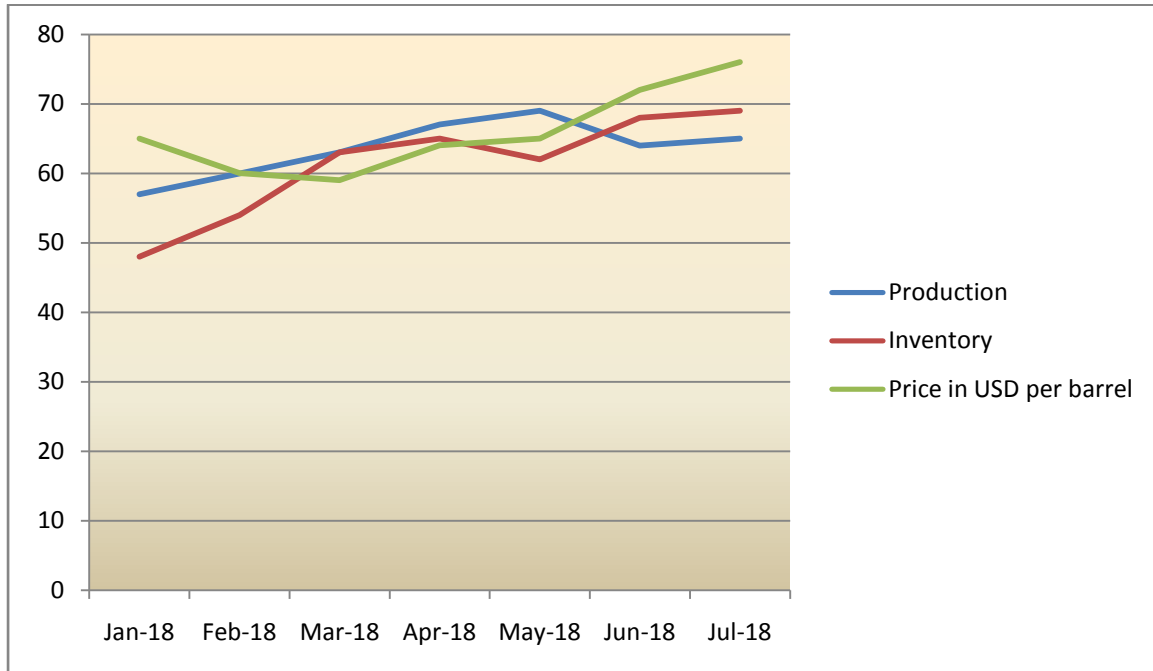


Hedging for future price against spot price and their deviation

Effective rate of crude oil post import and hedging of Brent based on historical data

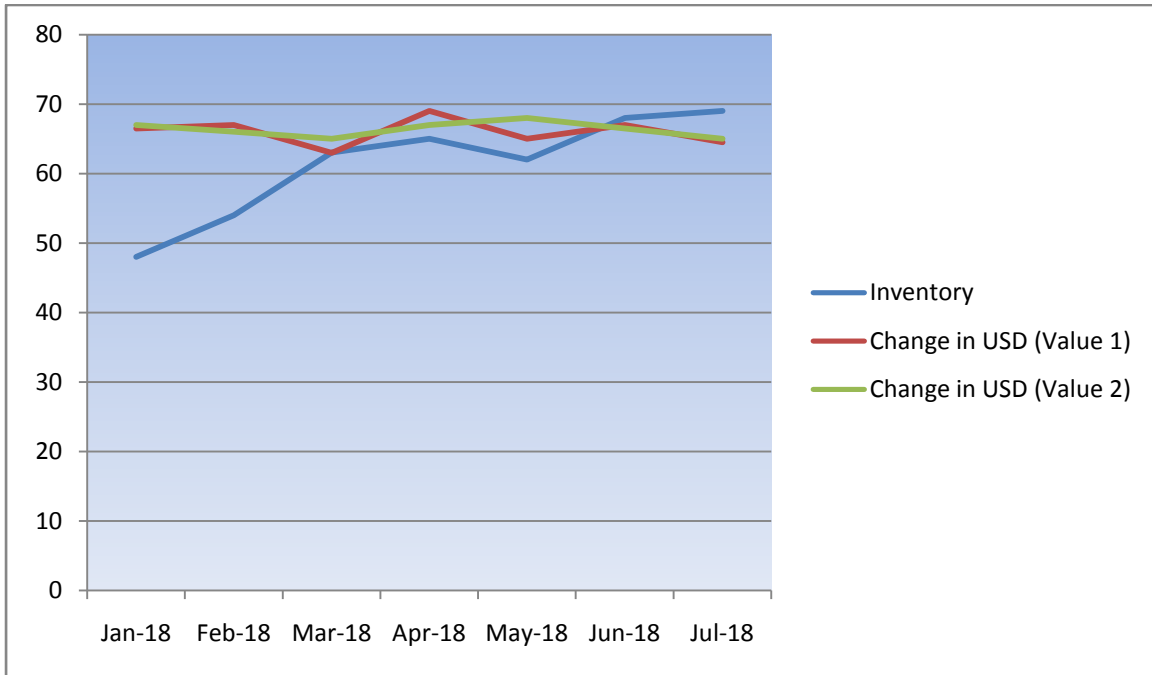
Production and inventory of crude oil before distillation change a lot. The valuation also changes a lot based on the price in USD per barrel, and also on the future price of barrel in USD.



Timeline	Production	Inventory	Price in USD per barrel
Jan-18	57	48	65
Feb-18	60	54	60
Mar-18	63	63	59
Apr-18	67	65	64
May-18	69	62	65
Jun-18	64	68	72
Jul-18	65	69	76

Given the production and inventory, and the change of price, the fluctuation is captured. This is the base figure that can work on production versus inventory.

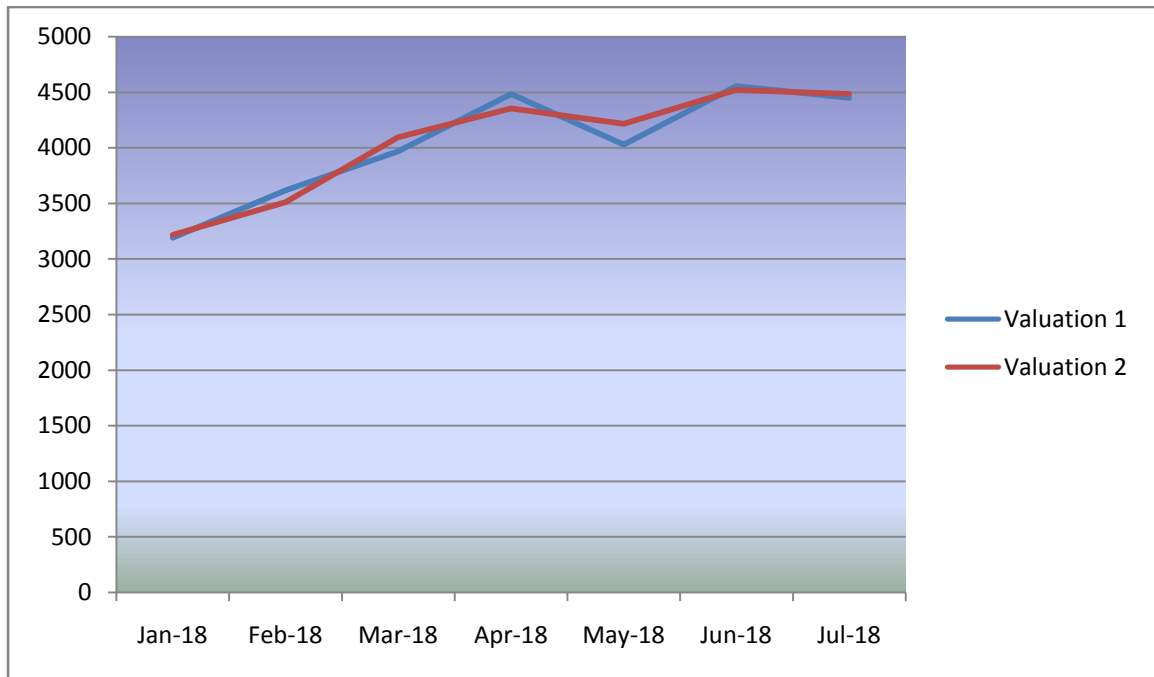
Hedging for future price against spot price and their deviation



	Inventory	Change in USD (Value 1)	Change in USD (Value 2)
Jan-18	48	66.5	67
Feb-18	54	67	66
Mar-18	63	63	65
Apr-18	65	69	67
May-18	62	65	68
Jun-18	68	67	66.5
Jul-18	69	64.5	65

The following graphs show that how does the inventory level is decided for sales based on spot and future price. The changes in the values of spot price versus marked or hedged or future price of Brent crude in USD, versus the changes for future price reflects on the valuations of the inventory.

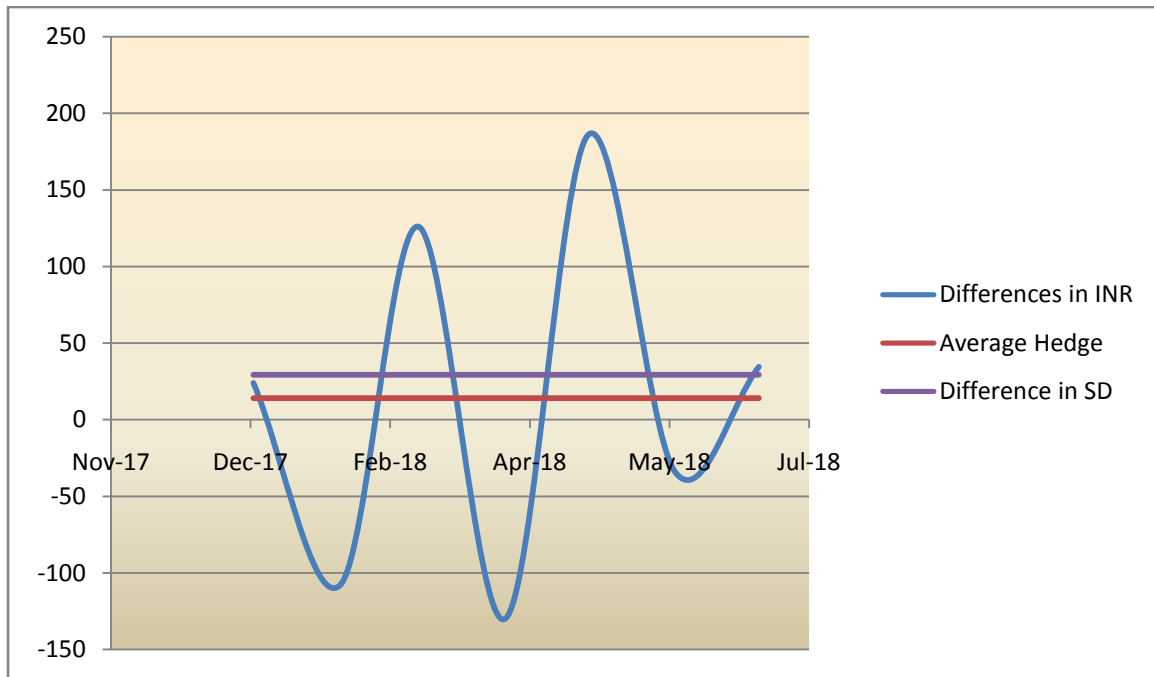
Hedging for future price against spot price and their deviation



	Valuation 1	Valuation 2
Jan-18	3192	3216
Feb-18	3618	3510
Mar-18	3969	4095
Apr-18	4485	4355
May-18	4030	4216
Jun-18	4556	4522
Jul-18	4450.5	4485

The valuation difference for the spot price and future price is determined based on mark-up and pay, for the price of Brent Crude per Barrel in USD.

Hedging for future price against spot price and their deviation



If the hedging is done, and a simple arithmetic mean is taken, the basic difference comes out to be less than the difference around INR 14.07, which means that the values taken for transactions are valid and are more pronounced in future than the spot prices. The SD is around 29.36. Hence, these future prices for hedging are risky.