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Rating Methodology for ratings of road projects based on Hybrid Annuity Model (HAM)

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Introduction:

The Government of India has approved the hybrid annuity model (HAM) to increase the pace of award and construction of national highways apart from de-risking the developers and lenders from inherent shortcomings associated with conventional toll and annuity based, design, build, finance, operate and transfer (DBFOT) model. NHAI has also started awarding hybrid annuity projects from January 2016.

The following sections cover salient features of hybrid annuity projects:

Bid parameter: Project life cycle cost defined as Net Present Value (NPV) of the quoted bid project cost plus NPV of the operations and maintenance (O&M) cost for the entire operations period is the bid parameter. Bid is awarded to the developer quoting lowest NPV for project life cycle cost.

Cash Construction Support: 40% of the bid project cost shall be payable to the concessionaire by the authority in five equal instalments linked to physical progress of the project. Concessionaire shall have to initially bear the balance 60% of the project cost through a combination of debt and equity.

Escalation clause in the project cost: Project cost shall be inflation indexed (through a Price Index Multiple (PIM), which is the weighted average of Wholesale Price Index (WPI) and Consumer Price Index (CPI) (IW) in the ratio of 70:30. The bid project cost adjusted for variation between the price index occurring between the reference index preceding the bid date and reference index date immediately preceding the appointed date shall be deemed to be the bid project cost at commencement of construction. Bid project cost shall be changed to variation in PIM on monthly basis till the achievement of commercial operations date (COD).

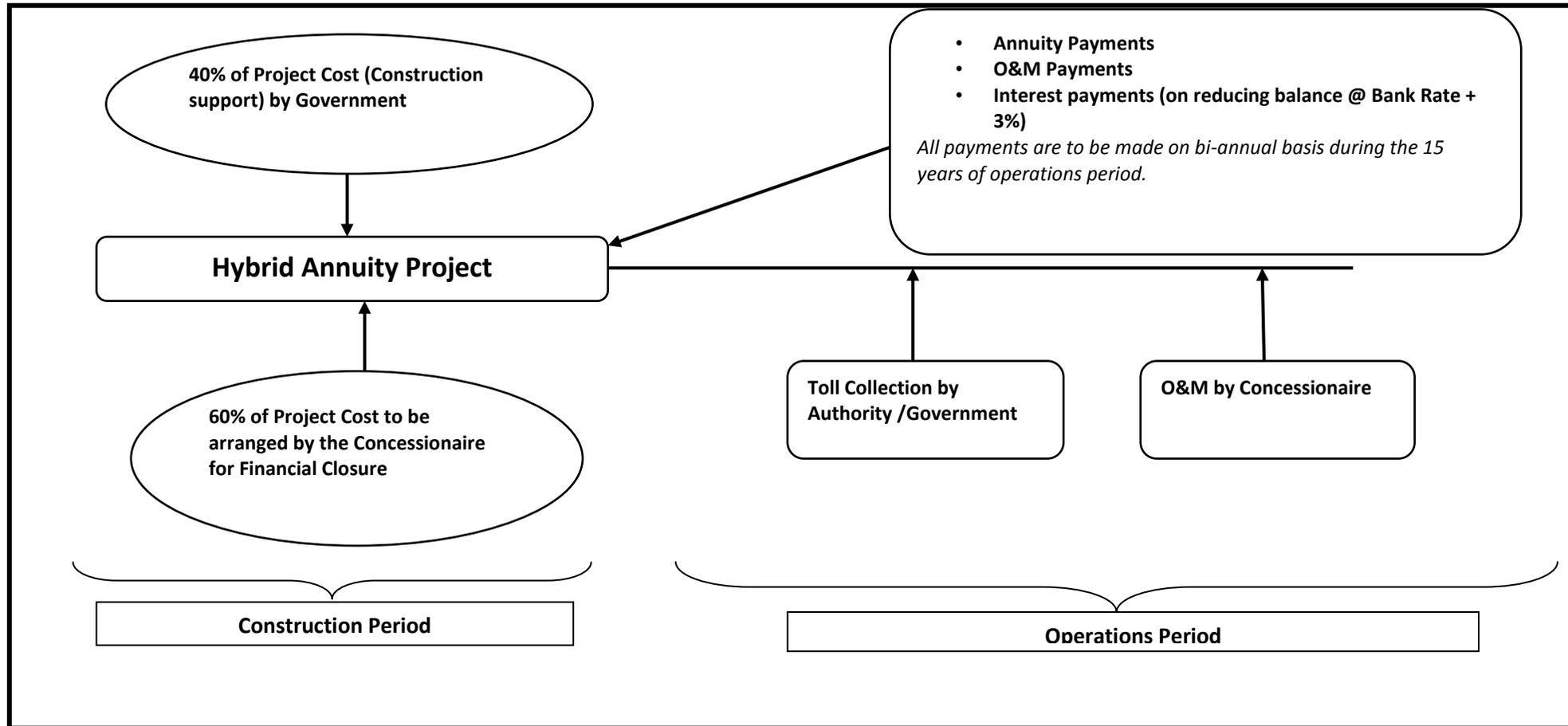
Stable cash flow of annuity payments: Semi-annual annuity payments shall be made to the concessionaire by the Authority on completion of the project for the balance 60% of the final bid project cost. The annuity payments have been aligned with typical revenue profile for highway projects. Along with the annuity payments, interest shall be paid in the form of annuity on reducing balance of final construction cost. Interest rate for the same shall be Bank rate + 3 % (currently 9.75% per annum).

Assured O&M payouts by authority: O&M payments shall be made to the concessionaire along with annuity by the Authority, in accordance with the amount quoted which will be inflation indexed. Concessionaire shall remain responsible for the maintenance of the project till the end of the concession period.

Revenue for authority: Toll collection shall be the responsibility and revenue of the authority.

Concession Period: It shall comprise construction period, which shall be project specific, with a fixed operations period of 15 years.

The following block-diagram provides an overview of the HAM Model.



Comparison of features in concession agreement of hybrid annuity road projects vis-à-vis conventional DBFOT annuity road projects:

Particulars	Conventional DBFOT project	Hybrid annuity project	Impact Analysis
Concession period	Concession period is fixed from the appointed date and it comprises construction and operations period. This arrangement reduces the operations period if there is delay in achievement of provisional commercial operations date (PCOD). For example, concession period is 17 years from the appointed date which also includes construction period of 730 days. In this case, number of annuities to be received by concessionaire reduces from 30 to 29 if there is delay of six months in achievement of PCOD.	Concession period includes fixed operational period of 15 years from COD. Hence, numbers of annuities are fixed at 30 irrespective of delay in achievement of PCOD. However, Authority can levy damages or withhold performance securities for the delays attributed to concessionaire.	Positive for developers and lenders as it provides revenue visibility.
Damages for delays attributed to the concessionaire	If COD does not occur prior to 91 st day after scheduled project completion date (SPCD) unless the delay is on account of reasons solely attributed to the authority or force majeure, the concessionaire shall pay damages to the authority in a sum calculated at rate of 0.1% of the amount of performance security for delay of each day until COD is achieved.	In the scenario mentioned here, damages amount increases to 0.2% or 0.3% of the amount of performance security for delay of each day until COD is achieved. Upon concessionaire failure to pay damages, the same shall be paid with interest of bank rate plus 3% and shall be deducted from the annuity payments till the recovery of entire damages.	Positive for the authority and more binding on developers to complete the project within stipulated time frame.

Particulars	Conventional DBFOT project	Hybrid annuity project	Impact Analysis
Bidding criteria	Authority mentions project- specific Engineering procurement and construction (EPC) cost in the request for proposal. However, concessionaire can freeze the project cost based on technical viability on its own as it is not the bidding parameter. This results in wide deviations in the cost of project based on the assumption and margin estimated by the developers.	Bid project cost is finalized on the date of declaration of bidder offering lowest project life cycle cost (including construction cost and O&M cost) and hence the project cost cannot be changed except variations in PIM and change in scope. Bid project cost shall be inclusive of construction cost, interest during construction, working capital and physical contingencies except additional cost due to variations in PIM, change in scope, and change in law or force majeure. Furthermore, concessionaire is also required to extend additional performance security to the authority in the form of unconditional irrevocable guarantee from a bank if the bid project cost of the selected bidder is lower by more than 10% of estimated project cost of authority.	Positive for authority and lenders. Nevertheless, this requires in-depth study of project cost by bidder based on the design and specification of scope of work. Emphasis on cost based bidding and availability of the recent cost estimates by NHAI is expected to narrow the difference between NHAI cost and bidding cost which can ultimately result in lower funding requirement for developers and lower exposure of banks.
Deemed termination	No such clauses.	In case, appointed date does not occur before the 1st anniversary of the signing of Concession agreement, the concession agreement shall be deemed to have been terminated by mutual agreement of the parties. Furthermore, if appointed date does not occur for the reasons attributed to concessionaire, authority shall en-cash performance security and additional performance security as damages thereof.	Protects the developer from inordinate delay in handover of land or regulatory clearances from the authority.
Project milestone	Project milestone linked to financial progress.	Project milestone linked to both physical and financial progress.	Positive for the authority and lenders as it protects them from any diversion of funds by developers.

Particulars	Conventional DBFOT project	Hybrid annuity project	Impact Analysis
Release of construction grant	Construction grant, if any, can be disbursed in the proportionate form of term loan disbursement after infusion of 100% contribution from sponsors.	Authority shall provide construction grant to the extent of 40% of the inflation indexed bid project cost. Construction grant is to be released in the form of five equal installments subject to the achievement of physical progress of 10%, 30%, 50%, 75% and 90% respectively.	Positive for developers and lenders as funding of the 40% of the project cost from the authority is expected to reduce the funding need. Further milestone for release of grant is relaxed from 20%, 40%, 60%, 75% and 90% respectively which is expected to reduce cost of borrowing in the initial phase.
Mobilization advances	Concessionaire can grant mobilization advances to EPC contractor from the cost of project. No mobilization advance is granted from authority during construction period.	Mobilization advances can be availed from authority upto 10% of bid project cost @ bank rate of RBI compounded annually during construction period. Out of 10% mobilization advances 5% shall be available at any time after appointed date and balance 5% within sixty days from appointed date. Mobilization advances shall be released within one month from request by concessionaire. Such mobilization advances are to be deducted in four equal instalments from construction grant by authority. Interest on such advances shall be recovered as the fifth and final installment upon expiry of 120 days commencing from the recovery date of fourth installment.	Positive for developers as mobilization advances are available at bank rate which is currently 6.75%. Low cost mobilization advances in the early stage of construction is expected to reduce interest during construction.
Delay in handover of balance right of way (RoW) post appointed date(i.e. handover of 80% land)	Concessionaire is required to complete the work on all lands for which RoW is granted within 90 days of appointed date and achieve PCOD after completing such work. However, final COD can't be issued even	In the event the authority is unable to provide remaining site within 180 days from the appointed date, the remaining site shall be removed from the scope of work under the provision of change in	Positive for developers and lenders as it provides better clarity and mitigates the construction risk to a considerable

Particulars	Conventional DBFOT project	Hybrid annuity project	Impact Analysis
	though work is delayed due to reasons attributed to the authority.	scope. Hence, final COD can be achieved after completing the 100% work on the site available to concessionaire within 180 days from appointed date.	extent.
Bonus payment on early completion	Bonus upto maximum one annuity (six months) shall be paid by authority along with first annuity subject to achievement of final COD(100% completion of work on the entire project length). Furthermore, annuity payment shall commence only after six months from scheduled project completion date (SPCD).	In the event concessionaire shall achieve COD on 30 or more days prior to scheduled completion date, authority shall pay bonus equal to 0.5% of 60% of bid project cost for 30 days by which COD preceded SPCD. Thereafter, the bonus shall be calculated on pro-rata basis. Bonus shall be due and payable along with the first annuity payment. Annuity payment shall commence within 15 days of 180th day from COD.	Positive for developers as bonus payment can be received even after completing 100% work on the land available within 180 days from appointed date.
Release of performance security	Performance security can be released after one year from appointed date or achievement of 20% of financial progress by concessionaire.	Performance security can be released after one year from appointed date or achievement of 30% of financial progress by concessionaire. Additional performance security can be released after achievement of milestone-III (i.e. 75% of physical progress).	More binding on developer and increases performance obligation of developer.
Change in scope	Authority shall pay the concessionaire any increase in scope of work approved by independent engineer. In the event of reduction in scope of work due to reasons attributed to authority or force majeure, annuity payment shall be reduced based on the cost assessed by independent engineer.	Same clause in case of increase in scope. While in case of reduction in scope due to reasons attributed to the authority, cost of such reduced cost is to be assessed by the independent engineer and bid project cost would be reduced by 107.54% of the civil cost for reduced scope. O&M payments shall also be increased or reduced in proportion of change in the length of project highway due to change in scope.	Neutral. Further, alignment of O&M payments with project length is favorable for the authority.

Particulars	Conventional DBFOT project	Hybrid annuity project	Impact Analysis
Termination payment under concessionaire event of default prior to COD	No termination payment.	Termination payment is allowed subject to achievement of second milestone for the payment of grant (i.e. 40% of the physical progress). Termination payment shall be paid in the range of 50-80% of the debt due or 9-32% of the bid project cost whichever is less minus insurance cover depending upon achievement of second to fifth milestone for release of construction grant.	Lenders are not entitled for termination payment till the achievement of 40% of physical progress which could require more than one year time.

HAM- credit perspective

Funding risk

Aggressive bidding, high debt levels and increasing working capital intensity as well as execution challenges had collectively affected the credit profile of prominent infrastructure developers / sponsors during last three years. Deterioration in the credit profile of some of the large developers has increased the funding risk during construction phase and reduced participation of developers in DBFOT model. At the same time, developers with strong execution capability and good financial flexibility are better placed to bag the sizeable opportunity in the road sector. HAM model entails lower sponsor contribution during construction period considering 40% construction support from authority and hence mitigates the funding risk to an extent. Furthermore, provision of mobilization advances at bank rate (currently 6.75% per annum) from authority is also expected to provide some support to concessionaire in the initial phase of construction. CARE expects equity commitment to be to the extent of 12-15% of project cost for HAM projects.

Sponsor evaluation

CARE considers credit strength of sponsor as important parameter for conventional DBFOT projects. In case of HAM projects, sponsor's project execution track record and commitment to support the project in exigencies are also important apart from sponsor's financial flexibility in light of following:

- Focus on cost based bidding requires in-depth assessment of project cost and O&M cost
- Cost competency remains crucial to generate envisaged Internal Rate of Return (IRR)
- Emphasis on physical progress for release of grant, increases reliance on sponsor

- Inflation indexed bid project cost protects the developers against price escalation to an extent. Nevertheless, extent of price escalation is difficult to factor at the time of financial closure. Hence, price escalation is likely to be funded through grant from authority and sponsor contribution in the ratio of 40:60 which can be subsequently reimbursed by the lenders in the project debt/equity after arriving at final project cost post COD.

CARE considers the following points as a mitigation tool towards evaluation of sponsor risk:

- Demonstrated execution track record of sponsor with lower reliance on subcontracting
- Sponsor's track record for completing the projects within envisaged time and cost parameter
- Sponsors' track record of supporting the projects in case of exigencies
- Corporate guarantee of strong sponsor till execution of project and receipt of first annuity
- Sponsor's financial flexibility and creditworthiness

Project implementation risk:

Project implementation risk is partially mitigated due to availability of 80% length of project before appointed date and NHA's efforts for providing faster clearances. Provision of deemed termination and clauses to issue final COD in case of completion of 100% work on the lands available within 180 days from appointed date also protect the interests of developers and lenders to a considerable extent. Besides, stringent clauses for levy of damages, encashment of performance security as well as additional performance security in case of delay in execution due to reasons attributed to the concessionaire also exert some pressure on the developer for timely execution. As compared with conventional BOT projects, challenges for developer cum EPC contractor to execute the project within envisaged cost, are greater as the project is awarded under competitive bidding based on the cost parameter as compared with conventional BOT project awarded based on the parameter of premium payment/grant offered to the authority. Further, construction risk increases in cases where sponsor has limited track record of execution of complex projects. Developers with in-house EPC team and demonstrated execution track record are expected to benefit from HAM, notwithstanding aggressive bidding, while developers relying on third party contractors are likely to find difficulties in securing contracts at required IRR. Construction grant is expected to be disbursed in installment upon achievement of milestone based on the physical progress. Moreover, lender shall disburse the project loan only upon achievement of desired project debt/equity by concessionaire. Consequently, working capital requirement for the EPC contractor or interim funding support from concessionaire till release of grant from the authority is expected to remain moderately high. However, relaxation in terms for release of grant and mobilization advances in recent model concession agreements is expected to provide relief to EPC contractors and provide cash flow cushion during construction period.

CARE considers the following points for analysis of project implementation risk:

- Developers track record in execution of large sized EPC projects
- Financial flexibility of sponsor and EPC contractor to fund increase in working capital intensity due to delay in receipt of construction grant
- Gap between NHAI Project cost and bid project cost and reasons in case of large variations between NHAI project cost and bid project cost.
- Gap between Lowest bidder (L1), L2 and L3 and other bidders
- Justification of bid project cost by reputed independent technical consultant
- Rate of interest assumed for calculating interest during construction and actual rate of interest finalized at the time of financial closure
- Contingencies considered by developers for arriving at bid project cost
- Financial progress assumed by developer for achieving designated milestone of physical progress
- Achievement of financial closure and status of funds deployment by sponsor
- Availability of Right of Way (RoW) and other clearances including forest clearance
- Complexity of the project road in terms of presence of structural work and terrain
- Stage of project progress and current project progress against stipulated progress

CARE considers the following points as a mitigation tool of project implementation risk:

- Demonstrated track record of EPC contractor in executing large sized projects
- Good financial flexibility of sponsor and EPC contractor
- Presence of fixed price EPC contract with provision of release of escalation amount due to change in WPI and CPI only after receipt of same from NHAI
- Sponsor support undertaking to fund cost overrun and any cash deficit during under construction phase (including due to delay in release of grant)
- Corporate guarantee of sponsor till COD and receipt of first annuity
- Reasonable gap between NHAI project cost and bid project cost as well as L1 and L2
- Less than 5% variation in project cost in assessment of reputed independent consultant
- Availability of required RoW and presence of minimal structural work

Cash flow risk:

During operational phase, cash flow is assured in the form of annuity payments from NHAI (rated CARE AAA/Stable) on semi-annual basis covering 60% of the project cost along with interest at bank rate plus 3% (currently 9.75% per annum). This assures cash flow during operational period.

O&M risk:

O&M risk is also partially offset due to fixed payment in the form of annuity which is also indexed to inflation movements with the base year considered as the year of bidding. However, developers would still face the risk of sharp increase in the O&M cost due to more than envisaged wear and tear.

Increase in O&M cost other than inflation indexation during operational period and consequent breach of performance obligations by developers in light of their lower contribution can result in deduction of annuity payments. Hence, aggressive bidding in O&M cost due to front loading of EPC cost can result in to moderate debt coverage indicators in operational period. This risk increases in case of sponsors with moderate to weak credit profile.

Majority of the projects awarded under HAM by NHA are to be developed with rigid pavement structure as compared to flexible pavement mainly to reduce the project life cycle cost.

CARE considers the following points for analysis of O&M risk:

- Construction cost of concrete road is around 25% higher than bituminous road albeit with significant reduction in the operations and maintenance cost. Bituminous layer is required to be replaced every five years in flexible pavement structure which results in higher O&M cost.
- Maintenance cost in rigid pavement structure consists of replacement of plain cement concrete (PCC) panel on regular basis. Based on estimates derived from independent consultant and as per discussions with industry sources, 0.5-1% of PCC panels are required to be replaced every year in rigid pavement structure. Hence, maintenance cost can be derived by multiplying PCC qty required to be replaced every year with current rate of PCC. Hence, O&M cost can be derived by adding operating cost with maintenance cost derived from above formula.
- Difference of O&M cost between L1, L2 and L3 and justification between wide variations
- Justification of O&M cost by reputed independent technical consultant
- CARE evaluates O&M cost based on above parameters. Further, CARE considers fixed price O&M contract with experienced contractor post COD, experience of sponsor in managing operations of BOT projects, rationale of difference between L1 and L2 for O&M cost and justification of O&M cost by reputed independent consultant as some of the effective strategies to mitigate O&M risk. Further, cash flow cushion during operational period improves in case total project cost considered for financial closure is lower than bid project cost which in turn also mitigates the O&M risk to a considerable extent.

Interest rate risk:

Interest shall be paid on reducing balance of cost. Interest rate for the same shall be Bank rate + 3% (currently 9.75% per annum). However, considerable lag between fall in bank rate and reduction in base rate by lender can reduce the margin of safety and increase interest rate risk to an extent. For example, bank rate reduced from 7.75% to 6.75% in about year while base rate of banks have not moved in tandem. Nevertheless, developer has margin of safety in the event of replacing the bank loans with long-term instruments at lower rates after establishment of some operational track record in light of strong credit quality of annuity

provider (i.e. NHAI, rated 'CARE AAA; Stable').CARE considers SPVs's ability to tie up the debt at competitive rate during construction period and sponsor's past track record of refinancing its other SPVs as mitigation tools for interest rate risk.

Liquidity support mechanism:

Creation of Debt Service Reserve Account (DSRA) especially prior to commercial operations date (COD) and major maintenance reserve account (MMRA) from project cash flows would continue to provide comfort to the ratings.

