

# Finance

WK5

1

开放作业 project

应用Random Forest 方法编写一个 house price predictor

数据参见

data.zip

```
# target: SalePrice  
# Features: **
```

要求：

1. 不需要全部feature，仅用float, int 训练就可以了
2. 如果有兴趣，可以尝试清理object features

参考答案

<https://www.kaggle.com/marsggbo/kaggle>

# 作业4

# Stock Market

- **What are stock exchanges**
  - NYSE (US\$22.9 trillion (2019))
  - NASDAQ (US\$ 12.95 Trillion (2019))
- SSE ( US\$5.01 trillion (May 2019))
- SZSE (US\$3.51 trillion (March 2019))

- **Oversee agency**
  - SEC
  - 证监会

# Index

- **What are Index**
  - S&P 500
  - Dow Jones Industrial Average (DJIA)
  - Russell 3000
- Shanghai Composite
- SZSE Component

<https://www.investing.com/indices/major-indices>

# Stocks

- IPO
  - Public traded company
  - OTC

<https://www.investing.com/indices/major-indices>

# Stocks Price

[https://en.wikipedia.org/wiki/Open-high-low-close\\_chart](https://en.wikipedia.org/wiki/Open-high-low-close_chart)



<https://www.mit.edu/~mbarker/formula1/f1help/11-ch-10.htm#:~:text=Types%20of%20Stock%20Charts,a%20particular%20period%20of%20time.&text=Open%2DHigh%2DLow%2DClose,stock%20for%20the%20same%20period.>



## Mutual Fund

## ETF

## Bonds

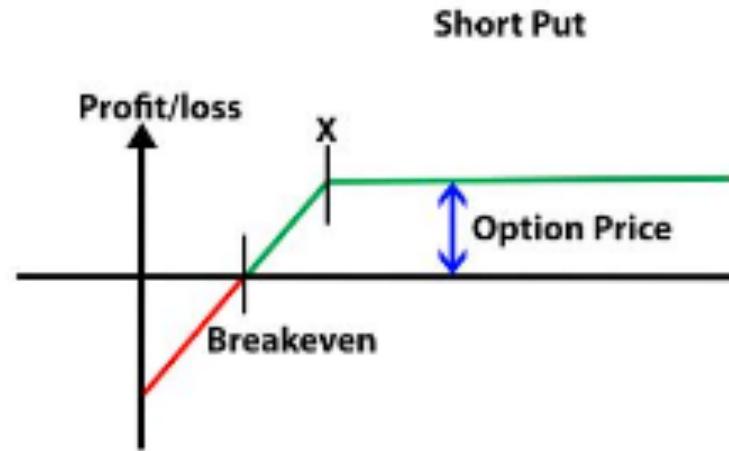
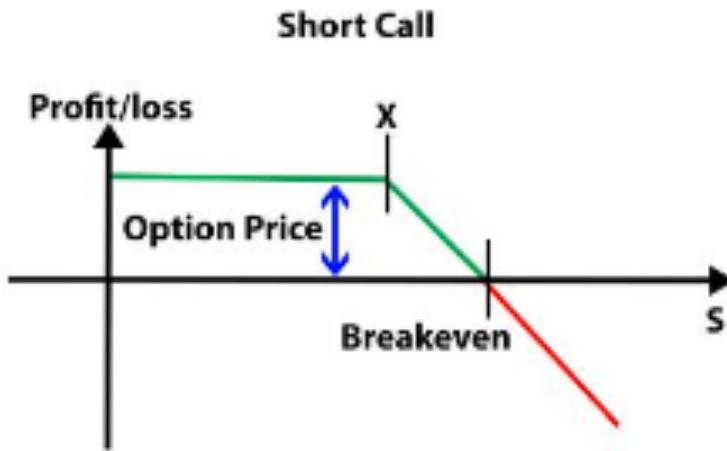
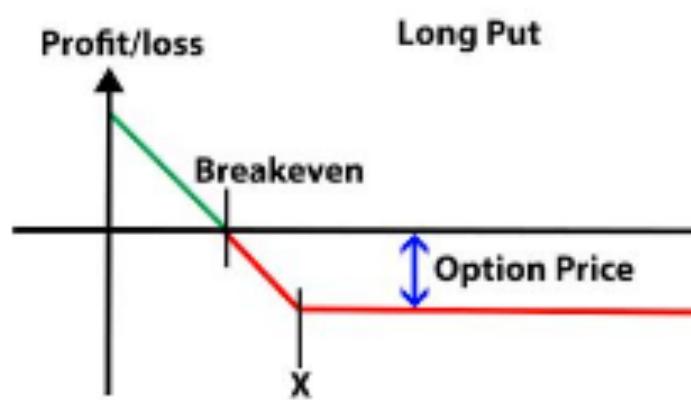
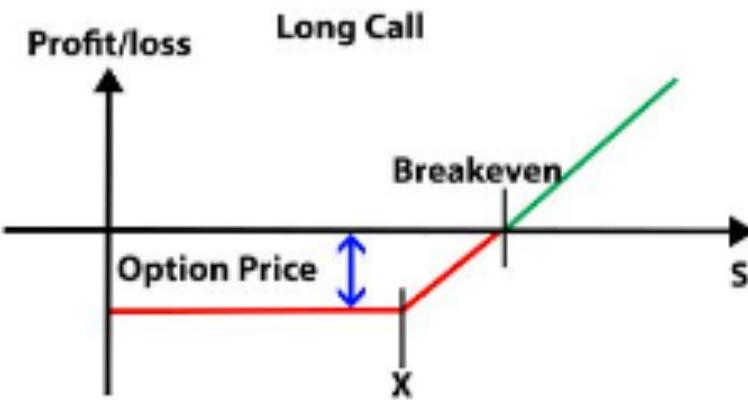
## Derivatives

## Other Financial Assets

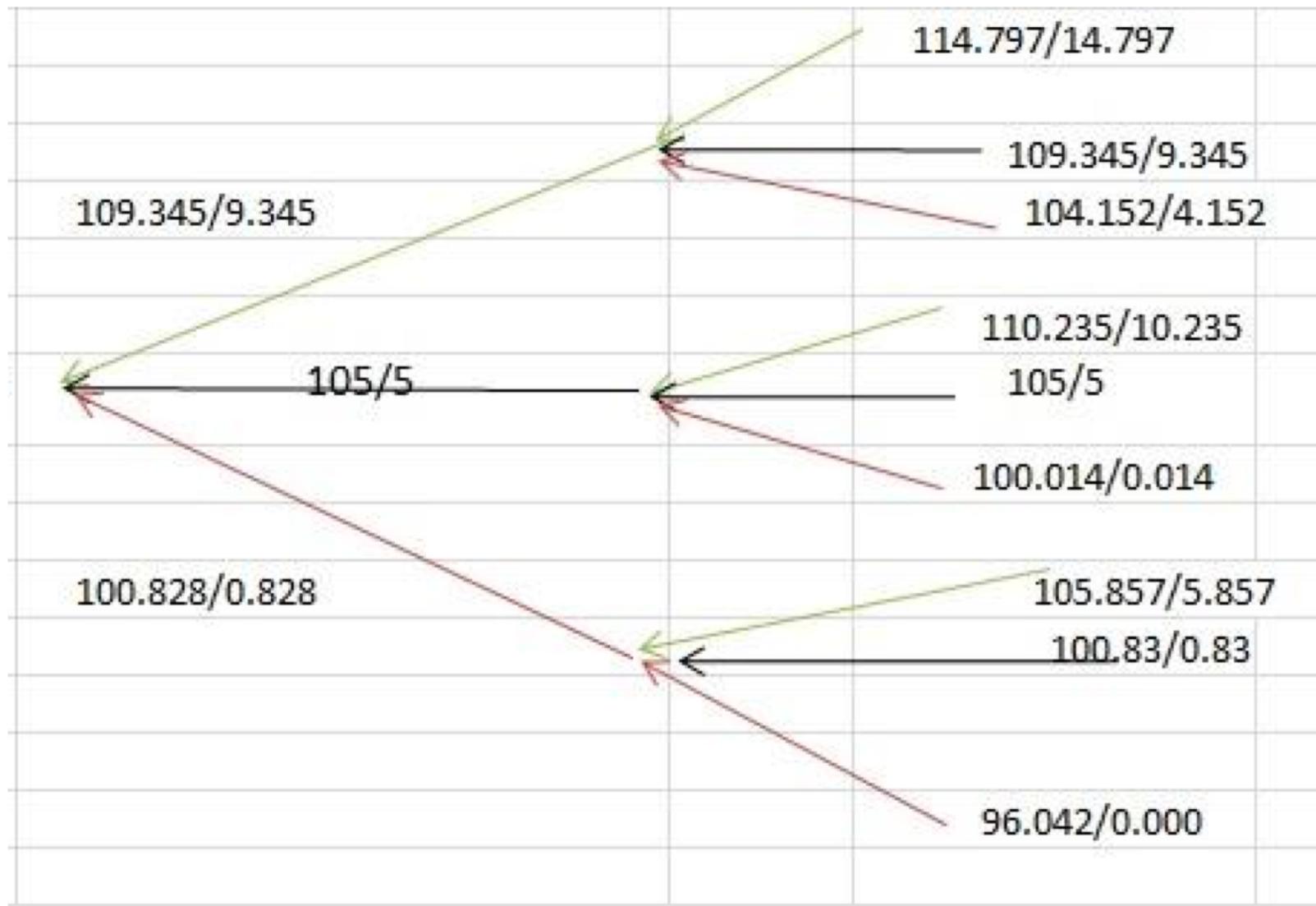


Bull or bear |





Option



Random  
Walk

The value of a call option for a non-dividend-paying underlying stock in terms of the Black–Scholes model is:

$$C(S_t, t) = N(d_1)S_t - N(d_2)PV(K)$$

$$d_1 = \frac{1}{\sigma\sqrt{T-t}} \left[ \ln\left(\frac{S_t}{K}\right) + \left(r + \frac{\sigma^2}{2}\right)(T-t) \right]$$

$$d_2 = d_1 - \sigma\sqrt{T-t}$$

$$PV(K) = Ke^{-r(T-t)}$$

The price of a corresponding put option based on [put–call parity](#) is:

$$\begin{aligned} P(S_t, t) &= Ke^{-r(T-t)} - S_t + C(S_t, t) \\ &= N(-d_2)Ke^{-r(T-t)} - N(-d_1)S_t \end{aligned}$$

For both, as [above](#):

- $N(\cdot)$  is the [cumulative distribution function](#) of the standard normal distribution
- $T - t$  is the time to maturity (expressed in years)
- $S_t$  is the [spot price](#) of the underlying asset
- $K$  is the strike price
- $r$  is the [risk free rate](#) (annual rate, expressed in terms of [continuous compounding](#))
- $\sigma$  is the [volatility](#) of returns of the underlying asset

## Black-Schole Equ

# What is a stock market crash?

- A stock market crash is different than a market “correction,” which is defined as a 10%+ decline in market prices from a recent high.
- Another common term is a “bear market,” which is defined as a 20%+ decline in market prices over a two-month period.



# Hands on Playground

The screenshot shows the UQER playground interface. The top navigation bar includes links for 首页 (Home), 开始研究 (Start Research), 我的交易 (My Trading), 研究数据 (Research Data), 深度报告 (Depth Report), 量化学堂 (Quantitative Classroom), 量化社区 (Quantitative Community), 帮助 (Help), and a user profile icon.

The main area displays a Jupyter Notebook titled "newtest". The code cell contains the following Python code:

```
1 DataAPI.MktEqudGet(secID=u"", ticker=u"688001", tradeDate=u"20190723", beginDate=u"", endDate=u"", isOpen="", field=u"", pandas="1")
```

The output cell shows a Pandas DataFrame with the following data:

	secID	ticker	secShortName	exchangeCD	tradeDate	preClosePrice	actPreClosePrice	openPrice	highestPrice	lowestPrice	turnoverRate	accumAdjFactor	negMarketValue	marketCap
0	688001.XSHG	688001	华兴源创	XSHG	2019-07-23	55.5	55.5	46.92	52.65	45.01	0.2775	0.996895	1766443008	19540

Below the table, it indicates "1 rows x 24 columns".