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Summary: Granger causality test method is used to check out the investors’ overconfidence in international carbon futures market. Based on the hypothesis of the homogeneity, overconfidence and risk aversion of investors, the equilibrium price model about the influence of investors’ overconfidence on carbon futures price is built, and the mechanism of carbon futures price and its volatility is analyzed based on the model, and the model is also verified by the numerical simulation method. It is found that the higher degree of investors’ overconfidence is, the greater the transaction cost and the higher deposit rates are, the higher the expected price of carbon futures is; the greater the degree of investors’ risk aversion is, the lower the expected price of carbon futures is; the increase of investors’ overconfidence degree amplifies the abnormal fluctuation of carbon futures price; the margin system affects the volatility of carbon futures price, giving full play to the adjustment of speculative activities in carbon futures market. The transaction cost does not affect the fluctuation of carbon futures price. The numerical simulation results show the accuracy of the model result. Compared with the margin system and transaction cost, the psychology of investors exerts a greater effect on carbon futures price and its fluctuation.

MSC: 91G20 Derivative securities (option pricing, hedging, etc.)

Keywords: overconfidence; carbon futures; mathematical model of equilibrium price; abnormal fluctuation; transaction cost; risk aversion

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