Chapter IV

Conclusion

This article gathers data of 65 days in three month to find the arbitrage opportunity with three different currencies. If ignoring the sequence of conversion, there are 40 path to get the profit. we pick the maximum profit from everyday to analyze the arbitrage opportunity. (there is no multi-point arbitrage if no three-point arbitrage. The less the currency, the shorter the path. the shorter the path, the more profit with the bid-ask spread.).in this article, we do not consider the borrowing cost, which means we assume no bid-ask spread in the money market.

- In this article, we observe (although we still cannot prove rigorously) that the sufficient condition for the existence of arbitrage path, $\lambda \max \neq n$, still holds even for the case of nonzero bid-ask spread.

- From the data of three month, we found that if the maximum bid-ask spreads are, on average, less than 0.47753% (average of 65 days), there will be opportunity for arbitrage profit.

- we also find the pair of currencies that appears most often, which can tell the investor the optimal path for the arbitrage. Under the situation of the bid-ask spread, the GBP-HKD(HKD underpriced with respect to GBP) appears 54 times in 65 days and the USD-GBP (GBP underpriced with respect to USD) appears 48 times. Without the bid-ask spread, the GBP-JPY(JPY underpriced with respect to GBP) and JPY-USD(USD underpriced with respect to JPY) appear 60 times, the USD-GBP appears 54 times. It should be noted, however, that the arbitrage opportunities that we found may be a result of asynchronous data. Nevertheless, the modified matrix method presented in this article can be used on tick data to determine an arbitrage path in real time.