

# Brownian Markets

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Financial market dynamics is rigorously studied via the exact generalized Langevin equation. Assuming market Brownian self-similarity, the market return rate memory and autocorrelation functions are derived, which exhibit an oscillatory-decaying behavior with a long-time tail, similar to empirical observations. Individual stocks are also described via the generalized Langevin equation. They are classified by their relation to the market memory as heavy, neutral and light stocks, possessing different kinds of autocorrelation functions.

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