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Research Announcement

A confidence representation theorem for ambiguity aversion with applications to financial markets and trade algorithm

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Abstract

This paper extends the solution space for decision theory by introducing a behavioural operator that (1) transforms probability domains, and (2) generates sample paths for confidence from catalytic fuzzy or ambiguous sources. First, we prove that average sample paths for confidence/sentiment, generated from within and across source sets, differ. Second, we identify loss aversion as the source of Langevin type friction that explains the popularity of Ornstein-Uhlenbeck processes for modeling mean reversion of sample paths for behaviour. However, in large markets, ergodic confidence levels, imbued by preference reversal operations, support our large deviation theory of bubbles, crashes and chaos in behavioral dynamical systems. Third, simulation of the model confirms that the distribution of priors, on source sets, controls confidence momentum and term structure of fields of confidence. For instance, our computer generated field of confidence mimics trends in CBOE VIX daily sentiment index, and survey driven Gallup Daily Economic Confidence Index (GDECI) sounding in Tversky and Wakker (1995) type impact events. We show how GDECI splits VIX into source sets that depict term structures of confidence for relative hope and fear. And identify a VIX source set arbitrage strategy by classifying each set according to its risk attitude, and then use the "confidence beta" of each set to explain differences in price moves.

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