

The diploma thesis describes portfolio management with proportional transaction costs. The main aim is to describe using of shadow prices to find the optimal Markov policies keeping the proportion of the investor's wealth invested in the risky asset within the corresponding interval in order to maximize the long run geometric growth rate. On the real market, the investor must pay transaction costs when he buys/sells shares. In the diploma thesis we transform these prices into the shadow price; when trading in the shadow price there are no transaction costs.

The solution itself is based on Itô formula and the martingal theory. The prices of shares are modeled as geometric Brownian motion.