



## INVESTMENT PORTFOLIO FORMATION VIA MULTICRITERIA DECISION AID: A BRAZILIAN STOCK MARKET STUDY

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### Abstract

The purpose of this paper is to identify how Multicriteria Decision Aid (MCDA) can assist the investment portfolios formation, increasing the reliability of decision making. In order to develop this paper, a simulation-based approach was used. Information about the assets traded on the spot market of the São Paulo Stock Exchange - BM&FBOVESPA were selected. They had a 100% of participation in the 246 trading sessions carried out in 2015 and had an average number of business/day greater or equal to 1000. The stratification resulted in the selection of 111 assets. Aiming assets evaluation, data were collected from 21 financial indicators. Subsequently, the Principal Component Analysis (PCA) was used to reduce the mass of collected data without the loss of essential information. PROMETHEE II method was used for assets ranking; it belongs to the group of methods for MCDA. At the end of these stages, four groups of investment portfolios were created for simulation. After the construction of portfolios, a simulation was performed with real data of the assets from 01.03.2011 to 11.14.2016. It resulted in a comparison in which it was observed that 100% of portfolios showed positive returns on the investment. The result of portfolios' group composed of assets based on the 21 financial indicators were higher than the other one formed from PCA criteria. Both of them were higher than Ibovespa result in the same period.

**Key words:** Stock portfolio; Principal Components Analysis; PROMETHEE