Continuous stochastic control theory has found many applications in optimal investment. However, it lacks some reality, as it is based on the assumption that interventions are costless, which yields optimal strategies where the controller has to intervene at every time instant. This thesis consists of the examination of two types of more realistic control methods with possible applications. In the first chapter, we study the stochastic impulse control of a diffusion process. We suppose that the controller minimizes expected discounted costs accumulating as running and controlling cost, respectively. Each control action causes costs which are bounded from below by some positive constant. This makes a continuous control impossible as it would lead to an immediate ruin of the controller. We give a rigorous development of the relevant theory, where our guideline is to establish verification and convergence results under minimal assumptions, without focusing on the existence of solutions to the corresponding (quasi-)variational inequalities. If the impulse control problem can be characterized or approximated by (quasi-)variational inequalities, it remains to solve these equations. In Section 1.2, we solve the stochastic impulse control problem for a one-dimensional diffusion process with constant coefficients and convex running costs. Further, in Section 1.3, we solve a particular multi-dimensional example, where the uncontrolled process is given by an at least two-dimensional Brownian motion and the cost functions are rotationally symmetric. By symmetry, this problem can be reduced to a one-dimensional problem. In the last section of the first chapter, we suggest a new impulse control problem, where the controller is in addition allowed to invest his initial capital into a market consisting of a money market account and a risky asset. The costs which arise upon controlling the diffusion process and upon trading in this market have to be paid out of the controller's bond holdings. The aim of the controller is to minimize the running costs, caused by the abstract diffusion process, without getting ruined. The second chapter is based on a paper which is joint work with Holger Kraft and Frank Seifried. We analyze the portfolio decision of an investor trading in a market where the economy switches randomly between two possible states, a normal state where trading takes place continuously, and an illiquidity state where trading is not allowed at all. We allow for jumps in the market prices at the beginning and at the end of a trading interruption. Section 2.1 provides an explicit representation of the investor's portfolio dynamics in the illiquidity state in an abstract market consisting of two assets. In Section 2.2 we specify this market model and assume that the investor maximizes expected utility from terminal wealth. We establish convergence results, if the maximal number of liquidity breakdowns goes to infinity. In the Markovian framework of Section 2.3, we provide the corresponding Hamilton-Jacobi-Bellman equations and prove a verification result. We apply these results to study the portfolio problem for a logarithmic investor and an investor with a power utility function, respectively. Further, we extend this model to an economy with three regimes. For instance, the third state could model an additional financial crisis where trading is still possible, but the excess return is lower and the volatility is higher than in the normal state.