A Characterisation of Cross-impact Kernels

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Trading a financial asset pushes its price as well as the prices of other assets, a phenomenon known as cross-impact. We consider a general class of kernel-based cross-impact models and investigate suitable parametrisations for trading purposes. We focus on kernels that guarantee that prices are martingales and anticipate future order flow (martingale admissible kernels) and those that ensure there is no possible price manipulation (no-statistical-arbitrage-admissible kernels). We determine the overlap between these two classes and provide formulas for calibration of cross-impact kernels on data. We illustrate our results using SP500 futures data.