What shakes the FX tree? Understanding currency dominance, dependence and dynamics

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There is intense interest in understanding the stochastic and dynamical properties of the global Foreign Exchange (FX) market, whose daily transactions exceed 10^{12} US dollars. This is a formidable task since the FX market is characterized by a web of fluctuating exchange rates, with subtle inter-dependencies which may change in time. In practice, traders talk of particular currencies being `in play' during a particular period of time -- yet there is no established machinery for detecting such important information. Here we apply the construction of Minimum Spanning Trees (MSTs) to the FX market, and show that the MST can capture important features of the global FX dynamics. Moreover, we show that the MST can help identify momentarily dominant and dependent currencies. We also discuss the anatomy of a shock to the FX markets: in particular, we discuss the real-time response of the global FX markets to a specific item of recent news.