

1 EXECUTIVE SUMMARY

The Tariff Authority on Major ports has the power to set the tariffs to be charged by the Major ports and the private terminals therein. TAMP has adopted a cost plus assured rate of return approach for estimation of the tariffs to be charged for the various services provided by the ports. TAMP has mandated CRISIL Infrastructure Advisory to review the existing rate of return regulation adopted for major ports and the private terminals and recommend modifications, if necessary. TAMP has also mandated CRISIL Infrastructure Advisory to look into various issues such as treatment of social obligation assets, method for linkage of return with utilization of the assets, method for assessment of the reasonableness of the investments, working capital norms, etc. The findings of each of these issues are summarized in the following sections.

1.1 Rate of return regulation

We have examined the pros and cons of the existing Return on capital employed (ROCE) approach adopted for the major ports and the Return on equity (ROE) approach adopted for the private terminals.

The objective of an assured rate of return regulation is to award a return on the asset class based on the risks in respect of that asset class; ownership of the asset is immaterial. Going forward, the risks associated with all the players will be of similar nature. Hence in our opinion, there should be a uniform rate of return approach applicable to the major ports as well as the private terminals and the allowable returns should be measured on the same yardstick.

We recommend that the *Return on capital employed (ROCE) approach be adopted for estimation of allowable returns to the major ports as well as the private terminals.*

The reasons for the selection of this approach are discussed below:

- It is simpler to define the capital employed for an entity, be it a corporate entity or a trust.
- The ROCE approach allows for financial engineering by the firm to optimise its cost of capital in line with the allowable return. The port trusts are now liable to pay income tax and hence debt funding would be a good option to lower the cost of capital of the port trusts as the interest outgo on the debt provides a tax shield.
- The port trusts would then need to be accountable to the lenders and adopt prudent investment norms / criteria. This would also promote the objective of the regulator to “assess the reasonableness of investments”. The financial discipline would be a first step towards eventual corporatisation of the port trusts.

The allowable rate of return under the ROCE approach is based on the estimation of the cost of capital (CoC) for the firms operating in this sector and is discussed in the following section.

1.2 Estimation of allowable rate of return

We evaluated various approaches for determination of the Return on equity to be considered for estimation of allowable return on capital employed. We have adopted the Capital Asset Pricing Model (CAPM) because the key elements that go in favor of the CAPM framework vis-à-vis the other approaches are its ease of application, relatively accurate estimates for the cost of capital (CoC) and the widespread acceptance of this method in the regulatory community, the investing community and the financial community.

The key parameters that determine the CoC under the CAPM framework are the Risk Free Rate (R_f), the Market Risk Premium (R_m), the Equity Beta (β_e), the Debt Risk Premium (R_d) the capital structure for the industry as determined by the debt-equity ratio and the tax rates applicable to the industry.

Risk Free Rate –The currently prevailing risk free rate in India is in the range 6.5% – 7.5% with a mid-point estimate of 7.0%. The risk free rate is based on the transaction-weighted yields on GoI bonds having a residual maturity of around 10 years considered over the period July to December 2002. Thus, the CoC has been determined using a R_f of 7.0% and would be applicable over the prescribed tariff review period. However, in case yields on the 10-year Government bonds move outside the prescribed range, we recommend resetting the CoC based on the latest average yields taken across the preceding half year.

Market Risk Premium – As per our assessment, the prevailing market risk premium in India is in the range 6.0% - 7.0% with a mid-point estimate of 6.5%. The market risk premium is based on our analysis of the premiums calculated using several methodologies on various indices. Some of the methodologies discussed during this process were the daily average returns, the geometric mean returns and the returns based on a systematic investment plan. Some of the indices used for the purpose of estimation were domestic indices like the BSE Sensex, the S&P CNX Nifty, and global indices like the S&P Global 1200, the S&P CNX Defty, the S&P 500 and the Dow Jones Industrial Average. In addition, other methodologies like a limited survey of market premiums actually being used by companies in India, the Dividend Growth Model and a Country Risk Premium method are also discussed. Details on the advantages and disadvantages of each of these methods are discussed later in the report. *The CoC calculations in the report use a $R_m - R_f$ of 6.5%* and would be applicable over the prescribed tariff review period, and we recommend a review of the market risk premium during the next review period.

Beta – Given the risks inherent in the business, we recommend using an **asset beta of 0.5** for the purpose of estimating the CoC for port sector. The recommended asset beta is based on an analysis of historical asset betas for International port entities and asset beta of other regulated sectors in India such as Power, telecom, fertilizers. The beta may be reset based on the latest data available in each tariff review period.

Cost of debt – We have undertaken an analysis of the risk profile of the port sector (refer Annexure I) and as per our assessment, the industry risk premium would be between 5-6%. While it would be appropriate to band the entire sector into a single risk basket, we have considered the status of this sector where majority of the assets continue to be owned by the Government. We have also considered the lower end of the band for the port trusts primarily due to the diversity of the cargo mix, availability of captive cargoes and the fact that the Port trusts are entirely owned by the GoI.

Hence, considering the prevailing risk free rate of 7%, it is recommended that 13% cost of debt be considered for private terminal operators and 12% in the case of port trusts.

Capital Structure - We recommend using a Debt-Equity ratio of 1:1 for the estimation of the CoC. The D: E ratio is based on the assessment of the capital structure at which the projects in the sector would be able to raise finances.

Tax Rates - We have used the prevailing marginal tax rate of 36.75% for estimating the CoC for private operators and 31.5% for the port trusts. It is recommended that the allowable rate of return be reviewed in case of any revision in the tax rate.

Allowable return on capital employed – Based on the above analysis, the pre-tax Cost of capital and hence the allowable return on capital employed for port sector in India is outlined in the table below:

Table 1. Computation of ROCE

		Basis	Port trusts	Private terminals
Risk Free Rate	R_f		7.00%	7.00%
Debt Risk Premium	R_d		5.00%	6.00%
Pre-Tax Cost of Debt	C_d	$= R_f + R_d$	12.00%	13.00%
Market Risk Premium	$R_m - R_f$		6.50%	6.50%
Asset Beta	β_a		0.5	0.5
Gearing	G		1.0	1.0
Tax Rate	T		31.50%	36.75%
Equity Beta	β_e	$= \beta_a * (1 + (1-T) * G)$	0.84	0.82
Post Tax Cost of Equity	c_e	$= R_f + \beta_e * (R_m - R_f)$	12.48%	12.31%
Tax Scale-up Factor	T_f	$= 1/(1-T)$	1.46	1.58
Pre-Tax Cost of Equity	C_e	$= c_e * T_f$	18.21%	19.46%
Weightage for Debt	W_d	$= G / (1+G)$	0.5	0.5
Weightage for Equity	W_e	$= 1 / (1+G)$	0.5	0.5
Cost of Capital (CoC)	CoC	$= W_d * C_d + W_e * C_e$	15.11%	16.23%
Recommended ROCE			15.00%	16.00%

It is recommended that the allowable rate of return be reviewed in case of any change in the tax rates, or there is an upward or downward revision in the risk free rate in the economy to the extent of 0.5%.

1.3 Definition of capital employed

Capital Employed is defined as “Net Fixed Assets + Working Capital”. **Net Fixed Assets (NFA)** is equal to “Gross Block – Works in progress- Depreciation”.

Working Capital (WC) is equal to “Current Assets (exclusive of cash/deposits relating to reserve funds)-Current Liabilities”.

Table 2. Working capital norms

Element	Definition	Allowable
Debtors	Days of operating income	30
Cash	Days of cash operating expenses	30
Stores inventory	Days of stores consumption	180

1.4 Other issues

TAMP has also referred various other issues to CRISIL and our findings and suggestions in this regard are given below.

1.4.1 Social obligation assets

We suggest that the assets of the port trusts be classified into the following categories:

Table 3. Working capital norms

Asset	Definition	Recommendation
Business assets	Assets that can be directly identified as being created for the port business	Such assets be considered for estimation of allowable ROCE
Business related assets	Assets which may not be directly used in the business but which have been created for supporting the business. For e.g – hospitals, schools, etc	Such assets be allowed recovery of their variable and fixed expenses, but the allowable ROCE be restricted to the risk free rate, which is determined to be 7% currently.
Social obligation assets	Assets which have been created for the use of community at large for e.g – sports stadium, etc	Within a fixed time frame, such services be made self sustaining. Till such time, all variable and fixed costs allowed as expenses for estimation of tariff but not eligible for any ROCE.

A simple test that could be applied while identifying whether the asset is a business related asset or a social obligation asset could be to identify the users of such assets. **If more than 75% of the users are port trust employees, then such asset could be treated as a "Business related" assets, else as a social obligation asset.**

In the future, all major assets, which are created, be classified on the above basis before undertaking any large capital expenditure so that at the investment clearance stage it is clear that the asset created may or may not be allowed a return depending on the category in which it lies.

1.4.2 Method for assessment of reasonableness of investment

We understand that presently, the capital investment made by port trusts / the private terminals is not approved by TAMP. However, since the investment decision subsequently has a bearing on the tariffs, the regulator is concerned about the reasonableness of such investments.

In view of the above, our view is that the following principles be used for assessment of the reasonableness of the investments. Has the investment resulted in:

- Reduction in operating costs
- Additional traffic / business
- Improvement in operating efficiency
- A combination of any / all of the above

1.4.3 Linkage of return with utilisation of assets

As per the present cost plus approach, all the costs, including depreciation are allowed to be recovered for estimation of tariff. Hence, in principle, the returns to be allowed on the capital employed may be adjusted for the capacity utilisation of the facilities.

The capacity of a port may be viewed as a balancing pipeline analogy, wherein the capacity of a port (measured as cargo throughput handled) is a function of the capacity of the channel, the berth and storage capacity, the cargo evacuation capacity (gate, rails, etc.) and the productivity, work practices. Hence, it is a difficult task to assess the capacity of a port. The task gets further complicated if the capacity is to be assessed for a multi-cargo handling port such as the Indian major ports.

The other issue is that in competing ports, excess capacity is an operational necessity being the only way to provide quick turnaround times to ships and thus maintain or increase patronage. Further, simple single channel mutiserver queuing theory shows that once a port reaches 70% capacity utilisation, congestion ensues. Hence excess capacity may also be seen as an unavoidable cost rather than an indication of inefficiency and wastage of resources.

We have reviewed the method currently used by TAMP for correcting the allowable returns in line with the capacity utilization of the service provided. Considering the issues relating to capacity as mentioned above, we suggest that the present mechanism of linkage of utilization of assets with the returns be continued and in the case of port trusts, for activities / services where it is possible to define a capacity for the service, the tariff charged for that service be set such that the returns are adjusted for the capacity utilization of the assets.

1.4.4 Technical service fees or royalties payable

We are also required to devise a suitable methodology for evaluating appropriateness of expenses such as Technical service fees payable to parent companies of the private operators and royalties bid by operators.

Technical services fees

We have reviewed the regulatory precedent in other sectors regarding the method for evaluating the appropriateness of expenses such as technical service fees or royalties payable to parent companies of the private operators. We have not been able to find a regulatory precedent in this regard.

We have reviewed the transfer pricing regulation, which define the parameters on which two entities may be considered to be associated enterprises, which is relevant for understanding this case.

In case of any contractual arrangement in the nature of provision of technical know-how or assistance, marketing assistance, training assistance or financial service assistance between an entity and the private terminal operator.

In order to decide whether such expenses be allowed as an expense for estimation of tariff, following guideline may be adopted:

“If an entity is defined as an associated entity of the private terminal company as per Section 92(A) of the IT act, such expenses may be dis-allowed”.

Royalty

In relation to the payment of royalty, the existing bidding process suggests that the bidders (prospective terminal operators) bid for the royalty to be paid to the port trusts in order to win the BOT contract.

Any bidder, in order to ascertain the amount, which can be offered to the port trust as a royalty, would first assess the revenues, operating costs and the profits, which can be generated over the period of the concession agreement. Depending on the bidders return expectations on the project, he would then decide the amount, which he would be willing to pay as a royalty to the port.

By transferring royalty payments to the user, the bidder is transferring his entire commercial risk, which otherwise he would have borne. Also, allowabilty of Royalty payments as pass-through will encourage high royalty bids. Having carefully considered the impact of allowing royalty payments as pass through expense, **in our opinion, royalty may not be included as an expense to estimate the tariff charged by a terminal operator.**

1.4.5 Development and renewal fund for port trusts

The above rate of return recommended is a composite rate and includes the 'compensation in respect of replacement and development funds which where hitherto separately denominated for Port Trusts. There is no rationale for any additional return over and above the allowable return on capital employed, recommended for the port trusts. However, the existing practice of apportionment of the allowable return of 3% each for the purpose of replacement and development funds may be continued by the regulator and the Port trusts.

It is important that the funds so created be used for the specified purposes only and any business assets created against the specified reserves should also be allowed the allowable return on capital employed specified.