

USAID FROM THE AMERICAN PEOPLE

1



TRADE AND INVESTMENT REFORM SUPPORT PROGRAM IN AZERBAIJAN

Financing and Cost of Capital estimation for Regulated Enterprises

ERRA/NARUC Regulatory and tariff Workshop Baku, Azerbaijan July 2008

Hasso C. Bhatia, PhD Utility Sector Adviser USAID Trade and Investment Reform Support Program

Basic Principles of Utility Regulation

- Maintain financial integrity of the utility
- Customer right to reliable service at reasonable rates
- Utility entitled to opportunity to recover costs, plus adequate profit
- Utility must prove costs are reasonable and prudent

Basic Principles of Tariff Regulation

- Practical Considerations
 - Ease of metering & billing
 - Customer Understanding
 - Available Technologies
- Legal Considerations
 - Statutory Authority
 - Federal and State laws

Major Cost Components of Service

- Operations and Maintenance Expenses (incl.fuel and purchased power)
- Depreciation and Amortization (return of investment)
- Taxes (other than income)
- Income Taxes
- Required Return on Investment (interest and profit)

Major Cost Components of Service

• Rev.Req. = [O&M + Dep.+ Other Taxes] + [Rate Base x ROR] + Income Tax

Rate Base represents net value of and equipment placed in service to customers.

Rate of Return Determination in Tariff-setting

Key principles in return estimation :

- Fair and Reasonable
- Attracts Investors and Lenders

Basic Factors

Consider circumstances of

- Enterprise
- market
- regulatory and legal authority
- rate payers

Basic Principles of Fair Rate of Return

Maintain Financial Soundness

- Return adequate to enable issue new securities
- Efficient use of capital resources to maintain authorized return
- Commensurate with risk in the enterprise
- Attract New Capital and Lenders
- Recognition of systemic risks

Types of (components of) Capital

Long-term Debt

- Mortgage Bonds (secured by general assets of the utility)
- Unsecured Debt
- Non-recourse loan, except to pledged asset
- Debt Service: Agreed principal & interest payment
- Sinking fund: means pay interest and principal in each period
- Interest expense deductible for income tax
- Typically actual interest expense included in cost of service

Other forms of debt capital:

- Short-term working capital
- Lease financing; project financing; bridge financing
- Asset-based financing, pledge of receivables, factoring

- Pollution control bonds similar to municipal bonds: tax free interest to investors therefore low cost to borrower

Bond ratings

Rating agencies:Moody's, S&P; Fitch

- Consider risk of issuer
- Risk in particular issue: each issue structured differently
- Business risk of the enterprise vs systemic (market) risk
- Bond default could lead to bankruptcy

Preferred Stock....

5-10% in the capital mix

- Debt and Equity Characteristics
- Fixed dividends guaranteed
- Cumulative i.e if dividend missed in one period becomes cumulative to next
- With or without redemption features, often 25 years
- Stock Holder Rights: Junior to Debt Holders, but senior to equity
- Higher Return Expected than Debt
- Interest Expense not deductible for taxes
- Treated as equity on balance sheet- lowers risk perception $_{12}$

Common Equity: shareholders equity

- Paid-in-Capital
- Retained Earnings (net earnings from operations minus dividend paid to shareholders)
 - No guaranteed dividends
 - Equity holder has last rights
 - No upward ceiling on return
 - No downward floor; no guarantee of dividend or principal
 - Highest risk, highest return potential

Capital Structure

- Percentage of Debt and Equity defines capital structure
- Leverage of the enterprise capital, e.g 60:40 debt to equity mix means 60% leverage
- High leverage indicates high risk
- Coverage Ratio: annual-earnings/ annual debt service
- Higher coverage means less risk
- Equity cost typically (not always) higher than debt cost
- Regulator wants to keep balanced ER
- Generally, higher equity means higher tariffs
- Higher equity ratio could lower borrowing costs

LEVERAGE

- Leverage can be effectively used to reduce overall financing costs since debt cheaper than equity
- High leverage is a measure of risk in the enterprise and lowers coverage ratio
- Regulators often use target or optimal capital structure for rate making
- Sometimes utilities use double-leverage:
 - Parent company uses borrowed funds and invests as equity in the subsidiary to demand higher return
- Regulators typically disallow such practice for tariff purpose

Example of Cost of Capital

Type of Capital	Proportion (%)	Rate	Cost Component of return
Long-term Debt	60	0.08	4.8
Preferred Stock	5	0.10	0.5
Common Equity	35	0.12	4.2

Weighted Average Cost of Capital 9.5% (WACC)

Zero Cost Capital

- DFIT: Deferred Income taxes
- ITC : Investment tax credits
- JDITC: Job Development tax credits
- DFIT arises from accelerated depreciation for tax purposes but straight line for regulatory purpose
- Tariffs include full tax liability of utility but it is allowed to defer payment to Govt.
- The deferred amount is treated as capital advanced to utility at zero cost

Estimating Equity Return

- Forward Looking Approach
- Represents Opportunity Cost of Money
- Capital Attraction
- Recognize Investment Risk
- Prevailing Market Conditions
- Use of financial theories and models

Comparable Earnings Method

- Compare earned returns of enterprises with similar operational and risk characteristics
- Typically analyze 20 or so comparable enterprises
- Adjust for any special events

Price-Earnings (P/E) Ratio Method

- Assumes market prices self-adjust to their book value (in equilibrium)
- Maintain constant Price/Earning ratio within the industry
- P/E of 7 suggest 15.5% return on equity

Discounted Cash-Flow (DCF)

Theory: <u>Current market price reflects present value of</u> <u>expected future cash-flows</u>

(Model widely used for utility analysis in US)

Formula reduces to:

k=D/P+g

k = estimated current cost of common equity (RoR)

- D = current dividend per share
- P = current market price of the common share
- g = assumed dividend growth rate expected for utility

Example

k=D/P + g	
D = \$1	g = 6%
P = \$20	D/P = 5%
k = 5% + 6% = 11%	

D and P are well published numbers

Return estimation thus reduced to estimating expected dividend growth rates

Several refinements of this model are utilized by analysts

Capital Asset Pricing Model (CAPM)

Compare market returns with other investments with varying risks and with risk-less return, e.g US Treasuries

RoR= Risk- free return + risk premium

- pure rent/ real return (risk-free return)
- inflation factor
- risk adjustment
 - systemic (external)
 - non-systemic (internal to the company)
 - Volatility Index "beta", [-1,+1] measures company vs. market volatility

CAPM Example

 $\mathbf{R}\mathbf{p} = \mathbf{R}\mathbf{f} + \mathbf{b}(\mathbf{R}\mathbf{m}-\mathbf{R}\mathbf{f})$

Rp = expected return **Rm** = market rate of return

Rf = risk-free return b = beta (index of volatility)

If,

Rm = 12%, Rf = 7% b = 0.8

then,

Rp = 7 + 0.8 (12-7) = 11 %

ROR Estimation

- Regulator does not rely on any single method, rather uses combination of methods
- Financial analysts often debate on merits and applicability of each method to the particular case on hand
- Disagreement often on assumptions: growth rates, inflation, relevance of data, etc

Applicability to Azerbaijan

Currently Limited tariff application for Azerbaijan

- No Historic Experience
- Internal Accounting and Financial Structure not amenable to data
- Lack of efficient security markets
- No adequate market or measure of risk-less securities
- However TC and specialists need to become knowledgeable about analytical techniques, tools as they begin to deal with international investors and lenders, IPPs



THANK YOU !