Volatility: rough or not?

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Rough volatility models have attracted a lot of attention since the seminal article "Volatility is rough" by Gatheral, Jaisson, and Rosenbaum (2014), who showed that these models can very parsimoniously capture some important stylized facts about volatility. Chief among them: (1) the roughness of volatility paths, and (2) the power-law term-structure of the at-the-money (ATM) skew. We reexamine these two points. While our study broadly confirms those findings, we show that (1) the roughness of volatility paths at the daily scale can also be explained by simpler non-rough Markovian models, and (2) the power-law term-structure of the ATM skew in fact fails to be valid for short maturities, where the skew does not appear to blow up. Rough volatility models, which generate such blow up, are thus inconsistent with the short-term skew. Simple non-rough models, with just one extra parameter, are shown to much better fit the whole term-structure. Our study concludes that while rough volatility is a natural, appealing, very parsimonious parametrization, at least one extra parameter is needed in order to disentangle the long-term (power-law) decay of spot-vol covariances from their short-term (non-blowing-up) behavior—and this extra parameter precisely makes volatility paths non-rough. This talk is partly based on joint works with Jordan Lekeufack and Mehdi El Amrani.