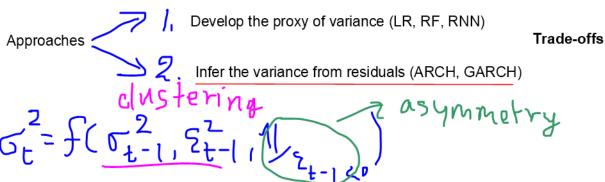


- Risk is an important determinant of investment in stock market.
- Volatility is the measure of how wildly the stock return swings.
- However, volatility is not constant over time.
- Isn't it great to know the dynamics of volatility itself?

Two behaviors commonly found:

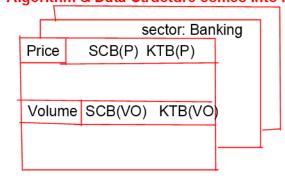
- 1) volatility clustering
- 2) Asymmetric responses to shocks



- NOT observed
- Measure the deviation from return mean
- Trade-off in choosing est period (At least 500)

Problem: Our data are not ready to be used in modelling yet. (80% of time used in cleaning)

Algorithm & Data Structure comes into rescue



Cleaning Tasks (Pandas-Python):

- 1. Combine: merge price + vo (regex & database)
- 2. Split: from sector -> stock (Hash & filter)
- 3. Combine: from stock -> group (Sort, apply & reduce)

Result: 1. Volatility dynamics exist in individual level. -> study dynamics at ind level helps.

2. Relationship between inv period and vol dynamics

