Comments on: "*Forecasting Intraday Throughput of Large Value Payment System Participants Using Neural Networks: A Preliminary Approach*" by Joseph M. Sadornas

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Basic Premise of the Paper

- The paper uses artificial neural network (ANN) model to forecast intraday outgoing payments of 5 of the largest participants in Philippine large value payment system
  - The aim of the model is to accurately forecast the cumulative payment flows of each participant each day
- Data from one month (21 business days), 9 hours each day
  - Cumulative outgoing hourly payments
  - 80% of observations used for “training” the model (17 days), 20% for testing (4 days)

Main Findings in the Paper

- For some of the participants, the method gives fairly accurate forecasts
- The model(s) are better in forecasting some of the participants' payment flows than others'
- The ANN type of models seem promising for forecasting the payment flows of participants
  - This is a stream of research worth promoting

Further Considerations (big picture)

- The problem in making regulatory work (and/or policy recommendations) using neural network model is the "black-box" nature of the model
  - It is difficult to communicate why the model behaves in certain way and to ensure public that it treats all equally
- The model includes only outgoing payments, but for liquidity issues, it should also consider incoming payments
  - Your raw data already contains destination
- You should compare the results of your model with the results of established forecasting models
  - This is the criteria against which the model will be evaluated eventually
  - You should discuss alternative models (literature review)

Further Considerations (smaller issues)

- As is discussed in the paper, cumulative forecasts have negative values and the cumulative values decrease between hours
  - Trade-off between most accurate hourly forecast and the consistency of forecasts
- Are the 5 largest participants and their payment flows similar to the rest in terms of dynamics?
  - How well does the model work with the smaller participants?
- ➢ As already considered in the paper, I would strongly encourage using non-cumulative payment flows
- How sensitive the results are to: i) the model parameters chosen, ii) the data period chosen, iii) the final value in the training set?
- Since the data seems cyclical (cycle = 1 day) why not use that previous day's value (t-9) as the naive forecast instead of preceding hour's value (t-1)?
- Why not try additional explanatory variables as input?

Conclusions

- The topic of liquidity / payment flow forecasting is an important one and it has direct benefits for the economy
  - Participants can reserve enough liquidity to manage their payments but do not need too large extra reserves
- This preliminary ANN-model seems to have potential for such forecasting
  - However, several issues still need to be addressed
- You should take more ambitious approach to try to realize the full potential of the ANN-models