The current financial crisis has raised considerable debate about the risk management practices of banks and other financial institutions. In particular, there have been concerns about systemic risk that basically means the possible consequences of bank failures on the economic activity, growth and employment. These worries originate from the common insight that the troubles in financial sector may spill over to the real economy.

In this thesis, I focus on hedge funds’ risks. Hedge funds are specialized investment vehicles which try to provide above average risk-adjusted returns due to the presumably superior skills of their management. The absence of regulation is an important feature of the hedge funds, and it implies less visibility and less observable risks. If these opaque risks materialize, the financial distress might spill over the financial system due to the tight links between the hedge funds and banks. This is called financial contagion.

In the first part of this thesis, I identify the hedge fund's risk profile and derive some quantitative risk management tools using a statistical concept called Value-at-Risk. Value-at-Risk tells the maximum loss a portfolio holder can suffer due to market risk over a pre-specified time period, given some probability. Specifically, since skewness and excess kurtosis often characterize the hedge fund return distribution indicating the possibility of a very large loss, models based on the normal distribution are not appropriate. Statistical theory provides alternative ways to estimate Value-at-Risk counting for the skewness and excess kurtosis. In this thesis I exploit the useful properties of extreme value theory, the Cornish-Fisher expansion and Monte Carlo simulation to derive the estimators for Value-at-Risk. In addition, liquidity risk is the central ingredient of systemic risk and also present in the hedge funds’ risk profile. Therefore, I derive liquidity-adjusted Value-at-Risk as well.

In the second part of this thesis, I focus on the hedge funds' role as to financial stability. I follow the general model by Allen & Gale (2000), in which contagion is modeled as an equilibrium phenomenon. In this model, external liquidity shock hitting into one sector of the financial market can spread over the entire financial system and bring down all financial institutions. Of course, in the approach of this thesis the hedge fund sector faces the shock and thus initiates the distress. However, even in the presence of the liquidity shock, this spillover is not inevitable, but is crucially dependent on the size of the shock and especially on the financial buffers, which can loosely be interpreted as the risk management practices.