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Calibration of Bollinger Bands Parameters for Trading Strategy Development in the Baltic Stock Market

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Abstract

In recent decades there was a robust boom ininvestment sector in Lithuania, as more people chose toinvest money in investment funds rather than keep money inthe closet. The Baltic States Market turnover has increasedfrom 721 MEUR in 2000 to 978 MEUR in 2008 (with peak2603 MEUR in 2005). When difficult period appeared inglobal markets, a lot of attention was dedicated towards themanaging of investments. Investment management firms inLithuania gain significance in personal as well as inbusiness section increasingly; even though these firms areconsiderably young (the first one in Lithuania wasestablished in year 2000).Successful investment begins with the financialanalysis of stock, asset or index, which you are going toinvest. Professionals can be divided into two groups as faras this point is concerned: supporters of fundamentalanalysis and the supporters of technical analysis.Fundamental analysts try to determine a company's valueby looking at the balance sheet, cash flow statement andincome statement. Technicians, on the other hand, assumethat all these fundamentals are accounted for in the stock'sprice and analyses charts of price movements and variousindicators derived from the price and volume. Technicalanalysis suffered major criticism when Fama (1965)presented his efficient-market hypothesis (EMH), whichstates that past prices cannot be used to profitably predictfuture prices. However, many researches showed thatEMH is not adequate in many aspects. With thisbackground the "Quantitative Behavioral Finance" theorywas introduced (see recent works of Gunduz Caginalp,Vernon Smith, David Porter, Don Balenovich, Vladimirallieva, Ahmet Duran, and Ray Sturm). This theory includessome topics of classical theories, but mainly it is based onbehavioral analysis of market agents and helps tounderstand behavioral biases in conjunction withvaluation. This means that there is no reason to criticizethe technical analysis, but in difficult cases (e.g. crises) itshould be supplemented by behavioral analysis of agents.In this paper some methods of technical analysis are usedto create an investment strategy trading in Baltic Statesstock market.The main objectives of this research are: adaptBollinger Bands to the Baltic market, determine whichinvestment period with – long term or short term –Bollinger Bands is more efficient, research the efficiency ofBollinger Bands depending on the parameters. In thispaper the optimal parameters are calibrated and theexpected profit is

estimated without the information aboutthe transaction costs."Bollinger plotter" was developed using the mostpopular mathematical toolbox MatLab in order to solvestated problems. Application is capable of chartingBollinger Bands and 6 other technical indicators withdesired period of time. This software is not a fullyautomated decision making system, as decisions areusually made based on value judgment.Since the stock returns usually have distributions withfat tails, then less than 95% of data fit in the Bollingertrading channels. However the Bollinger bands tradingsignals were supported by additional indicators (e.g. %b),so the loss of data is not significant.Our calibration results show that short term investorshould apply 10 days moving average and use a tradingchannel with the width of 1.8 standard deviations, for theBollinger bands.

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