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Self-reinforcing feedback loop in financial markets with coupling of market impact and momentum traders

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Abstract

By incorporating market impact and momentum traders into an agent-based model, we investigate the conditions for the occurrence of self-reinforcing feedback loops and the coevolutionary mechanism of prices and strategies. For low market impact, the price fluctuations are originally large. The existence of momentum traders has little impact on the change of price fluctuations but destroys the equilibrium between the trend-following and trend-rejecting strategies. The trend-following herd behaviors become dominant. A self-reinforcing feedback loop exists. For high market impact, the existence of momentum traders leads to an increase in price fluctuations. The trend-following strategies of rational individuals are suppressed while the trend-following strategies of momentum traders are promoted. The crowd-anticrowd behaviors become dominant. A negative feedback loop exists. A theoretical analysis indicates that, for low market impact, the majority effect is beneficial for the trend-followers to earn more, which in turn promotes the trend-following strategies. For high market impact, the minority effect causes the trend-followers to suffer great losses, which in turn suppresses the

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