M339W: February 1st, 2021.

Real Options.

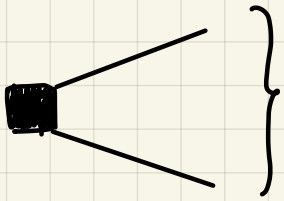
A **real option** is a right to make a particular business/investment decision.

Example.
- renewing a TV show for another season;
- buy the initial installments in a book series w/ an option to buy more @ a later date;
- option to make a movie out of a book
- Jasper Fforde: options on whether members of different royal family marry one another.
- option to buy more airplanes

Real options are different from derivative securities (like the calls and puts we usually discuss) since they don't have a tradeable underlying asset (so there is no straightforward pricing by replication). Also, they are not usually traded themselves.

To valuate real options, we will use a binary tree w/ two types of nodes:

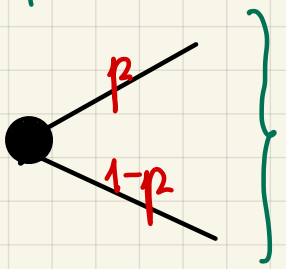
■ ... decision nodes



possibilities for a decision

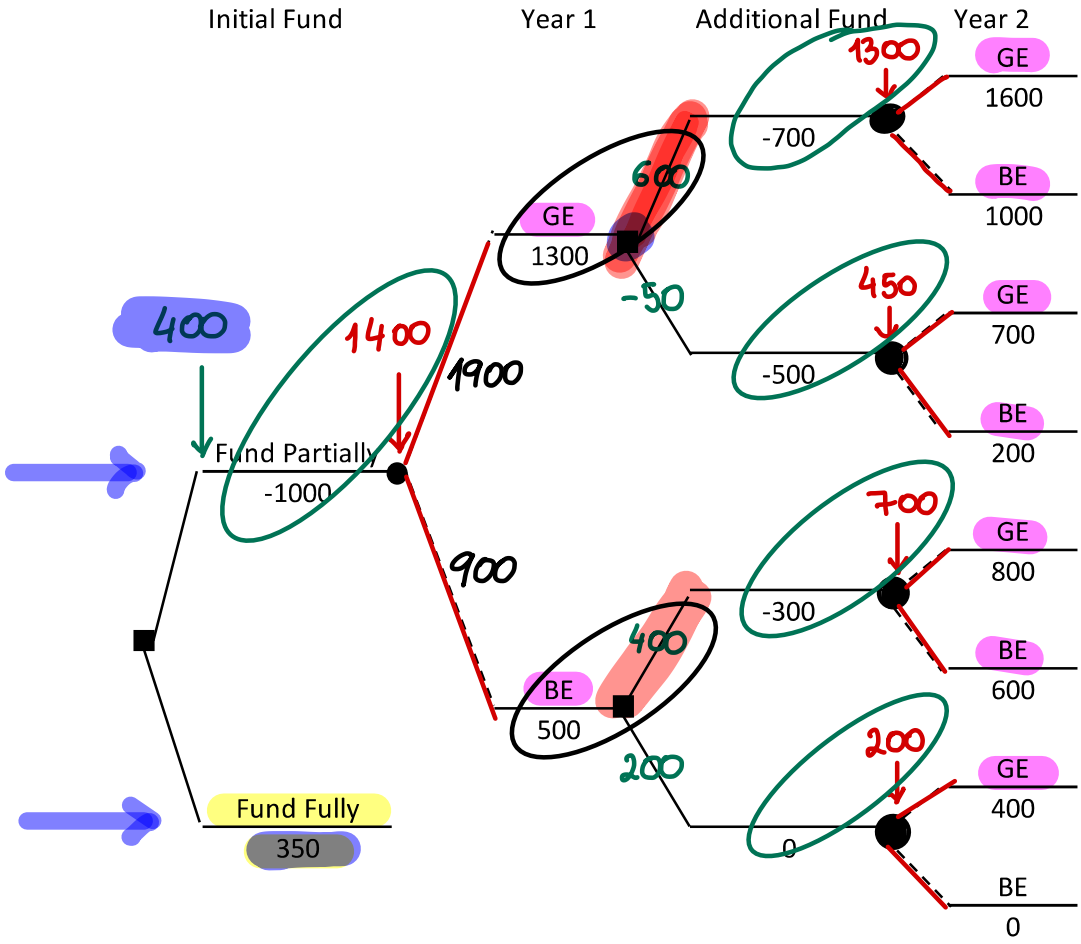
and

● ... information nodes



different scenarios

28) Consider a two-year project that when fully funded at time 0 has a net present value of $350. The decision tree below shows the cash flows of the project when partially funded at the beginning of the Year 1 (at $t = 0$) with an option to provide different amounts of funding at the beginning of Year 2 (at $t = 1$). This tree reflects two economic states (GE = good economy, BE = bad economy) in each of the two years. For a given year, each economic state has a 50% probability.



Assume the discount rate is 0%.

Calculate the value of the option at $t = 0$.

(A) 0

(B) 50

(C) 150

(D) 200

(E) 250