

The goal of this diploma thesis is to introduce several tests of independence for time series following the ARMA model and then compare them within the simulation study. First, the basic theory of independence is reminded together with covariance and correlation. Asymptotic unbiasedness and consistency are derived for sample cross-covariance and also consistency for correlation. After the introduction of the ARMA model, each test is described and its advantages and disadvantages discussed. The following tests are included: Haugh test, using estimates of white noise and sample cross-correlation, modified t-test, for which we assume weakly stationary series instead of random samples, and lastly distance covariance test, which uses properties of characteristic functions. These tests are compared in the simulation study together with the standard independence test using Pearson correlation coefficient. At the end, an illustrative example with finance data is presented.