

Abstract:

In this work we will get familiarized with a discrete valuation of options. A powerful and widely applicable numerical method known as the binomial model will be established. Starting with a basic economic idea of non-arbitrage principle we build a risk-neutral world and develop the binomial model for call options. The general binomial model is extended into a trinomial model and there are several parameterizations that are actually used in practice, provided for both of them. Great emphasis is also focused on a theoretical background. The theoretical knowledge, that will be introduced here in the discrete world, one can regard as basis for continuous models. The consequences of probability theory and risk-neutral valuation appear in the valuation of American options. There are three ultimate goals of this work: construction of the model itself, its implementation and an overview of the theoretical background.