Manipulation of the FX market:
Are there structural breaks in the volatility of the 4pm fix?
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Motivation
Every day for more than five years, traders at large banks attempted to manipulate the value of at least three major international currencies: the pound, the euro, and the dollar. The manipulation attempts concerned the 4pm London “fix”, the most important benchmark rate in the foreign exchange (FX) market. Though authorities fined ten banks a total of $11bn for their misconduct, they did not definitively establish the extent of the damages. The manipulation benefited the banks at the expense of their clients. These clients launched a class action lawsuit against fifteen banks, estimating damages at $8-$10bn, but later settling for $2.3bn.

Though these numbers appear to give some indication of the damages, it can be questioned whether there were any damages in the first place. The UK’s Financial Conduct Authority fined banks for bad management that allowed manipulation attempts to occur, not for manipulation itself. Similarly, the US Department of Justice fined banks for conspiring to manipulate, refraining from a damage estimate. The evidence for these allegations consists primarily of communication records, some of which have been made public. However, even the publicly available examples of manipulation attempts are not always successful, which has led credence to the view that, at a daily turnover of $1.6 trillion, the FX market is simply too big to manipulate.

Contribution
So were attempts to manipulate the 4pm fix actually successful? Several recent studies find evidence of extraordinary trading patterns at the time of the fix, but this evidence is suggestive rather than definitive. I contribute to this literature by modelling structural breaks in the volatility of the 4pm fix. Beyond studying volatility as an interesting phenomenon in itself, the investigation sheds light on whether manipulation was successful. It can be shown that, ceteris paribus, successful attempts at manipulation increase price volatility. This implies that volatility suddenly drops when a period of successful manipulation comes to an end. Such a drop may not be obvious if it is hidden behind other dynamics, but it may be detected with a suitable model of structural breaks. However, if no structural breaks occur, it may be concluded that the manipulation was never successful.

Results
This paper measures volatility at the 4pm fix for two currencies that are known to have been the target of manipulation attempts: EUR/USD and GBP/USD. Volatility is measured with realized kernels constructed from high frequency data. An MSVAR(2,5) model is applied to the resulting daily series in order to detect structural breaks. Smoothed probabilities indicate a break most likely occurs on 16 October 2014. The timing of the break may have been precipitated by rumours about the initial round of fines on 11 November 2014, less than a month later. Alternatively, the break may be related to the flash crash on US bond markets on 15 October 2014. I conclude that volatility may contain information about manipulation, but that further research is necessary to disentangle the effects from other events.