

COST OF CAPITAL AND VALUE BASED REGULATION- A CASE STUDY OF INDIAN TELECOM SECTOR

INTRODUCTION

In the regulated telecom scenario, cost of capital will be one single unifying factor using which the enterprise as well as the regulator would aim at value creation. In a way, we can call it value convergence in that all stake holders in the regulatory process strive towards value creation at the end. This can be visualized in the figure-1 which shows various inter linkages in the process of value creation by the stake holders in the regulatory system.

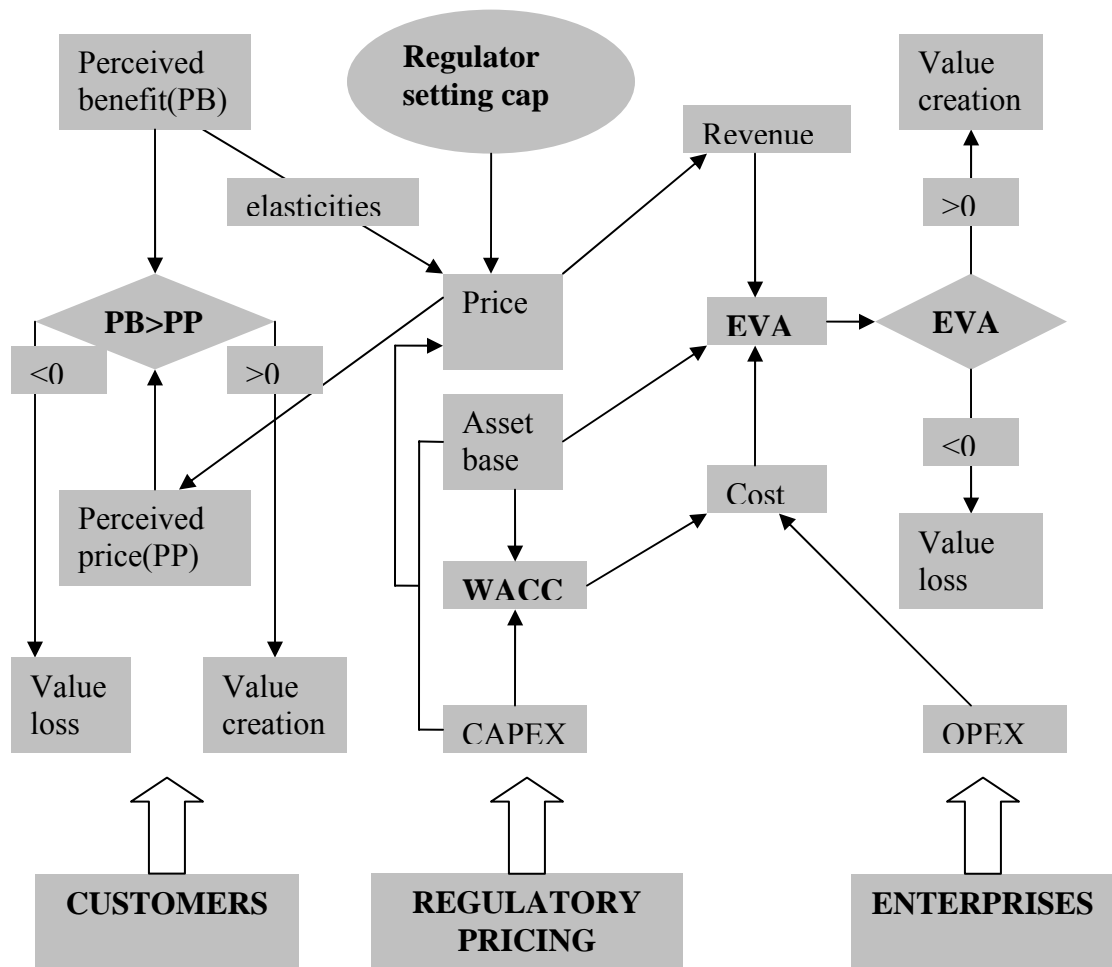


Figure-1

The enterprise would basically look at value creation at two levels- micro and macro levels. At micro level, value creation is project related. At project level, the decision rules for value based project management are:

¹If NPV>0, the project creates value.

If NPV<0, the project does not create value.

In the NPV analysis, weighted average cost of capital (WACC) (see Box-1) is factored in discounting cash inflows and cash out flows and as such any positive NPV points to value creation and negative NPV value non-addition or value loss.

BOX-1

$$WACC = D/(D+E) * K_d(1-t) + E/(D+E) * K_e$$

Where K_d = Cost of Debt

K_e = Cost of Equity

D = Debt Value

E = Equity Value

t = Marginal Tax Rate

$D/D+E$ and $E/D+E$ are capital structure weights

From company perspective, WACC represents cost of funds from suppliers of funds

From the perspective of supplier of funds, WACC represents required rate of return by the providers of funds (Capital). WACC can also be looked at from the perspective of opportunity cost in that it is the rate of return that the suppliers of funds can earn in other projects/investments with the same capital structure and risk disposition.

At macro level, value creation is EVA (Economic Value Added) related. EVA is a value based performance metrics which is defined as:

$$EVA = NOPAT - \text{Capital base} * WACC.$$

Where **NOPAT: Net operating profit after tax = EBIT(1-t)**

As against mere accounting profit, EVA focuses on economic profit. In the reckoning of accounting profit, only cost of debt is considered without taking in to account cost of equity. But capital funds comprise not only debt component but also equity component. As such capital charge should include both cost of debt and cost of equity. EVA considers both cost components and after discounting them from NOPAT, it gives a measure of residual income - a kind of surplus concept. From this perspective, as against accounting profit based performance metrics such as ROI, ROE etc, EVA gives an idea about value creation in the enterprise.

Customers perceive value creation from the perspective of perceived benefit vis-à-vis perceived price. In perfect competition, it is the market which mediates between the enterprises and the customers optimizing value creation to both. But recognizing realities of market failure, which should be at least the case

¹ $NPV = \sum (EBIT(1-T) + D) / (1 + K_c)^t + SV_n / (1 + K_c)^n - I$ where EBIT= Earnings Before Interest and Tax, T=Marginal tax rate, D= Depreciation, K_c =Weighted average cost of capital, SV= Salvage Value, I= Initial investment, $t=1 \dots n$ period

in capital intensive telecom sector in the developing countries, the regulator mimics competition so as to deliver value creation to both enterprises and customers. It chooses appropriate regulatory policies in this regard so that no service provider, including the incumbent service provider would rake in profits on account of monopoly or significant market power (SMP). In pursuance of this objective, it sets upon the choice of regulatory model and pricing policy there upon. When it comes to pricing policy, the regulator uses WACC as a regulatory tool to guide the avowed objective of value creation to customers and at the same time the service providers would be able to generate value creation to the enterprise not borne out by monopoly or SMP. Basically, there are two regulatory models- ROR (Rate of Return) regulation and RPI-X (Retail Price Index-X) regulation. It is obvious that ROR regulation is basically cost plus type and as such WACC would be a reference point for fixation of required rate of return to the service providers. It is clear from the equation of required revenue used in the context of ROR regulation.

Required revenue = opex plus capital depreciation plus allowed rate of return times net regulatory base.

The allowed rate of return is based on the WACC to be determined and from this emerges the determination of required revenue. For this reason, we can state that in its converse ROR regulation is essentially cost of services regulation.

In the RPI-X regulation, the X factor is discounted from the previous price providing for productivity gain or cost efficiencies so that real prices fall at each time of review of price cap. Here, WACC is not taken as given datum and on the other hand X factor puts pressure on WACC and other costs to be scaled down to enable value creation, not with standing fall in real prices. Thus value creation in RPI-X regulation is through cost route supported by cost control including reduction in WACC but in ROR regulation value creation is through revenue route on the basis of required rate of return guided by WACC. The idea in framing regulatory regimes with due consideration to WACC is to put in place a regulatory model that would give impetus to competition and at the same time maximize the collective welfare of customers and service providers, a sort of win-win situation. It would be interesting to note that in the fully allocated cost model used in the framing of TRAI tariff paper 1998/3, tariff philosophy of different net work elements is sought to be cost based. The table-1 would give an idea in this regard against each net work element

Net work element	Tariff philosophy	Remarks
Rental	Below Cost	To Be Stepped Up In 3 Stages
Local Call	Cost + No Margin	Price Cap
² NLD Call	Cost plus	Price Cap
³ ILD Call	Cost plus	Price Cap

Source: TRAI consultation paper No.98/3

Table-1

² NLD: National Long Distance

³ ILD: International Long Distance

It would be of further interest to note that having followed the fully allocated cost method, capital charge on the capital employed was fully recognized and as such the concept of EVA is undercurrent in the tariff philosophy followed. In fact, in the case of NLD and ILD net work elements, mark-up was pegged at the level equal to WACC. In the case of local call net work element, the price cap was fixed at a level just equal to cost with no margin. In the case of access, the tariff was fixed below cost. The break-up shows that 23% of the regulated business constituting access charges is below cost with negative EVA. 23% of the regulated business constituting local call revenue has no margin and hence is EVA neutral. The balance 54% of the business constituting NLD and ILD call revenue is on cost plus basis with positive EVA and this expected to be more than the negative EVA and in over all terms, there would be the strong probability of generating value creation by way of positive EVA. Table-2 would give a summary of these facts.

ITEM	ACCESS (RENTAL)	LOCAL CALL	NLD	ILD
Revenue	23%	77%		
		23%	32%	22%
		30% of call revenue	42% of call revenue	28% of call revenue
Less operating cost	-----	✓ Opex from access loop to SDCC ⁴ (X%)	✓ Opex from access loop to SDCC(1-X%) ✓ ,Opex from SDCC onwards	
EBDIT				
Less Depreciation	✓	-----	-----	-----
⁵ EBIT				
Less Capital Charge (WACC*Capital base)	✓ ⁶ Capex from access loop to SDCC	----	✓ Proportionate Capex	✓ Proportionate capex
Mark-up	Below cost	No margin	Cost Plus ⁷ (20%=WACC)	Cost plus (20%=WACC)
EVA element	Negative	Neutral	positive	Positive

Source: Constructed from TRAI consultation papers 98/3 and 2002/03

Table-2

⁴ X% is proportion of local minutes in total minutes of use.

⁵ In the DOT set-up, tax (t) =0; As such, NOPAT= EBIT (1-t) =EBIT; But in the company set-up, tax aspect has to be factored in and to this extent, EVA would be tax adjusted.

⁶ In its consultation paper on basic services tariff 2002/2003, TRAI envisages scenario-2 providing for the allocation of X% to rental and 1-X% to long distance call charges.

⁷ In 1998 tariff paper, 20% mark-up has been assumed. But in 2002/03 tariff paper, 10% mark-up has been assumed in reckoning ICU charges signaling WACC value lower than before.

WACC RECKONING AND VALUE CREATION IN BSNL

In this perceived EVA approach to telecom tariff for various service segments, fully allocated cost model has been followed in which WACC is the critical cost component. In fact, WACC is the basic factor to reckon capital charge as well as to decide mark-up. In 1998/3 tariff consultation paper, WACC was estimated to be ⁸20%. But it seems the equity cost part of WACC was not worked out based on CAPM (Capital asset pricing model), notwithstanding CAPM cannot be considered to be a totally unflawed model to calculate cost of equity due to volatility of beta estimate. In its tariff paper 2002/03, TRAI has assumed ARE(Annual Recurring Expenditure) of ⁹22.77%. But the point to be noted is that after discounting ¹⁰15% towards depreciation on average basis, cost of capital works out to 7.77%. From this, applying the ¹¹ debt-equity ratio of 0.2:0.8, cost of equity (=Ke) works out to 7.78% which is much less than the value of 22% assumed by TRAI in its estimation of WACC in its consultation paper 1998/3. Considering this gaping differential, this paper makes an attempt to work out cost of equity on the basis of CAPM model and finally WACC by factoring in both cost of debt and cost of equity. As far as the debt component is concerned, the post tax cost of debt can be easily reckoned from the borrowing profile. ¹²Accordingly the cost of debt to BSNL is at the level of 11% approximately. Only reckoning of cost of equity poses certain complications. EVA approach supports the choice of CAPM model to make assessment of the cost of equity. We can consider applying this model to BSNL. One feasible option is whether we can use MTNL case as a proxy model. We can perceive that both operating risk and financial risk of MTNL and BSNL are comparable. ¹³Most importantly, debt equity ratio of both the enterprises is almost the same. Considering these comparable operational and financial characteristics, we can use MTNL data to work out cost of equity for BSNL on proxy basis.

While using MTNL data, we can have two approaches. One is based on dividend capitalization model and the other on CAPM approach. The advantage in using both the approaches is that the results can be compared so as to ensure that the cost of equity estimated is not much off the mark. Plugging the MTNL data in the dividend capitalization model, cost of equity can be worked out as under.

$$Ke = D1/P0 + g$$

Where g = Growth Rate of Dividend

⁸ Table AII.3:Estimated cost of capital, TRAI's consultation paper 1998/3

⁹ TRAI's consultation paper on tariffs for basic services No 2002/03

¹⁰ From the BSNL schedule of depreciation rates based on the WDV method of depreciation as given in schedule XIV of companies act, A&P and cables which constitute about 81% of the asset value, has depreciation rate of 15.33% and as such this rate has been taken as the representative depreciation rate, pending actual calculation on weighted average basis.

¹¹ BSNL audited financial statements 2002

¹² Source: BSNL annual report 2000-2001

¹³ Debt: equity for MTNL at Y-2002 is 0.29:0.71(Source: www.myiris.com). Debt: Equity for BSNL at Y-2002 is 0.2:0.8 (Source: BSNL annual report, 2002)

$$D1 = D0*(1+g)$$

$$P0 = \text{Market Price}$$

$$^{14}g = 14.5\%; D0 = 4.5; P0 = \text{Rs.110}$$

$$Ke = 14.55\%$$

To use CAPM approach, the key point is to plug in various values in the equation given below.

$$Re = Rf + \beta*(Rm-Rf)$$

Where

Re : Expected rate of return from equity

Rf : Risk free rate of return

Rm : Expected rate of return from market portfolio

Rm-Rf : Market Risk Premium

¹⁵ β : A measure of systematic risk

In the reckoning, the critical parameter is β . It is possible to derive the value of β by regressing MTNL stock returns on the returns of market portfolio. Since the β of BSNL is sought to be derived from β of MTNL, a peer enterprise, β of MTNL has to be unleveraged first using the formula $\beta_a = \beta/(1+(1-t)*D/E)$ and again releveraged for BSNL using the formula $\beta = \beta_a*(1+(1-t)D/E)$ ¹⁶. Considering the complexity of the exercise and the need for data, for the limited purpose of understanding, this paper short circuits the direct way of calculating β . Instead, empirical values obtained in this regard are used. There exists a range of values of β on the basis of type of regulation and the country/system to which it relates to. It is an empirical finding that systems with low incentive power (ROR regulation) coexist with low β values, while those with high incentive power (RPI-X regulation) have high β values. The table-3 shows the summary of empirical results.¹⁷

INCENTIVISATION	β VALUE	TYPE OF REGULATION
HIGH	0.77	RPI-X(PRICE CAP)
MEDIUM	0.70	DISCRETIONAL
LOW	0.47	ROR

Table-3

¹⁴ Source: www.myiris.com

¹⁵ β (beta)=Co-variance of stock with market/Variance of the market: The more a stock moves up and down with the market, the more non-diversifiable risk it has.

¹⁶ Source: Omar o. Chisari, Martin A. Rodriguez Pardina and Martin Rossi “ *The cost of capital in Regulated firms: The Argentine Experience*”

¹⁷ Omar o. Chisari, Martin A. Rodriguez Pardina and Martin Rossi. *ibid*

As our regulation is based on fully allocated costing/ cost of services approach, it has its inherent weakness in terms of bias towards capital intensity and in particular, is benign towards cost inefficiencies by way of covering the same. More over, even though competition has intensified in NLD/ILD service segments in which case ROR has to be market driven, it considers the entire business in its reckoning of required ROR. As such it is basically low incentive regulation. From this cushioning, the regulatory journey can be only towards tightening. This tightening can be implemented through RPI-X regulation in which case the return would be covering non-diversifiable risk only unlike the case of ROR regulation which allows return even to diversifiable risk. As such, we can take the two regulatory scenarios as two ends of the spectrum and within this range, the value creation of the enterprise would be impacted, depending upon the actual value of beta. At one end of the spectrum, scenario -1 would give an idea about the value creation attributable, not only to non-diversifiable risk but also a component of diversifiable risk, and at the other end of the spectrum, scenario-2 would show value creation attributable to non-diversifiable risk only. To construct these twin perspectives, β values can be taken as 0.47 and 0.77 respectively. The advantage in assuming the value of β at 0.77 is to have an idea about the realistic reference value of K_e and the comparability of the same with respect to the value of K_e arrived at using dividend capitalization model. Table-4 summarises the values of cost of equity and WACC.

ITEM	SCENARIO-1	SCENARIO-2
β (beta)	0.47	0.77
Rf(Risk free rate)	8%	8%
(Rm-Rf) market premium	¹⁸ 8.23%	8.23%
Re(Cost of equity)	11.87%	14.34%

Table-4

Incidentally, R_i (=14.34%) worked out on the basis of $\beta = 0.77$ using CAPM approach is comparable to the value of R_i (=14.55%) worked out on the basis of dividend capitalization model. We can only reasonably assume that the β values would be ranging in between 0.47 and 0.77 and accordingly the values of R_i and WACC would be determined thereupon, notwithstanding the fact that such an exercise is only approximate and need to be substituted by the direct approach of regression of MTNL returns on market portfolio in arriving at β value

Having arrived at the range of β and R_i values, we can check whether BSNL has actually generated positive EVA as per the financial statements for the

¹⁸ This value is based on the paper presented by Shri.Shrikant Kulkarni on cost of capital in the recent TERI seminar on infrastructure regulation and reform held At Goa.

years ending 2000-2001 and 2001-2002. A simple reckoning of EVA without considering adjustments would workout as shown in the table-5.

ITEM	YEAR 2000-2001		YEAR 2001-2002	
	SCENARIO-1	SCENARIO-2	SCENARIO-1	SCENARIO-2
Capital employed at the beginning	¹⁹ 28858Cr	28858Cr	57716Cr	57716Cr
D/E	0.25:0.75	0.25:0.75	0.2:0.8	0.2:0.8
Cost of equity(Ke)	11.87%	14.34%	11.87%	14.34%
Cost of debt(Kd)	11%	11%	11%	11%
WACC (=D/D+E)*Kd(1-T) +(E/D+E)*Ke	11.65%	13.51%	11.7%	13.67%
PAT	747*2=1494Cr	747*2=1494Cr	6312Cr	6312Cr
NOPAT(Net Operating Profit After Tax) =PAT+(interest*tax rate)	2042Cr	2042 Cr	6780Cr	6780Cr
Capital Charge(=capital employed at the beginning*WACC)	3362Cr	3899Cr	6752	7890
EVA=NOPAT-Capital charge	-1320Cr	-1857Cr	28Cr	-1110Cr

Table-5

¹⁹ Being the first year of the company, average capital employed has been used.

BSNL has shown improvement in value creation or minimizing value loss in year 2001-2002 over the previous year 2000-2001. Even in scenario-1 which represents inefficient regulatory price setting assuring return to non-diversifiable risk as well as a component of diversifiable risk, value creation is negative during the year 2000-2001 and positive in marginal terms during the year 2001-2002. But if we discount grant from government amounting to 2300Cr categorized under other income, EVA under scenario-1 also would be negative for the year 2001-2002. Most importantly, as per latest TRAI's order on telecommunication interconnection usage charges (IUC) regulation, 2003(1 of 2003), BSNL has to now pay termination charges for calls originating from its network – be it cellular or wire line (basic) or WLL –and terminating on networks of other service providers which are not out-payments earlier. The table-6 shows the considerable pressure that IUC regime may impose on its out-payments and hence on operating cost.

	Existing	Revised	
		Metro	circles
	interconnect	interconnect	interconnect
Fixed to cellular	0	(0.30/min)	(0.40/min)
Cellular to fixed	1.20 per 3 min 0.40/min	0.50/min +0.10/min (0.20/min)	0.60/min +0.20/min (0.20/min)

Source: constructed from TRAI's order on telecommunication interconnection charges (IUC) regulation, 2003(1 of 2003)

Table-6

Instead of net interconnect in-payment of 0.40 /min accruing to BSNL now, as per the proposed IUC regime there will be net interconnect out-payment @ 0.20/min which represents a loss of 0.60/min. Obviously, this will put pressure on the bottom line of BSNL further downwards. In scenario-2 which represents efficient regulatory price setting assuring return to non-diversifiable risk only, BSNL couldn't create value in both the years. Since it can be reasonably assumed that the cost of equity would be ranging between 11.87% and 14.34%, BSNL would be in tight spot on the fundamental issue of value creation, notwithstanding its comfortable net profit of Rs 6312Cr during the year 2001—2002. In particular, given the IUC regime to be implemented from April 1, 2003 onwards and emerging intensive competition tilting advantage in favor of cellular networks in which BSNL is a late entrant, the thin EVA margin of 28Cr noticed during the year 2001-2002 would not be sustainable. Incidentally, this also provides a strong logic for operationalisation of USO (Universal Obligation Fund) fund in as much as much of the value erosion/value loss is due to its connectivity in rural areas and residential connectivity in urban areas.

Cost of capital and value turn round in BSNL

Here from the BSNL perspective, we have to take a close look at the enabling factors for value turn around. From the definition of EVA, we can attempt a sort of Du Pont analysis (Figure-2).

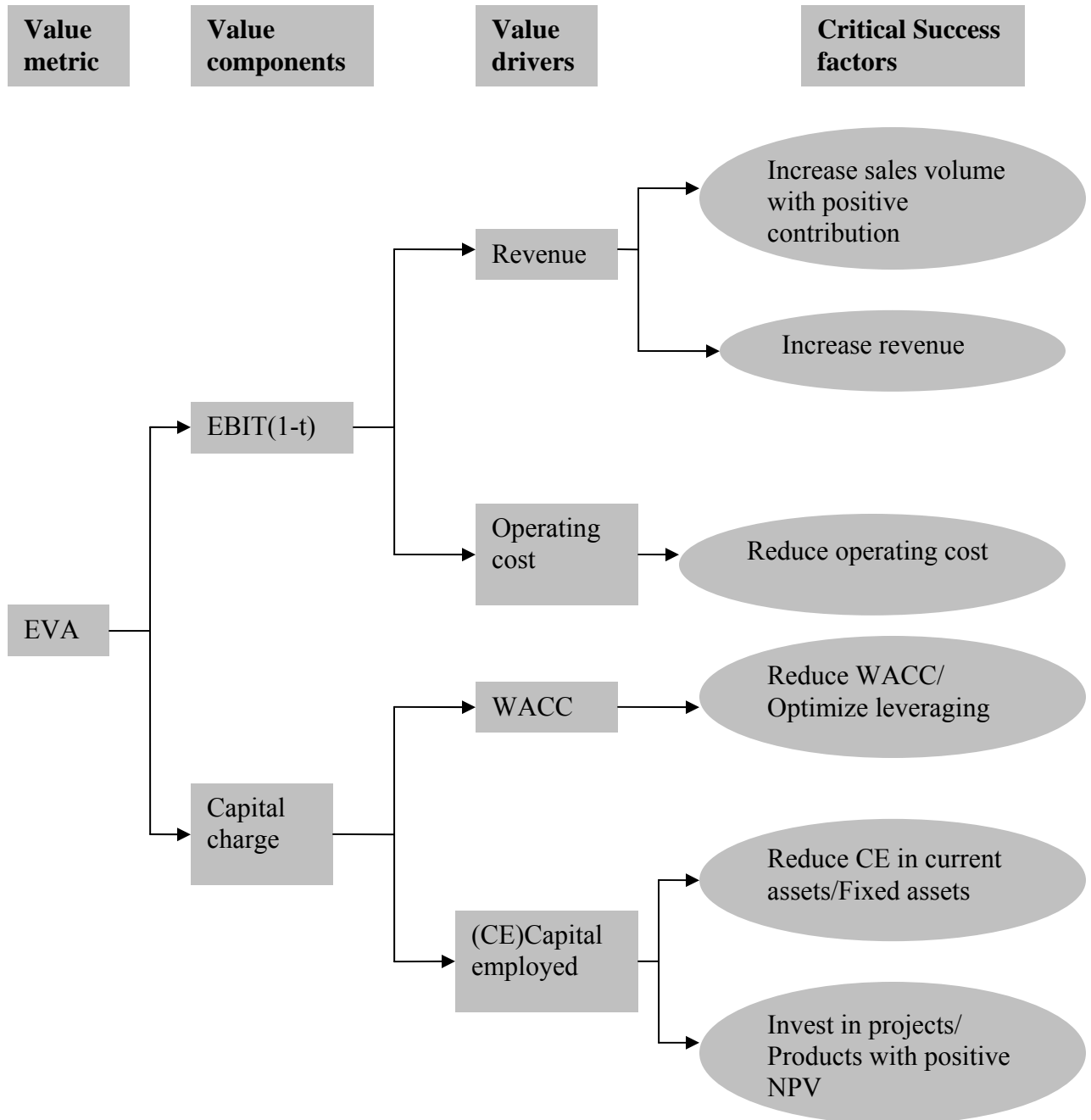


Figure-2

The above value drivers and CSFs(Critical Success Factors) can be further drilled down to formulate micro level analysis of value creation.

Value drivers	Critical Success Factors
<p>Revenue</p> <ul style="list-style-type: none"> ▪ Market segmentation ▪ Product focus ▪ Long distance call revenue ▪ Optimum use of network/exchange ▪ Revenue from IUC 	<ul style="list-style-type: none"> ▪ Service focus on 20% of the customers generating 80% of the revenue ▪ More focus on cellular service where contribution per user is more ▪ Generate more traffic/volume ▪ Optimize loading/share the existing infrastructure ▪ Generate more termination charge revenue through incoming calls
<p>Operating cost</p> <ul style="list-style-type: none"> ▪ Staff cost ▪ Operating cost ▪ Maintenance cost ▪ Interconnect out-payments 	<ul style="list-style-type: none"> ▪ Convert staff cost in to discretionary cost/productivity related cost ▪ Explore BPO(business Process Outsourcing) e.g accounts receivables/BPR(Business Process Re-engineering) ▪ Implement six sigma service provisioning ▪ Optimise long distance call routing/Strategise bundling of fixed and cellular services so that calls from fixed to cellular will be mostly within BSNL networks and to enable this go in far aggressive cellular expansion.
<p>WACC</p>	<ul style="list-style-type: none"> ▪ Optimise leveraging ▪ Scout for cost effective sources of financing-both off-shore and on-shore
<p>Capital employed(CE)</p>	<ul style="list-style-type: none"> ▪ Minimise CE in current assets ▪ Minimise CE in fixed assets e.g allow the participation of local community ventures to build local loop costing the larger percentage of the net work ▪ Share the infrastructure to minimise CE ▪ Conserve CE by investing more in projects with positive and higher NPV ▪ Conserve CE by investingt more in products e.g cellular where NPV is expected to be higher

Table-7

Given the cascading fall in tariffs in NLD/ILD service segments in the existing competitive telecom scenario, the options to create value through revenue route are limited. The revenue route is now more market driven and cannot be endogenously determined. The other route to value creation lies in the cost front. From the opex perspective, the prescriptions are by and large enterprise driven. From the capex perspective, WACC holds key in value creation to the enterprise. If the WACC is kept at the minimum, it should be possible to achieve the same output level with less resource spending or with the same resource level spending to achieve the high output level.

It would be also interesting to know the impact of leveraging on value creation. In this context, it would be useful to do a quick incremental analysis of value creation during the year 2001-2002 over the year 2000-2001, as it has been averred that the financing of the capital outlay for the year 2001-2002 is entirely met out of internal resources²⁰. Since equity funding is of high cost as compared to debt, it would be of interest to know whether incremental EVA is positive or not. A table (**Table-8**) can be constructed to facilitate reckoning of incremental EVA.

	2002	2001	Incremental 2002	
CE	67181Cr	57716Cr	9465Cr	62449Cr
Income from services				24299Cr
Output-capital ratio				0.39
income from average CE			9465/2=4733Cr	4733*.039=1845Cr
Opex during 2002				20461Cr
Opex-Capex ratio				0.33
Opex for CE of 4733Cr				4733*0.33=1562Cr
EBIT				483Cr
EBT(=NOPAT)				483Cr
Capital charge @11.87% on 4733Cr				562Cr
EVA				-79Cr(=483Cr-562Cr)
Capital charge@14.34% on 473Cr				679Cr
EVA				-196Cr(=483Cr-679Cr)

Source: constructed from annual reports of BSNL 2001and 2002

Table-8

²⁰ Source: www.bsnl.co.in/company/achievement.htm

As against the positive EVA of 28 Cr obtained in a levered scenario for the year 2002, incremental EVA in an un-levered scenario for the year 2002 is rather negative. This only points to the fact that optimum leverage will be helpful in augmenting value creation provided ROI exceeds cost of debt²¹, notwithstanding that optimum debt-equity ratio cannot be maintained at each incremental level. But the fact of the matter is that at project level, the present appraisal system does not give any idea about value creation on the basis of the point whether ROI is greater than cost of debt or not, leave alone other value based management measures such as investment conservation. BSNL has to put in place value metrics at project level to capture the big picture at enterprise level by way of EVA.

ISSUES IN VALUE BASED REGULATION

- ***What matters most is not mere regulatory forbearance but effective and efficient regulatory oversight.***

It is rather curious to note that even BSNL with significant market power in fixed wire line service could either scrape through with marginal value creation or with a strong probability of value loss accruing to it in case of volatility of earnings or cost of capital in due course, notwithstanding perceived value based regulation. There are two levels of addressing this issue. At the enterprise level, strategies open to the enterprise are elucidated in the figure. As discussed earlier, the enterprise has larger scope for value creation through cost route. But there exists regulatory level as well. The enterprise level strategies can be sustained only through supportive and complementary type of regulation. Even though fully allocated cost model is rather relatively easily implementable with cost attributions to various net work elements, it doesn't question the rationale and the extent of WACC and capital base whereupon capital charge is reckoned. It is WACC reckoning by the regulator that would guide the regulatory efficiency as well, besides ensuring value creation to the customers by mimicking competition. In its recent consultation paper on basic service tariff, TRAI has noted that the basic service tariff level in the NLD/ILD service segments has lowered to a level even less the re-balanced level, notwithstanding the rebalanced tariff level is cost based. The moot point is whether competition would have driven tariff level any way to a level lower than the re-balanced level, even if there had been no exercise in fixation of cost based tariff. What is interesting is that the fully allocated cost method, which is not even the second best pricing method, justified certain level of price caps and rate of return but competition, on the other hand, pushed down the price much lower off the mark. Of course, from customer perspective, such cascading fall in tariff would have resulted in value creation, provided customers' perceived benefit is more than the perceived price. But, the point at issue is whether simultaneously such value creation would have taken place at the enterprise level, notwithstanding fully allocated cost method being followed which would ensure certain rate of return. If the BSNL picture throws any hint in this regard, it is not in the affirmative. It would have been a

²¹ From the equation $ROE = ROI + ((ROI - K_d) * D/E) (1 - t)$ where ROE = return on equity, ROI = return on investment, K_d = cost of debt, D/E = debt-equity ratio, t = marginal tax rate, this inference can be made out.

safe bet to assume that fully allocated cost model, due to its inherent attribute of cushioning in cost inefficiencies on both operating and capital costs front , would have actually set in motion downward value spiraling.

- ***Effective and efficient regulatory oversight calls for a paradigm shift in regulatory model.***

It is also a point to ponder over whether any customer value creation as a result of steep fall in price that cannot be matched or supported by the costs is sustainable and if not, whether the regulator should step in instead of relying on the perceived unfailing wisdom of the market. Even granting that such perception about market failure is unfounded, for which only regulation has been put in place to check, ROR regulation practiced through the fully allocated cost method would not be working. The simple reason is that competition, even in its imperfect form, pushes the price below the average pricing which is the break-even pricing on the elastic portion of the demand curve of the business/business segments. With all gold-plating that would be conceived of in ROR regulation, the end result in a situation of price competition, dominated more by euphoria than economics, is high cost levels and lower ROR. Obviously, this points to the strong probability of value creation not being ensured by the regulation practiced as of now, notwithstanding its best intentions. Even the price driven value creation as perceived by the customers is attributable to competition and not to regulation. It is competition gain and not regulatory gain.

Against the validity of the propositions stated in the pre-para, the desirability of RPI-X regulation has to be adjudged. Unlike ROR regulation, RPI-X regulation induces cost efficiency through X factor. By appropriate choice of X factor, notwithstanding subjectivity or sophistication that would be going in to its fixation, it is possible to ensure fall in price in real terms which can be a source of value creation to the customers. The real merit of the RPI-X regulation lies in pressurizing the enterprises to look in for productivity gains or cost efficiencies for value creation to them as well as to the customers. Ostensibly the enterprises have to take a close look at their WACC and capital employed, in particular, that part invested in current assets. In such a situation, fall in price would be triggered off more by productivity gain/cost efficiency than by reckless competitive drive. In Indian situation, this proposition can be assumed to have much relevance. For instance, BSNL, the erstwhile government department, is saddled with many of the lag and long winding processes with attendant avoidable cost implications. The existing regulation does not seem to incentivise the incumbent dominant service provider to focus on cost efficiencies. This is equally applicable to any service provider, unless efficiency induced value creation is pursued internally as a matter of corporate strategy on sustainable basis. But the regulator cannot afford to take comforts on this no-regulatory/ non-systemic supposition. Here only comes the relevance of RPI-X regulation and the British model in this regard substantiates and supports the claim for the switching over to RPI-X regulation sooner in Indian situation.

- ***Access Deficit Charge (ADC) is not the only answer to address tele-density issue.***

Another interesting issue raised in the TRAI's consultation paper is whether access deficit charge (ADC) has to be levied and loaded on the interconnection charge.²² The very logic of ADC is based on ECPR (Efficient Component Pricing) principle which assumes perfect cost efficiency in a contestable market on the part of the incumbent operator. If the incumbent operator has perfect cost efficiency, then the entry of the new operator would be resulting in opportunity loss of revenue on account of providing interconnection to the new operator and as such the incumbent operator has to be compensated by the ADC. The simple logic is that opportunity value loss on account of interconnection for having achieved perfect cost efficiency has to be compensated by ADC at least to maintain value neutrality. It could be a point of debate that whether such rationale can be advanced in the existing telecom sector to justify levy of ADC. On the other hand, loading ADC on interconnection charges would result in cost distortions coming in the way of efficient entry in to the service provisioning of net work elements concerned, besides value erosion to the customers availing that particular service on account of loaded inter connection charges being factored in pricing. In fact from the end user value perspective, OFTEL, the regulator in U.K, lifted rental constraint in 1996 and consequently, the concept of ADC was given go-by in the case of BT.²³ If the access service providers experience value loss in the customer segments not economically viable, it has to be targeted and addressed by alternative policies similar to USO fund, in stead of bundling and distorting systemic efficiency. It is also a point to be noted that interconnection usage charges (IUC) are reckoned on the basis of fully allocated cost including mark-up of 10% and revenue share license fee. Had IUC been based on TELRIC (Total long run incremental cost) towards which many countries have already migrated, the distortion impact on allocative efficiency could at least be kept to the minimum even if it is considered imperative to load ADC on IUC. Nevertheless it would be interesting to observe that in the long run, by co-operative, liberal and TELRIC based provisioning of interconnection, the incumbent operators and their competitors would not get in to prisoner's dilemma problem which otherwise would go along with the non-co-operative game amongst the service providers. The fact of the matter is that seamless, non-discriminatory and cost aligned interconnectivity would generate positive externalities benefiting customers and service providers that cannot be captured in the reckoning of IUC on the basis of the accounting cost data.

- ***Asymmetric regulation need not be talked about in the context of the incumbent operator only but can be in the context of value creating products/propositions.***

The need for value based regulation in the Indian context is now assuming curious dimension. The emerging telecom scenario in India shows increasing

²² Refer "The economics of telecommunication regulation" by Lisa Correa, *Telecommunications law* edited by Ian Walden & John Angel.

²³ "The economics of telecommunication regulation", *ibid*.

evidence of substitutability between fixed wire line service and cellular. ²⁴For the first time, during the quarter of April-June, 2002 the number of cellular subscribers added are more than the number of subscribers of fixed wire line service added. Considering the converging tariff differential between fixed wire line and cellular and at the same time more value added features of the latter as compared to the former, customer migration from the fixed wire line to cellular would get impetus. The associated phenomenon would be value migration. For that matter, it would make economic sense to invest more in cellular where it is perceived that contribution per user is more than that in fixed wire line. It means that the scope for value creation is more in cellular than in fixed wire line due to pre-matured ending of product life cycle of the latter caused by the creative destruction of the technology. But the fact of the matter is that an unbridled price war has already started pushing down the prices in cellular service segment - even at a level lower than the land line STD tariff in certain distance slabs. This cascading fall in tariffs has to be viewed against the accumulated losses claimed by the cellular service providers. The revenue and cost data of these cellular service providers are also not publicly available so far and as such there exists tremendous information asymmetry, for that matter, information non availability. Having assumed forbearance by relying on the perceived unfailing wisdom of the market, the regulator would run in to a typical moral hazard problem for it is not certain whether such low tariffs are sustainable supported by the costing with a view to create sustainable customer value in the long run or it is a simple short term strategy to outsmart each other having no regards to economics of tariffs. The recent telecom turmoil in USA triggered off by excessive surplus capacity and cascading fall in tariff cannot be considered to be isolated and not relevant in Indian situation. The role of the regulator would be to check the suicidal price war that has the potential danger of value destruction to the service providers and ultimately to customers. The moot point is whether it can be termed anti-competitive in case the regulator fixes price floor on the basis of estimated WACC below which price cannot fall except at the cost of value creation or at least value neutrality and on the basis of this understanding appropriately guide the price war on economic basis. After all, value creation for both customers and enterprises – a sort of value convergence- would be made possible only by value based regulation that is guided by appropriate WACC philosophy.

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The views expressed by the author are personal

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²⁴ Source: COAI news bulletin 20.