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India's Revenue Sharing Contract Regime with focus on fiscal and bidding elements

Abstract:

Recently Indian hydrocarbon policy has seen major shift towards Revenue sharing model. In Revenue Sharing, apart from Royalty payable to Government, the Government take constitute a share in Revenue net of Royalty based on biddable Lower Revenue point and Higher Revenue point. The aim of this paper is to compare the Production Sharing Contract regime and Revenue Sharing Contract regime on policy changes. Further, to analyze the fiscal and bidding elements in Revenue Sharing in HELP-I round, for which a hypothetical onland oil field is considered.

An analysis of average Government NPV for the four revenue scenario were considered against various combination of biddable government share at LRP and HRP. It is found that Government NPV is more sensitive towards the government share at LRP than HRP and so is the Contractor IRR. However with incremental rise in government share at HRP results in relative less lowering of contractor IRR than compared to the rise in Government NPV. Thus government share closer to 100% of HRP gives optimum results based on Contractor IRR. This paper demonstrates that bidding parameters can be adjusted in such a way so as to achieve maximum government NPV while achieving the contractor's IRR.

Introduction:

Exploration and Production (E&P) of hydrocarbons in India started in 19th century and took formal shape with its National Oil Companies (NOCs) viz. ONGC and Oil India ltd in 1956 and 1959 respectively. There have been three different Fiscal regimes in India, Nomination basis to ONGC and Oil India Ltd., Production Sharing Contracts regime, Coal Bed Methane on Production Link Payment regime. Recently Indian Oil and Gas policy has seen major shift to Revenue sharing model. In Revenue Sharing Model, apart from Royalty payable to the Government on the production, the Government take will constitute a share in the Revenue net of Royalty. In this model, the investors will bid Government Share percentage against two revenue points, a percentage Government Revenue Share when revenue is less than or equal to the Lower Revenue Point (LRP) and a percentage Government Revenue Share when revenue is more than or equal to Higher Revenue Point (HRP). The percentage Government Revenue Share at revenue points falling between the LRP and HRP is interpolated on a linear scale. This linear correlation between LRP and HRP ensures no undue burden on the bidder and on the other hand provides for increasing revenues for Government in case of increasing production / price. Further, there is no cost recovery element, which will enable investor the liberty to take its own technical and commercial decisions without interference of the government.

Comparison of Production Sharing and Revenue Sharing Model:

Government share, prospectivity, competitiveness, transparency and status of hydrocarbon imports or exports etc. are many factors that need to be considered when deciding on a licensing and fiscal policy. Every fiscal regime has its own pros and cons. The broad features of PSC and RSC are compared in Table 1.

In Production Sharing Contract (PSC), in addition to the Royalty payable to the Government on the production, the Government take constitutes a share in the profit earned by the Contractor. The profit share is determined through bidding and the rate applicable in any year is determined in relation to the profitability of the Contractor during the previous year measured by Investment Multiple or IM, based on the bid values. In Revenue Sharing Contract, in addition to the Royalty payable to the Government on

the production, the Government take will constitute a share in the Revenue net of Royalty. The share will be determined through bidding, and the rate applicable in any month will be determined in relation to the net Revenue per day, during the previous month, based on the bid values. Thus under the RSC Government gets revenue from the first year of commencement of production where as in PSC Contractor shares profit after recovering the costs.

Table1: Comparison of Production Sharing Contract regime and Revenue Sharing Model regime:

Parameter	PSC Regime (NELP)	RSC Regime (DSF & HELP)
Fiscal Model	Profit Sharing	Revenue Sharing
Cost Recovery	Allowed	Not applicable
Timing of Government Share	Post cost recovery	On onset of hydrocarbon production
Royalty	Standard rates	Low Rates (Offshore)
Timeline of production	Post approval of FDP, there is no timeline for commencement of production	In DSF-I the timelines of commencement of production is defined. In HELP there is no specific timeline, but penalty applies beyond the commitment as made in Field Development Plan.
Exploration in Mining lease areas	Not Allowed	Allowed (Uniform License)
E&P Activity for all hydrocarbon	Not Allowed	Allowed
Management Committee	Technical & Financials examination	Focus on Reservoir Monitoring, No Micro Management
Exploration Period	Onland& shallow water – 7 years Deepwater – 8 years	Onland& Shallow Water – 8 years Deepwater – 10 years
Pricing and Marketing of Gas	Freedom subject to government approval	Freedom (arm's length)
Category	Ultra Deep water not defined	Ultra- Deep water defined
Site Restoration Fund	Cost Recoverable	Contractor risk
Bid Evaluation Criteria (BEC)	Minimum Work Program :50% Fiscal terms 50%: a) Profit Petroleum b) Cost Recovery	**DSF-I:** Work Programe : 20% Biddable Government Revenue Share:80% **HELP-I** Work Programe: 50% (Work Program 45% and originator incentive 5%) Biddable Government Revenue Share:50%

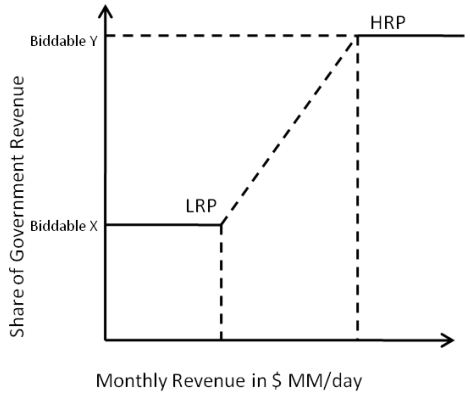
The cost recovery element of PSC has been quite controversial, especially due to perceived instances of gold plating and manipulation of Investment Multiple by contractors. Estimation of recoverable costs proposed by the Contractors is fraught with uncertainties leading to disputes, slower decision making, etc. To rectify these shortcomings in PSC, revenue sharing model was adopted which eliminated the contentious cost recovery. The important point to consider is India's potential resources were re-estimated in 2017 and the total hydrocarbon inplace resources are estimate to be around 41,872 MMTOE as per DGH subject to approval from Ministry of Petroleum and Natural Gas. In fact 48% of sedimentary basin area of India does not have adequate geoscientific data, thus it is important to incentivize exploration with mechanism like cost recovery etc. It encourages exploration by ensuring the recovery of investment made in block provided there is production and also result in converting resources in reserve. In Revenue sharing as the revenue is directly shared with government, the Contractor may try to keep costs low to maximize profits. In other words, since the Revenue Sharing model does not permit cost recovery, Contractor may not spend more on technology intensive activities. There is no incentive to explore and exploit difficult oil etc. which are costly and capital intensive in nature leading to higher cost of production. Further in RSC has no bearing in time whereas in PSC

excess capital expenditure in the beginning decreases PTIM and postpones movement to higher PTIM slabs which impact government share as well as contractor share.

Revenue Sharing is simple and transparent system with easy-to-monitor parameters of production and price. In view of the uncertainty in the prospectivity of the exploration acreage offered, estimation of revenue share would be difficult, almost amounting to gambling leading to irrational bids. Further, in the absence of adequate geo-scientific data in the blocks on offer, estimation of representative production profiles may be difficult, which may also add to nonrealistic bids.

Fiscal terms in Revenue Sharing Model:

In this model it is proposed that the bidders will bid Government Share percentage against two revenue scenarios point "X" a percentage Government Revenue Share when revenue is less than or equal to the Lower Revenue point and point "Y" a percentage Government Revenue Share when revenue is more than or equal to Higher Revenue point. The quote for LRP and HRP is combined oil & gas revenue, rather than separate quotes at two points of revenues for oil & gas separately. The percentage Government Revenue Share at revenue points falling between the two Revenue points (Lower and Higher) is interpolated on a linear scale(Fig. 1).The linear correlation between Lower Revenue Point and Higher Revenue Point ensures no undue burden on the bidder and on the other hand provides for increasing revenues for Government in case of increasing production / price.



DSF-I	HELP - I
LRP: $MM 0.01 per day	LRP: $MM 0.05 per day
HRP:$ MM 1 per day	HRP:$ MM 7 per day

HRP

The LRP is essentially a level of revenue up to which investor(s) can, afford to let Government Share of Revenue increase beyond a fixed percentage share. It ensures that the bidder will strive to enhance production levels to at least this point to break-even his revenue outgo. Thus bid for the Lower Revenue Tranche is always has to be non-zero.

The HRP ensures that the bidder is not burdened with ever increasing Government sharing, as after a certain level of production, even the operating costs rise as the fields mature. Freezing the Government share after the HRP offers incentive to enhance production rate with better technology and accelerated development strategy.

The bidders are required to bid the value for both the tranches. Revenue share to GOI between the LRP and HRP indicated will be then interpolated on a linear scale with a positive slope by applying the following formula

$$GRS_D = X + [(Y-X) \times (RDaily-LRP) / (HRP - LRP)]$$

Where,

"GR S_D(LRP-HRP): Government Revenue Share for each day when the average daily revenue is more than the LRP but less than the HRP

"Y"= Government Revenue Share for each day corresponding to the HRP

"X" =Government Revenue Share for each day corresponding to the LRP

"RDaily" = The Revenue generated on each day

"HRP" &LRP" as defined in relevant clause of RSC

Thus revenue share is computed directly based on the level of production and the price realized, without the need to examine books of accounts on expenditure.

Apart from government share at Lower Revenue Point and government share Higher Revenue Point, government revenue consist of Royalty as applicable of Oil and Gas fields in Onland, Shallow water , Deepwater and Ultra Deep water. Beside this various taxes paid by company also adds to Government's revenue. In this paper government, revenue is considered only from government share at LRP and HRP net of royalty.

Critical points in Fiscal regime of RSC and its impact:

There are mainly two biddable parameters in government share at LRP and HRP. The Bid 2. The points for these categories are varying in the grading is proportionately with the higher bidder paper present a study on analysis of the Average scenario considered during Bid evaluation (HELP-I) government share at LRP and HRP.

The biddable work program is purely Block specific company's requirement to acquire it. Due to its paper work program, as biddable parameter is not purely company's decision, so the same is also

Table 2: Bid evaluation Criteria in RSC

Round	Criteria	Points	Description
DSF-I	Biddable Work Program	20	Only the biddable number of appraisal / development wells, proposed to be drilled as part of Field Development plan will be considered for evaluation purposes.
	Biddable Government Share of Revenue	80	Revenue Share offered to Government by the bidder LRP and HRP. The Net Present Value (NPV) of Revenue Share offered to Government by applying ten percent (10%) discount rate will be computed under four scenarios taking into account four notional revenue profiles. A simple average of the 4 (four) values of NPV of the Government share so arrived under the 4 (four) scenarios will be used for evaluation.
HELP-I	Originator incentive	5	Available to the EoI submitting party 5 only on a First come First Served basis)
	Biddable Work Program	45	2D (API): 8, 3D(API) : 17, Exploratory wells: 15, Core analysis for Shale resources: 5
	Biddable Government Share of Revenue	50	Revenue Share offered to Government by the bidder LRP and HRP. The Net Present Value (NPV) of Revenue Share offered to Government by applying ten percent (10%) discount rate will be computed under four scenarios taking into account four notional revenue profiles. A simple average of the 4 (four) values of NPV of the Government share so arrived under the 4 (four) scenarios will be used for evaluation.

Year	SCENARIO-1 Daily Revenue (mmusd)	SCENARIO-2 Daily Revenue (mmusd)	SCENARIO-3 Daily Revenue (mmusd)	SCENARIO-4 Daily Revenue (mmusd)
1	0.908675799	0.378538813	0.105936073	0.052968037
2	1.817351598	0.757077626	0.211872146	0.105936073
3	3.401826484	1.511415525	0.49086758	0.24543379
4	4.534246575	1.776027397	0.573972603	0.286986301
5	4.534246575	1.776027397	0.573972603	0.286986301
6	4.534246575	1.776027397	0.573972603	0.286986301
7	4.534246575	1.776027397	0.573972603	0.286986301
8	4.534246575	1.776027397	0.573972603	0.286986301
9	4.534246575	1.776027397	0.573972603	0.286986301
10	4.534246575	1.776027397	0.573972603	0.286986301
11	4.096508637	1.59363659	0.50101628	0.25050814
12	3.724461566	1.438616977	0.439008435	0.219504217
13	3.407497186	1.306548485	0.386181038	0.193090519
14	3.136838267	1.193773935	0.341071218	0.170535609
15	2.905202705	1.097259118	0.302465291	0.151232645
16	2.706532827	1.014480002	0.269353645	0.134676822
17	2.298031716	0.863924778	0.232810939	0.11640547
18	1.970140577	0.742251623	0.202151791	0.101075895
19	1.702499282	0.642367595	0.176214283	0.088107141
20	1.481096922	0.559347182	0.154127467	0.077063733

Revenue Sharing Model; work program and evaluation criterion in RSC is given at Table DSF-I and HELP-I round. In all the categories getting total points for that category. This Government NPV for the four revenue against the various combination of biddable and based on available geoscientic data and uniqueness related to specific Block, in this evaluated. Further, the originator incentive is excluded.

Government Share at LRP

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0%	161.3	322.7	484.0	645.3	806.7	968.0	1129.3	1290.7	1452.0	1613.3
10%	411.2	572.6	733.9	895.2	1056.6	1217.9	1379.2	1540.6	1701.9	1863.2
20%		822.5	983.8	1145.1	1306.5	1467.8	1629.1	1790.5	1951.8	2113.1
30%			1233.7	1395.0	1556.4	1717.7	1879.0	2040.4	2201.7	2363.0
40%				1644.9	1806.3	1967.6	2128.9	2290.3	2451.6	2612.9
50%					2056.2	2217.5	2378.8	2540.2	2701.5	2862.8
60%						2467.4	2628.7	2790.1	2951.4	3112.7
70%							2878.6	3040.0	3201.3	3362.6
80%								3289.9	3451.2	3612.5
90%									3701.1	3862.4
100%										4112.3

Table 3: Revenue Scenarios used for NPV calculator (in excel format) for HELP-I as given on DGH website

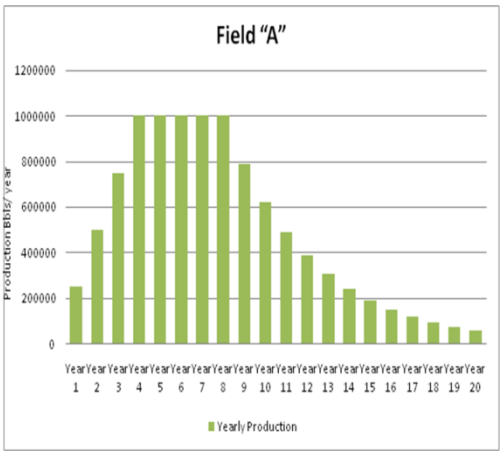
Table 4: Average Govt. NPV in US$ Million of four scenario at varying LRP& HRP government share

As given in Notice Inviting Offer the NPV of Revenue Share offered by Contractor to Government will be evaluated by applying 10% discount rate under four scenarios taking into account four notional revenue profiles given in DGH website (Table 3). A simple average of the four figures of NPV of Government share arrived under the four scenarios is used for evaluation. Based on this revenue profiles the combination of government share at LRP and HRP was generated using Data Table of "What-If analysis" (Table 4) and used to prepare the trend for Type 1 Block i.e. onland.

Using the data from Table 4, government NPV was plotted against government share at Lower Revenue Point and Higher Revenue Point (Fig. 2). The NPV values have been analyzed and it can be seen that Government NPV is more sensitive towards the government share at LRP than HRP. For every percentage jump in government share at LRP, the Government NPV is increasing by US$ 25 Million whereas in every percentage jump in government share at HRP is US$ 16 Million. This is one of the critical point to be considered during bidding.

Fig 2:Government NPV at varying LRP and HRP

For analysis, One hypothetical oil field "A" with recoverable reserve of 5 MMBbls located on onland was considered for evaluation RSC fiscal regime in HELP-I round.



Input parameters considered CAPEX US$75 Million and OPEX US $60 Million, exclusive of Site Restoration and Abandonment Cost, Royalty 12.5% and Income Tax Rate 30%. The contract period is taken as 20 years. Crude price range considered varying from US$ 40/Bbl to US$ 100/Bbl in a cyclic pattern to capture the price volatility

Fig. 3: Production profile of Field "A"

Assumption of Field production profile is given at Fig. 3 with peak production of around 1600 Bbls/d with four years for development and four years of plateau, followed by steady decline rate. The development cost is split equally in the initial four years.

Based on these parameters Internal Rate of Return (IRR) has been calculated at various combination of government share at LRP and HRP (Fig 4).

The Contractor IRR is negatively correlated to government share at LRP & HRP. It is found that Contractor IRR is more sensitive towards the government share at LRP than HRP. For every percentage jump in government share at LRP, the Contractor IRR drops by 0.6% whereas it drops by 0.1% for every percentage jump in the government share at HRP. This is another pressing point during bidding for fiscal terms in HELP-I.

Fig 4:Contractor IRR at varying LRP and HRP

Optimum bidding strategy for Onland Field " A" in HELP-I:

Fig 5:Balance of Government NPV and Contractor IRR

The Government NPV contours were plotted against the Contractor IRR (Fig 5), it is observed that for a particular Govt. NPV value, maximum contractor IRR is achieved at 99% government share at HRP (as observed that HRP is less sensitive). Thus depending on the minimum IRR requirement (Hurdle rate) of bidding company the maximum government NPV can be decided. Based on which the optimum combination for biddable Govt. share at LRP and HRP can be finalized. For example for a company having a Hurdle rate of 10%, the maximum Government NPV contour intersecting the 10% Contractor IRR line is of US$ 2425 Million. The correspondingly Government share at LRP on this point is 32%. Thus the bidding strategy for Onland Field 'A' for achieving 10% IRR is government share at LRP is 32% and government share at HRP is 99%.

Conclusion:

The recent reforms, revenue-sharing represents a simplicity in fiscal design and presumably less administrative intervention. RSC gives liberty for exploration and exploitation of all kinds of hydrocarbon during contract period. From Government share point of view this model captures the windfall profits as it capture variation in production and price. It is worth mentioning that high exploration risk and low-prospect regions must balance government take with attractive financial returns to investors. Cost Recovery of PSC encourages exploration by ensuring the recovery of investment made in block in case of production.

After analysis of Fiscal terms in HELP-I, it is observed that the Government NPV is more sensitive towards the government share at LRP than HRP and so is the Contractor IRR. The effect of government share at HRP is comparatively less for contractor IRR compared to Government NPV. That is with incremental rise in government share at HRP results in relative less lowering of contractor IRR than compared to the rise in Government NPV. Analysis by assuming Onland Field "A" gives clarity that bidding parameters can be adjusted in such a way so as to achieve maximum government NPV while achieving the contractor's IRR. Thus this can be concluded that the biddable government share at HRP closer to 100% gives the optimum results and at LRP the biddable share depends on company's assessment and hurdle rate/IRR. Based on learning from the case study similar strategy for bidding Type II and Type III blocks can be formulated.

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