnings sharing under price cap regulation can guard against extremely large and extremely small levels of earnings, but at the expense of limiting the incentives of incumbent suppliers to reduce operating costs and to excel in the market place.**
- 4. Some limited adjustments for exogenous events under price cap plans can be advisable.**
- 5. Sometimes, it can be advisable to present the regulated firm with a choice among a carefully-chosen set of regulator plans.**
 - Doing so can lead to gains for the firm, the regulator, and consumers.**

Summary of Analysis

- 1. Price cap regulation requires real prices to fall, on average, by an X factor.**
 - Calculation of the ideal X factor is not straightforward, but is guided by sound economic principles.
- 2. Price cap plans often restrict movements of individual prices, impose service quality standards, and incorporate adjustments for exogenous factors.**
- 3. Price cap plans can also incorporate earnings sharing.**
 - Earnings sharing ensures less extreme earnings, but dulls incentives for superior performance.

4. Scheduled reviews of price cap plans can take many forms.

- **Profit reviews make PCR function much like RORR.**
- **Alternative reviews can provide stronger incentives for superior performance by the regulated firm.**

5. Careful empirical work is required to assess the merits of price cap regulation in particular settings.

Appendix: Other Hybrid Plans

1. **Yardstick Regulation.**

- **Holds individual firms to the standards set by other firms, rather than to absolute, exogenous standards.**
- **Can be valuable when regulatory information is limited and firms have similar operating circumstances.**

Example: **UK water industry.**

2. **Price caps with higher allowed prices to finance approved investment projects.**

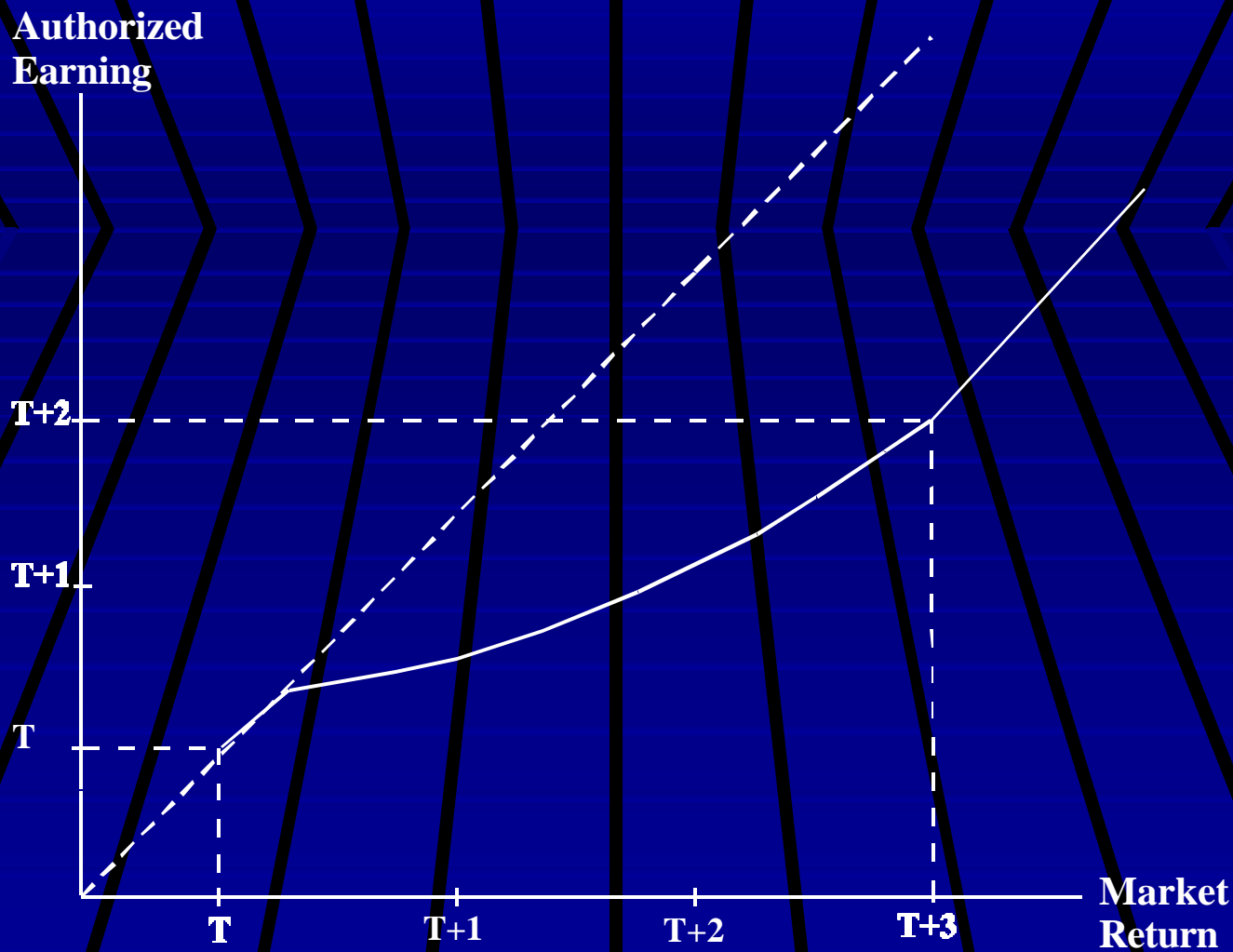
- **K factor in Argentina's gas industry.**
- **Q factor in UK water industry.**

3. Earnings Sharing with a Reverse Taper.

- **Providing the firm with a diminishing share of incremental earnings can be politically attractive.**
- **But a diminishing share of incremental earnings for the firm can discourage large cost reductions.**
- **Earnings sharing plans that give the firm an increasing share of incremental earnings have been implemented.**

Basis Points Above Approved Rate of Return	Company/Customer Split
0 - 25	100% / 0%
25 - 75	25% / 75%
75 - 100	35% / 65%
100 - 125	45% / 55%
125 - 150	55% / 45%
150 - 175	65% / 35%
175 - 200	75% / 25%
200 - 250	85% / 15%
250 - 300	95% / 5%
> 300	100% / 0%

Table 1: Earnings Sharing Plan for SDGE.



T = Target Rate of Return

Figure 4. The SDGE Earnings Sharing Plan.