Optimal Transaction Filters under Transitory Trading Opportunities: Theory and Empirical Illustration

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Summary

It is documented that opportunities for above-normal returns are available to market participants at some level. By nature these profit opportunities are predicable but transitory, and transaction costs may be a major impediment in exploiting them. The purpose of this paper is to design an optimal filter that maximizes the expected return net of transaction cost. To accomplish this we employ a parametric approach that allows the trading signal and the transaction cost to be in the same units. The optimal filter depends on the exact balance between maintaining the most profitable transactions and minimizing the transactions costs. In general the optimal filter is significantly smaller than the transaction cost. This occurs when the expected return is persistent. Our model characterizes the determinants of the filter in general and provides an exact solution for the filter under the assumption of changes in expected returns being uniformly distributed.

We apply our optimal filter to a natural case for our model: daily foreign exchange trading in the yen/dollar market. As is well-known, simple moving-average trading rules generate positive expected returns in the foreign exchange market. However, returns net of transaction costs are insignificant if no filter is applied. We find that for the optimal filter the net returns are still significantly positive and higher than those when the filter is set equal to the transaction cost.

These results are important as they suggest an approach for employing trading strategies with filters to deal with transactions cost, without leading to excessive data mining. The results also hint that in some cases conclusions of abnormal profits disappearing after accounting for transaction costs may be worth revisiting.