DCF: Basic Concepts
Time

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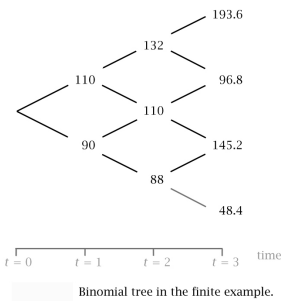
How is time modeled?

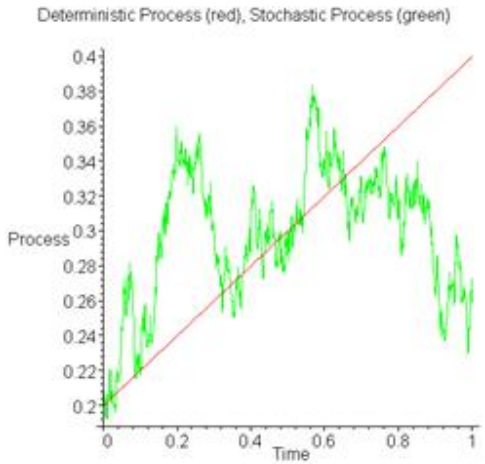
We distinguish between

discrete-time
(realistic, but
elaborate to handle)



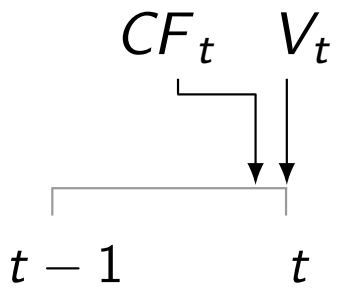
Binomial tree in the finite example.

continuous-time
(elegant, closed-form
solutions, mathematically
challenging)



We use a discrete-time setup.

Payment date



Prices are always ex cash flow. This rules out several trading strategies.

For example, in this model you cannot sell a stock immediately before the dividend date and buy it back a second later before the price has adjusted ("dividend stripping").

Lifespan

Two cases are possible:

finite realistic, but what is a reasonable end date?

infinite This will require **transversality** (which is equivalent to saying "nothing strange happens when $T \to \infty$").

Often we use an infinite setup.

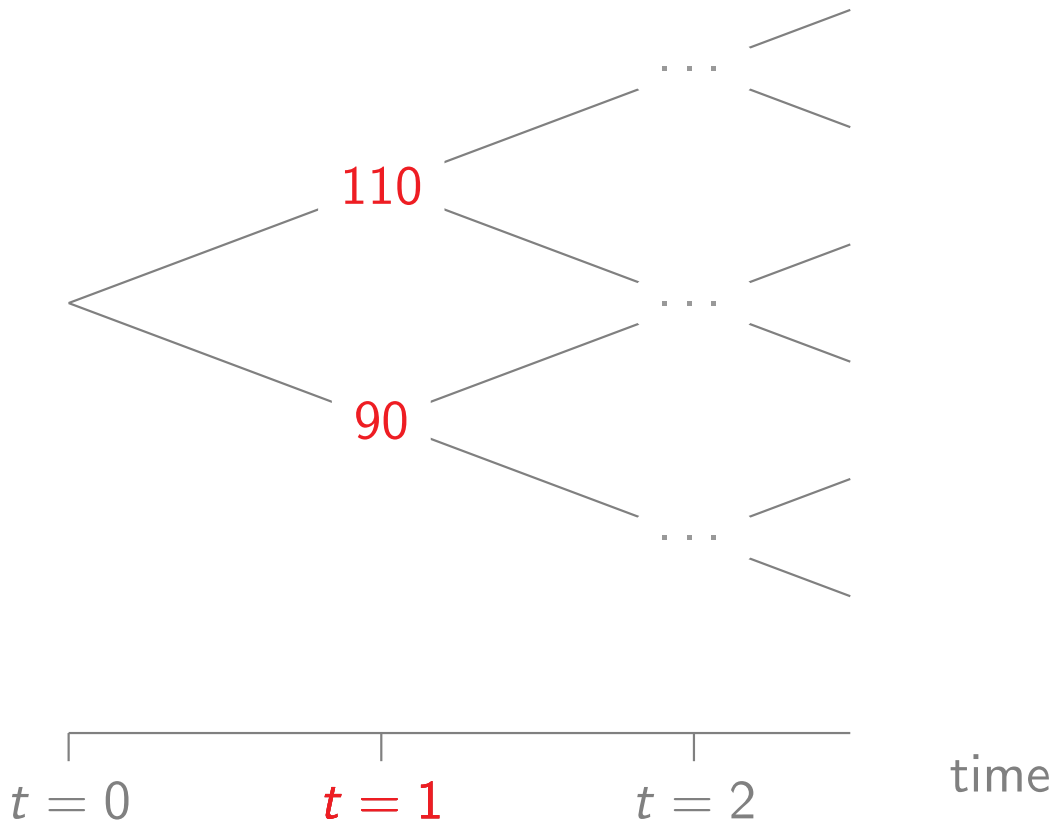


Figure: Cash flows in the finite example throughout the book.

What happens if at $t = 1$ actual cash flows are neither 90 nor 110?

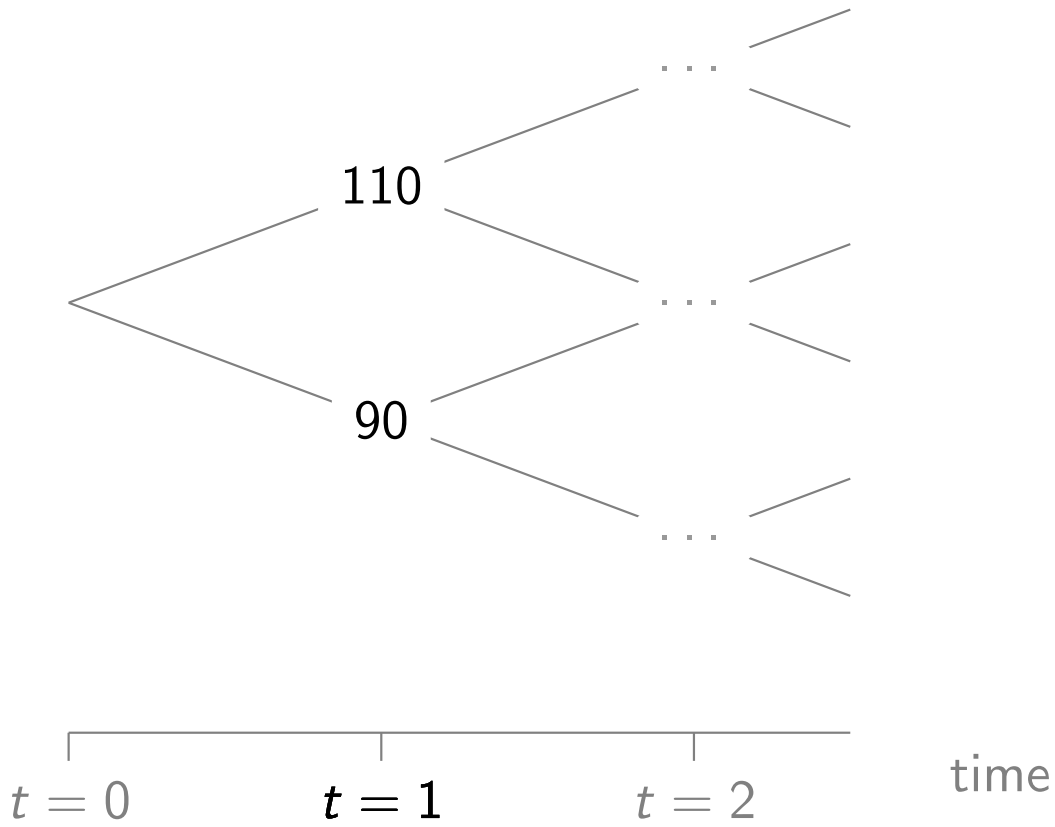


Figure: Cash flows in the finite example throughout the book.

If cash flows are neither 90 nor 110: model failed.

Actual and future cash flows

Nostradamus (1503–1566),

failed fortune-teller

We stay at $t = 0$ and only think about the future.

If the model turns out to be wrong we have to start all over again.

Summary

Discrete-time model,
Prices are ex cash flow,
Often infinite lifespan of company,
We always remain at t=0; keep the point-in-time principle in mind.