

The main goal of this project is a comprehensive and comparative study concerning commonality in liquidity on the eight Central and Eastern European (CEE) stock markets (i.e. Poland, the Czech Republic, Hungary, Slovenia, Slovakia, Latvia, Lithuania and Estonia). Commonality in liquidity means that financial asset liquidity changes over time, and that these time variations are ruled by a significant common component in the liquidity across assets or market liquidity. The existence of commonality suggests the assumption that there exists at least one common factor that simultaneously influences liquidity of all stocks in a market. The first empirical research of commonality in liquidity was conducted by Chordia, Roll and Subrahmanyam in 2000. Their results revealed that firm-level liquidity was significantly influenced by both a market and an industry-wide liquidity component on the NYSE. The econometric models proposed by Chordia et al. (2000) and their later modifications are widely used in studies of commonality in liquidity on various stock markets. Although the U.S. stock market is the most frequently explored, there is a growing body of empirical studies on commonality in liquidity on other equity markets in the world. However, the number of studies concerning commonality in liquidity in the group of equity markets is limited. To the best of the Principal Investigator's knowledge, a comprehensive and comparative study concerning commonality in liquidity has not been conducted in the group of the Central and Eastern European stock markets thus far. Therefore, an attempt will be made to verify the following research hypotheses:

- 1) Market-wide commonality in liquidity exists on each individual Central and Eastern European stock market, separately.
- 2) Global commonality in liquidity exists in the group of the Central and Eastern European stock markets.

The project focuses on statistical and econometric methods in empirical finance. The scientific methodology is based on advanced statistical and econometric analysis of a multivariate time series of financial data, as well as high-frequency intra-day transaction data for securities. The literature contains a number of tests of commonality in liquidity, for example the market model of liquidity approach, various modifications of the market model of liquidity including additional industry and control variables, Principal Component Analysis (PCA), or Asymptotic Principal Components (APC) approach, among others. The proxies of various liquidity/illiquidity measures are necessary to estimate econometric models of commonality in liquidity. The literature presents many alternative measures of liquidity/illiquidity. Furthermore, order imbalance indicators could be utilized among other liquidity/illiquidity and trading activity measures to test commonality in liquidity. The crucial problem in market microstructure research is that the proxies of many intra-day liquidity measures are calculated based on trade and quotes data. Moreover, the order imbalance indicators are approximated based on information about the number, volume and value of transactions initiated by each side of the market. As the information of trade sides is not publicly available on most emerging stock markets (including the CEE markets), the additional purpose of this project is to enrich research methodology with new procedures employing trade classification algorithms for recognizing the side initiating the transaction. There are some trade classification procedures described in the literature. In the initial stages of the project, the investigator intend to implement and apply selected trade classification algorithms for the approximation of liquidity/illiquidity measures, as well as order imbalance indicators, using intra-day data.

The issue of the proposed project situates itself in one of the major topical strands of the empirical finance literature. The pioneering nature of the project lies in a deep statistical and econometric analysis of commonality in liquidity on the CEE emerging stock markets. Although extensive research has documented significant commonality in liquidity among stocks on various capital markets, there is no unanimity in the literature regarding the causes of commonality in liquidity. Testing the research hypotheses will probably allow to answer the question of whether market-wide commonality in liquidity exists on the CEE stock markets. The importance of the project results for the development of civilization may consist in a better understanding of the mechanisms that govern the stock market operating and trading. Moreover, commonality in liquidity is an important topic because of many practical implications. Research results propagation among the investors may allow for a better understanding of the fact that the real capital market is not frictionless and not perfectly liquid. Furthermore, in light of the recently growing literature on asset pricing, it would be interesting to investigate whether commonality in liquidity plays a crucial role in non-classical liquidity-adjusted asset pricing on international stock markets.