

# Dealer model with finite assets in foreign exchange market

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Through analysis of high frequency financial market data, various statistical properties and empirical laws have been discovered. The dealer model is one of agent-based models to clarify the relation between these findings and dealer's behavior in the market. The dealer model predicts the market behavior consistently with the empirical laws in real markets by introducing the effect of trend-following [1].

In the previous dealer models, the fluctuation of total fund in the foreign exchange (FX) markets has not been taken into account. However, inflow and outflow of funds are expected to have significant impact on financial market. Indeed, it was discovered that big amount of interventions can drastically shift the exchange rate for a short time [2] in FX markets. To understand such impact triggered by the inflow of funds, it is necessary to generalize the dealer model in order to take into account the finite assets effects.

In this presentation, we introduce a new dealer model with finite assets. We consider an artificial market where dealers trade two currencies (e.g., Japanese Yen and US dollars), and we numerically study the finite asset effect. In this model, dealers repeat transactions many times, and the finite asset effect arise since several dealers lose their assets until they cannot trade due to the shortage of their assets in a long time scale. From simulation we estimate a relation between the fluctuation of funds in the market and movement of the exchange rates. This relation is expected to hold also in the real foreign exchange market.

## References

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