

Waqas Ahmad Wattoo, Donghan Feng, Muhammad Yousif and Sohaib Tahir, 2018, A promising scheme for portfolio selection to gain pragmatic pool-based electricity market returns under uncertain circumstances, *Studies in Informatics and Control*, 27(4): 431–442.

**Abstract** The prospective trading position of an independent power production company (IPPCo) is fortified by handling its portfolio between numerous trading preferences. Owing to uncertain circumstances, the future profits of these trading preferences are estimated by applying fuzzy or probabilistic methods. Conventional schemes are usually found inappropriate in computing the uncertainty and revealing the deviation between apparent and actual market profits. Based on this deviation, a non-probabilistic Information Gap Decision (IGD) theory is applied in this paper to present the optimum scheme for IPPCo's portfolio selection. The performance of IPPCo is modeled and critically analyzed in determining its trading scheme. Numerous decisions are validated for IPPCo through various criteria in results to plump for the best outcome. The risk averting behavior of IPPCo's framework leads to offer robust decisions towards losses, whereas, its risk captivating behavior provides the facility to acquire windfall gain. The presented scheme is also corroborated through real time scenarios of PJM market.

**Keywords** Uncertain market returns, Independent power production company (IPPCo), Pool electricity market, Portfolio optimization, Information gap decision (IGD) theory.