Arbitrage and Quantum Mechanics

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In this communication we have as objective to argue for the use of a wave function (out of quantum mechanics) in the formulation of the (finite state space) financial non-arbitrage theorem.

Financial assets (like option contracts, futures, forwards etc...) are all priced via this theorem. The theorem can be proven via the so called separating hyperplane argument. See Duffie (1992).

The theorem allows for the use of so called 'risk-neutral' probabilities by which one can discount a risky asset at the risk free rate of interest.

We attempt to show in this communication how the quantum mechanical wave function (interpreted as an information wave function) can be of use in the non-arbitrage context. We provide for a rationale why on the basis of arbitrage, we can invoke the use of quantum mechanical principles.

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