Case Study

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What happens in derivatives that allow two-way shouting?

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Abstract: *Is it possible to combine the shout and the cancellation features in a single product? How do the shout strategies for the buyer and the seller interact? How to deal with multiple shout opportunities?*

Just like early exercise, there is another interesting feature that is often added to an option contract to make the contract attractive for the buyer. This is the "Shout" feature, which allows the holder of the option to lock in the payoff before the expiry of the option, by shouting. The buyer would shout early if the current payoff is positive and he is unsure whether the final payoff would be as high as the current payoff. This way, the buyer will get at expiry, the maximum of the locked payoff and the final payoff. Shout features can be used by structured product groups, with either single or multiple shout opportunities for the buyer.

The main attraction of a shout option is that it can be considered as a cheaper alternative of the lookback option, and at the same time removing the regret of a wrong exercise of an American option (in hindsight). Mr.Ashish and his quant team at Tech Kapital were aware of the shout feature and have incorporated this in some of their earlier product designs at the request of their clients. But after satisfactorily answering the impact of adding the cancellation feature in an American option for a particular client (see 'Case study on a cancellable option' by the author at IIMK cases webpage), Mr.Ashish got interested in exploring the link between "shouting" and "early cancellation". In particular, he wants to develop a product which allows both the long and short positions in an option contract to shout i.e. a two-sided shout option.

Their first challenge is to design a relevant product based on this idea, clearly stating the payoffs and the exercise rules. And before attempting to price a two-sided shout contract, he and his team want to ensure whether the standard shout option can be priced in a binomial model, so that it will be easy to explain the basic properties of this product to the client. At the same time the binomial pricing will also give the team more flexibility in combining 'Shout' with other features, as per the client's requirement. However, at this point they are not sure whether their pricing engine can easily accommodate multiple shout opportunities.

Once they have a basic pricing framework, they can focus on the initial motivation of a two-sided shout product and come up with the optimal strategies for the buyer and the seller. Coming to the two-sided option, the same question that arises in a cancellable option is also relevant here viz. *'Does it matter who (among the buyer and the seller) gets the first right to exercise at every exercise date or do we have to design it in such a way that exercise dates are kept separate for the two parties?'* The team will be doubly happy if they can also incorporate multiple shout opportunities in these two-sided contracts.

Can you help them?

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