Delta算法与对冲收益

1. **Delta算法实现**

示例：delta\_calculate\_example.py

环境：python3.6

Dependencies：scipy.stats；numpy

1. **SVI模型******

* 全Delta:



* Effective Delta:



1. **BS模型**

* Delta:



1. **动态对冲盈亏（PnL%）**

平直期权：S/K在（0.98,1.02）区间

盈亏PnL：不取绝对值，可正负相抵。

对冲标的：对冲选取的是50ETF而不是期货，可能会造成一定的偏差。有研究说50ETF期权跟期货一致性更高，可能用期货对冲会得到更好的效果。

对冲盈亏如下图所示：

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| sample dates | contract month | moneyness | PnL(%) | | |
| BS delta | SVI total delta | SVI effective delta |
| 2015.9-2016.1 | 0 | ATM | -20.1700% | 10.5800% | -2.8000% |
| 1 | ATM | -3.7400% | -4.2200% | -4.5200% |
| 2 | ATM | -1.0800% | -0.2500% | -0.3700% |
| 3 | ATM | -0.4000% | 0.2400% | 0.3900% |
| 2016.2-2016.7 | 0 | ATM | -31.3700% | 8.3300% | 5.7600% |
| 1 | ATM | -3.4500% | -0.2200% | -1.2000% |
| 2 | ATM | 2.2300% | 0.5100% | 0.5300% |
| 3 | ATM | 2.3200% | 0.7900% | 0.8200% |
| 2016.8-2017.1 | 0 | ATM | -47.4800% | 3.0700% | -9.7700% |
| 1 | ATM | -11.1800% | -8.2400% | -4.1900% |
| 2 | ATM | 1.6300% | 0.6100% | 0.7900% |
| 3 | ATM | 1.2700% | 0.3700% | 0.4200% |
| 2017.2-2017.7 | 0 | ATM | -37.5000% | -6.7800% | -18.4400% |
| 1 | ATM | -6.7400% | -3.5200% | -2.1500% |
| 2 | ATM | -1.0900% | -0.6300% | -0.4000% |
| 3 | ATM | -0.3800% | -0.3300% | -0.1200% |