ESTIMATING CROSS ASSET JUMP PROCESS

BACHELOR THESIS

VASSILIOS LAIOS

SUPERVISOR:

PROF. DR. THORSTEN HENS

BANKING AND FINANCE

SWISS BANKING INSTITUTE

UNIVERSITY OF ZURICH

Executive Summary

Since the economist Robert C. Merton extended the seminal Black-Scholes theory of option pricing by introducing a jump component, numerous researchers have developed new models in order to matching key features of asset returns. This thesis deals with completely new model of this kind. Focussing on the downward jumps, a simulation has been conducted to assess the model and to compare the performance of the examined asset classes. The daily returns for the individual stocks, indices, bonds and commodities are used to fit the model and the Mean Squared Error is utilized as evaluation criterion. The thesis also explains the individual components of jump processes in financial modeling and provides an overview of crashes in the economy sector. We find that our new model is better suited for estimating jump processes of stocks and bonds than commodities and indices. Moreover, it provides a suitable base for financial modelling as long as the underlying price trajectory does not contain huge upward jumps. The results and the interpretation are presented and discussed in this thesis.