Intelligent Trading of Seasonal Effects: 
A Decision Support Algorithm based on 
Reinforcement Learning

Dennis Eilers  
eilers@iwi.uni-hannover.de  
Christian Dunis  
christian.dunis@hpwmg.com  
Hans-Jörg von Mettenheim*  
mettenheim@iwi.uni-hannover.de  
Michael H. Breitner  
breitner@iwi.uni-hannover.de

April 5, 2014

Abstract

Seasonalities and empirical regularities on financial markets have been well documented in the literature for three decades. While one should suppose that documenting an arbitrage opportunity makes it vanish there are several regularities that have persisted over the years. These include, for example, upward biases at the turn-of-the-month, during exchange holidays and the pre-FOMC announcement drift. Trading regularities is already in and of itself an interesting strategy. However, unfiltered trading leads to potential large drawdowns. In the paper we present a decision support algorithm which uses the powerful ideas of reinforcement learning in order to improve the economic benefits of the basic seasonality strategy. We document the performance on two major stock indices.

Keywords:
Reinforcement Learning, Seasonalities, Trading System, Neural Networks

JEL classification: G17, C45, C88

*Corresponding author.
URL: www.iwi.uni-hannover.de
Tel. +49 511 762 4982