Math 5422 - Quantitative Hedge Fund Strategies

Project 6: Convertible Bond Pricing Using QuantLib

Due Date: Match 1, 2023

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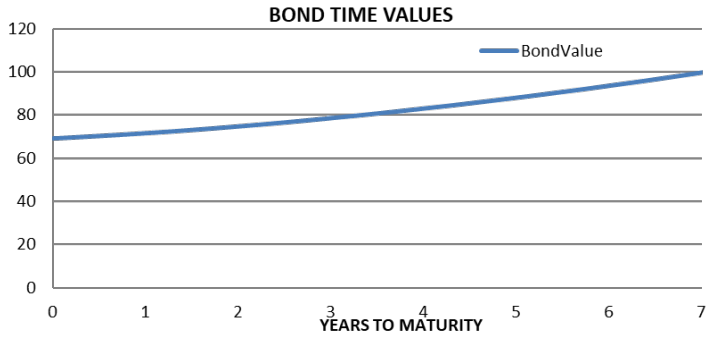
Project Description

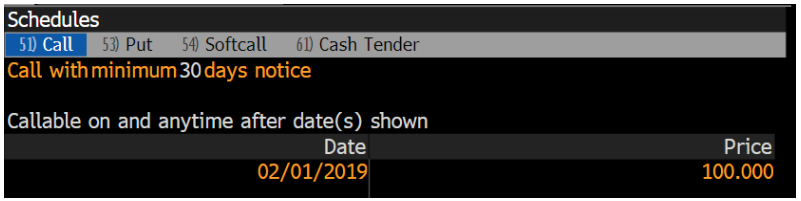
1. Using QuantLib to price a convertible bond
   - Ideally, we should use the actual swap curve as the yield curve. If that is too difficult, you can use a constant yield curve
   - Dividend is 0
   - Soft calls will be ignored
   - Outputs should include prices, accrued, and the Greeks.
2. Calculate the bond floor curve (on the time grids) using a risky yield curve = swap curve + 400bp, this is simply a cashflow discount from maturity back to valuation date.



http://gouthamanbalaraman.com/blog/value-convertible-bond-quantlib-python.html

Bond Description

Calls / Puts / Soft Calls



Bond Description

Q&A

1. Greeks:
   - Delta: Change of value for 1% stock move. Use central difference on +/-1% stock price move. **Note that the denominator should be parity, i.e. 15.422. (Delta should be < 1)**
   - Gamma: Change of Delta for 1% stock move, calculate along with Delta.
   - Vega: Change of bond value for 1% volatility change
   - Rho: change of bond value for +100bp yield curve changes (calculated as 100 * (change of bond value for 1bp of yield curve changes)

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