

Does Bitcoin behave as a currency?: A standard monetary model approach

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Summary

We derive the Bitcoin exchange rate dynamics by solving the exchange rate equation of the standard flexible-price monetary model to investigate whether it behaves like a currency. The dynamics is driven by an asymmetric mean-reverting fundamental shock which can be attributed to a money demand shock. A crash occurs when the exchange rate breaches a lower boundary where a smooth-pasting condition is imposed. The Bitcoin exchange rate is quasi-bounded at the boundary, and generates skewed distributions consistent with empirical observations. The crash risk increases with a weakened mean-reverting force for the exchange rate. The empirical results show the exchange rate dynamics can be calibrated according to the model, in which the mean reversion of the dynamics is positively co-integrated with the Bitcoin transaction volume indicating demand for Bitcoin; and with the risk reversals of the Australian dollar and Canadian dollar in currency option markets. The analysis based on the monetary model shows that the Bitcoin exchange rate shares some characteristics of a currency with crash risk.