

**CREDIT QUALITY ASSESSMENT OF  
STATE ELECTRICITY BOARDS**

**By**

**V. Ranganathan  
Manoj S. Naik\***

**September 1996**

**Please address all correspondence to:**

**V. Ranganathan  
Professor  
Indian Institute of Management  
Bannerghatta Road  
Bangalore 560 076  
India**

**Fax: (080) 6644050**

## Abstract

*With State Electricity Boards emerging as leading monopsonistic buyers from Independent Power Producers, their credit quality assessment is an important concern for IPPs and lenders. This paper provides an approach in the Indian context. The assessment is done along two dimensions viz. assessment of business risk and financial risk. The former is assessed in terms of Market indicators and Operating indices. Market indicators, in turn cover a) Consumer mix, ability to increase tariffs and Government support by way of paying for social objectives, and b) demand growth. The operating indices cover the hydro-thermal mix, PLF, T&D losses and No. of employees per million units sold, and the extent of external dependence. The Financial risk is measured by such yardsticks like profitability, interest burden, and surplus left after loan repayment obligations. All the data is from a single Report of the Planning Commission on the working of State Electricity Boards.*

# CREDIT QUALITY ASSESSMENT OF STATE ELECTRICITY BOARDS

The credit quality of a State Electricity Board (SEB) is primarily a function of two factors : *business Risk & financial risk*. These two categories of risk can be broken down further to highlight the key factors driving the risk in each category. The relevance of each of these key factors shall be explained as we proceed with the credit quality assessment of five state electricity boards under study. These are : Karnataka (KEB), Kerala (KSEB), MP (MPEB), Orissa (OSEB) & UP (UPSEB). (OSEB ceased to exist as of April 1, 1996) This analysis is based on the performance in the financial year 1994-95 (Planning Commission report on the working of the SEBs). The performance indicators for the year 1995-96 have not been released so far (August 1996).

## BUSINESS RISK

The major criteria considered in assessing the business risk are

### 1. MARKET

#### a. *Consumer Mix, Tariffs & State Government Support :*

The electricity act authorizes the SEBs to charge tariffs adequate to support their operations. In practice however, it is the state government that decides the level of tariffs to be charged. Political considerations often play a large role in this exercise. Hence the agricultural & domestic consumers have been receiving electricity at a subsidized rates (“Subsidized Segments”). The tariffs are subsidized in part by the other users (“Subsidizing Segments”) and partly through direct state government subsidies.

The consumer mix therefore has a direct bearing on the future financial health of the SEB. The boards which have favorable ratio of subsidizing to subsidized load are viewed positively.

Given the consumer mix (& political compulsions), there is a limit to how high the subsidizing segment ( industrial & commercial ) tariffs can be raised. If the prices charged to these consumers are already high, the SEB could face an inflexible pricing structure. Hence, the SEBs with low tariffs (& supported by a steady tariff rate increase in the past - an indication of it's *will* to raise tariffs) are viewed favorably due to it's potential to reduce losses or increase profits in the future.

Lastly, given the consumer mix and the tariff structure, the level of subsidy required and received from the state government is an indication of the extent of dependence of the SEB on the state government. The *ability* & the *willingness* of the respective state governments to support the SEB is important in evaluating the SEBs credit quality. The credit assessment of the state governments done by ICRA ( captured by the "fiscal index" ) is used as a surrogate for evaluating the "ability" to support and the level of subsidy support provided in the recent past is taken as an indicator of the "willingness" of the state government. The state government subsidies are in lieu of the subsidies given to the consumers by the SEB and hence the 'dependence on the state government' factor is included under 'market' risk.

State	Consumer Mix ( 1994-95 )			
	Subsidizing		Subsidized	
	Units (%)	Revenue(%)	Units(%)	Revenue(%)
KEB	40	83	60	17
KSEB	63	76	37	24
MPEB	58	92	42	8
OSEB	67	85	33	15
UPSEB	42	72	58	28

State	Average Tariff (1994-95) & Average Annual Tariff Increase (92-95)							
	Domestic		Agriculture		Commercial		Industrial	
	p/Kwh	% inc	p/Kwh	% inc	p/Kwh	% inc	p/Kwh	% inc
KEB	109	3.2	3.2	-7.7	413	19.4	230.3	8.1
KSEB	64.3	6	22	-4.1	150	14.1	102.1	7.9
MPEB	62	8.9	6	-25.1	230.7	12.6	230.8	8.5
OSEB	51	11.8	30	-0.01	92	-4.5	140.2	19.1
UPSEB	87.9	2.9	41.1	10	179.8	4.4	239.1	4.4

It is clear from the above that KSEB, MPEB & OSEB have a relatively favorable load mix. KSEB & OSEB tariffs to subsidizing consumers is low and the willingness to increase tariffs has also been established.

### **Credit Assessment Of State Governments ( ICRA Ratings)**

	<b>Fiscal Index</b>	<b>All-India Rank</b>
Karnataka	114.05	6
Kerala	113.74	7
MP	94.77	12
Orissa	81.86	17
UP	89.16	14
All-India	100	-

### **Subsidy Received From State Government**

**Subsidy (received by SEB) as a % of  
Net Subsidy given to consumers**

	<b>92-93</b>	<b>93-94</b>	<b>94-95</b>	<b>Average</b>
KEB	59.3	47.8	103.5	70.2
KSEB	0	0.8	0	0.27
MPEB	79.4	68.4	39.2	62.3
OSEB	94.3	111.5	112.4	106.1
UPSEB	0	0	0	0

Karnataka government clearly stands out for its ability and willingness to support KEB. MP & Orissa have also demonstrated their desire to support their respective SEBs but the fiscal balance in the state appears to have been a constraint ( as demonstrated by the falling ratio of subsidy given to the SEB to the net subsidy passed on to the end users ). Kerala & UP governments have not compensated their SEBs at all.

#### *b. Demand Growth in the Area Serviced*

While demand potential is really not an issue in a power deficit country like India, the demand growth needs to be ascertained for each SEB. This is important because the marginal cost of power is greater than the average cost.

Hence any shortfall in demand could directly reflect on the offtake from the IPP.

It is obvious from the table below that the demand growth is satisfactory for all the boards. Ideally however, the price elasticity of demand should be factored into the analysis; this will particularly be important for OSEB & KSEB since these boards have a lot of flexibility for increase in tariff charged to the 'dominant' subsidizing consumer segment. The price elasticity has not been factored in here due to inadequacy of information.

### Demand Growth

State	Demand-Supply gap	Compounded annual growth rate (96-2002)
KEB	-5.48%	6.2%
KSEB	-5.6%	7.7%
MPEB	-4.5%	6.35%
OSEB	-11.2%	9.70%
UPSEB	-10.6%	7.26%

### *Market Risk - Overall Rating*

State	Rating	Remarks, if any
Karnataka	Favorable	Poor mix & Tariff inflexibility made up by state support
Kerala	Favorable	Favorable mix & Tariff flexibility
MP	Unfavorable	Tariff inflexibility & falling state support
Orissa	Favorable	Favorable mix & tariff flexibility
UP	Unfavorable	Poor in all respects

## 2. OPERATIONS

The assessment of operating risk is important because it directly affects the *future* financial health of the SEB. The assessment of operating risk is concerned with the following :

### *a. Plant Mix*

The mix of hydroelectric and thermal plants in the total capacity has two important implications. Firstly, the cost of hydroelectric power is lower and hence the average cost of power is likely to be lower for the SEB which has a higher percentage of hydroelectric capacity. However, the variability of rainfall near the location of the hydel plant can be a much greater risk vis-a-vis coal linkage risk of a thermal plant. The fuel risk of a thermal is likely to be very low particularly if the same state has abundant reserves & production of coal.

<b>State</b>	<b>% Hydro</b>	<b>Average Rs/Kwh</b>	<b>Cost</b>	<b>Coal reserves</b>
Karnataka	71	1.26	-	
Kerala	100	1.08	-	
MP	17	1.62		Yes (Plenty)
Orissa	65	1.11		Yes (Plenty)
UP	25	1.82		Yes

The SEBs with higher % hydrocapacity do have a lower average cost. This will get reflected in the financial evaluation ( under profitability ) & hence we are concerned more with fuel/input arrangements here. From this point of view, OSEB, KEB & KSEB have a much greater risk of a disruption in the normal operations & hence existing revenues.

### *b. Plant Performance*

The factors adopted for evaluating plant performance are the Plant Load Factor, T&D losses & Employee productivity. The trends in these give an indication of the future operations and profitability of the SEB.

	<b>% PLF</b>		<b>T&amp;D losses %</b>		<b>Employee/Mkwh</b>	
KEB	65	↑	18.30	↓	3	↓
KSEB	-		20	↓	3.9	↓
MPEB	58	↑	19	↓	4	↓
OSEB	29	↓	22	↓	5.2	↓
UPSEB	44	↓	22	↓	3.9	↓
All-India	55		19.4		3.9	

*Interpretation Of above :*

	<b>Efficiency of Operation</b>	<b>Trends</b>
KEB	Favourable	Average
KSEB	Average	Average
MPEB	Average	Average
OSEB	Unfavourable	Average*
UPSEB	Unfavourable	Unfavourable

\* OSEB has been given an average rating inspite of a low and falling PLF because the only thermal plant of OSEB has been sold to NTPC as a part of the power sector reforms. Infact, poor *present* operating performance could well be interpreted as a *future* profit potential if the power sector reforms in the state are able to meet their stated objectives.

### *c. External Dependence*

Dependence on external sources of power capacity exposes an SEB to the risks specific to that source.

	<b>Purchase as a % of Sale to consumers with State</b>
KEB	*116.5
KSEB	33.60
MPEB	53
OSEB	60
UPSEB	48
All-India	50

\* *Due to the 'sales' figures being only 'metered' sales, large 'unmetered' sale results in purchase/sales % > 100.*

All the boards, except KSEB, have an a large dependence on external sources of power capacity. It should be noted here that in the case of Karnataka, the state itself has a separate power corporation for generation and KEB itself has very limited installed capacity.



## ***Operation Risk-Overall Rating***

<b>State</b>	<b>Rating</b>
KEB	Average
MPEB	Average
OSEB	Average
UPSEB	Unfavorable

For arriving at an overall rating on operations risk, plant performance trends have been given more weightage because this factor will *definitely* have an impact on the future profitability of the SEB while the others factors are conditional to certain events happening (like shortfall in rains etc.).

## **FINANCIAL RISK**

The focus here is on analyzing the past performance of the company to provide a review of their financial situation. The key parameters considered for this analysis are :

### ***a. Profitability***

The trends in OPBDIT/OI,\* commercial profit/loss with & without subsidy, cash profits etc. have been analyzed here.

### **OPBDIT/OI (%)**

	<b>92-93</b>	<b>93-94</b>	<b>94-95</b>
KEB	3.2	6.2	3
KSEB	7	3.5	8.6
MPSEB	7.2	7.8	7.6
OSEB	0.8	12.5	9.5
UPSEB	5.5	0.8	8.6

\* OPBDIT : Operating Profit Before Depreciation, Interest and Tax  
OI : Operating income.

## Commercial Profit/Loss (Rs. crore)

	Without Subsidy			With Subsidy		
	92-93	93-94	94-95	92-93	93-94	94-95
KEB	-19.4	-1.8	-192.3	32.3	34	43.1
KSEB	-65.4	-62.9	-77	-65.4	-62.1	-77
MPEB	-350.3	-386.4	-407	29.8	-21.1	-187
OSEB	-85.1	-123.5	-90.2	25.9	24.3	24.3
UPSEB	-812.4	-1048.3	-1351	-812.4	-1048.3	-1351

All the boards have been consistently showing losses (which have been increasing over the years) in absence of the state government subsidies. The abrupt increase, however, is in the case of Karnataka in the year 1994-95. This jump is partly due to an increase in depreciation allowance and in part due to increase in fuel costs, interest expenses etc. (this is reflected in the fall in OPBDIT/OI as well) As seen earlier, KEB has been well supported by the state government, including a large jump in subsidy in 1994-95. However, unless this trend is contained, such subsidy support may not be sustainable.

Besides KEB, OSEB & MPEB have been showing a consistent cash profit (refer table below) thanks to their respective governments. However, in the case of MPEB, the level of subsidy received has been falling and hence the commercial loss even with subsidies in the last couple of years (& the reducing cash profit).

## Cash Profit (Rs. crore)

	92-93	93-94	94-95
KEB	95.8	110	195
KSEB	-36	-23	-33
MPEB	279	266	141
OSEB	77.2	74	76.3
UPSEB	-548	-762	-957

*Cash profit is the sum of commercial profit and depreciation. Cash profit would be more relevant for the lenders than commercial profit, as far as immediate payment is concerned. For sustained payment potential, into future years, commercial profit without subsidy is a better guide.*

**b. Receivables**

This is an important factor especially considering the poor financial health of the SEBs. The planning commission document on the working of the SEBs doesn't give 94-95 figures and hence the available data has been used.

	<b>92-93</b>	<b>93-94</b>
KEB	122 days	107 days
KSEB	83	98
MPEB	71	74
OSEB	158	137
UPSEB	174	194

The trends in receivable are more important than just the present situation since it is only when the receivable days grows or reduces that the liquidity is affected. KEB & OSEB show a favorable trend.

**c. Interest Burden & Borrowing Capacity**

Interest as a % of OI and the Net Internal Resources (surplus left with the SEB after revenue expenditure and loan repayment) have been taken as the key indicators of the SEBs fresh borrowing capacity.

**Interest/OI (%)**

	<b>92-93</b>	<b>93-94</b>	<b>94-95</b>
KEB	10.5	10.5	11.3
KSEB	31.4	27.7	26.5
MPEB	30.3	28.2	24.9
OSEB	29.7	21	17
UPSEB	37.7	36.6	46.3

### Net Internal Resources (Rs. crore)

	92-93	93-94	94-95
KEB	384.8	-28.5	135.3
KSEB	117.7	24.6	121.3
MPEB	15.1	-399.2	52.7
OSEB	41.4	49.7	24.7
UPSEB	-5	-53.2	-206.9

Net internal resources = cash profit - loan repayment obligation.

KEB & OSEB have a net surplus (internal resources) and a relatively low Interest/OI.

### *Financial Risk- overall rating*

State	Rating
KSB	Favorable
KSEB	Unfavorable
MPEB	Unfavorable
OSEB	Favorable
UPSEB	Unfavorable

The bases for the above ratings are the piece-wise judgements summarised in Exhibit 1. The emphasis here is to analyze the present financial health of the company. It must be emphasized here that the two boards given a favorable rating have a substantial subsidy support from the state governments. While the compensation is definitely valid in lieu of the subsidies passed on to the end consumers, whether this can be relied upon as a sustainable source of revenue in future is the question one should rightfully ask.

## **Conclusion :**

The above is to be recognised as the first step towards a credit quality assessment of the SEBs. A lot more fine tuning is required in proceeding from numbers to judgements, and also in refining the numbers themselves. For instance, is a high hydro-thermal ratio favourable or unfavourable from the point of view of business risk? Tariff increases in the past indicate the ability of the SEB/Government to increase the tariff, but it also means that the scope for further tariff increase is reduced. We also know that there is a fudge in T&D loss figures, due to demetering in Agriculture. The PLFs cannot be looked at in isolation of the banking facility offered by the hydro reservoirs. Finally converting the multi-dimensional attributes into a single decision of whether one would like to do business with an SEB is not devoid of subjective weights altogether.

## EXHIBIT 1

### OVERALL RATING

	Business Risk		Financial Risk
	Market	Operating	
KEB	F	Avg.	F
KSEB	F	Avg.	UF
MPEB	UF	Avg.	UF
OSEB	F	Avg.	F
UPSEB	UF	UF	UF

F : Favorable  
UF : Unfavorable  
Avg. : Average

#### ***Market Risk***

Is a function of consumer mix, tariff inflexibility and state government support and the demand growth expected.

#### ***Operating Risk***

Is a function of plant mix, plant performance and external dependence.

#### ***Financial Risk***

Depends on profitability, receivable outstanding and the borrowing capacity of the SEB.