**Minutes of second year PhD review for Zimian Zhang**

In Attendance: Peter Jacko [PJ]; Nikos Kourentzes [NK]; Christopher Kirkbride [CK] (Supervisor); Zimian Zhang [ZZ] (Student)

**Minutes of the Meeting**

ZZ gave a 25-minute presentation overviewing the work conducted in the second year of his PhD studies, including the research planning for the remainder of his PhD. PJ thanked ZZ for the presentation.

After the presentation PJ and NK began a discussion with ZZ progressed via a series of comments and questions regarding the presentation. Key aspects of the discussion were as follows (not in chronological order of the discussion):

PJ commented that the models proposed a by ZZ now has a more realistic objective function. NK suggested that the model should consider the lead time of transactions since it could be significant when a company finance itself by selling illiquid assets. NK also questioned the parameters used in the model and suggested to adopt parameters used in literature.

With regard to the policy output, PJ questioned the jaggy effect of the optimal policy. PJ pointed out that it might be caused by discretization of the model and might be disappear in models employing more states. PJ also asked about the boundary effect of the policy output and suggested to cut out the part affected by the boundary from the figure. For the bankruptcy probability figures, PJ pointed out that the simulation and DP result should be closer and suggested a potential issue might exit and should be looked at.

In terms of the model with loans, PJ questioned the assumptions that only one loan is available on the market and that the company cannot take another loan with debt remaining. ZZ pointed out the method he used can be developed to solve a model with multiple loans. PJ asked where the loan parameters come from, for example, the loan size and conditions and pointed out the loan is external to the company. PJ also suggested to explore the loan space, i.e. what loans are available to the company given its current financial state.

NK asked other methods to DP/ADP in cash management studies and why not use them. NK also asked if it is necessary to use ADP to reduce the computation time. ZZ pointed out the exponential growth of DP computation cost and ADP might be the only feasible method for the holistic model.

In respect to completing PhD thesis, PJ commented that solving the holistic model might be quite challenging and the current plan is quite ambitious. PJ also commented that it would be quite difficult to balance the research and writing papers/chapters. PJ suggested to spent time focusing on writing a paper, then get back to the research. NK commented that ZZ should connect more to literature to get his work published. NK also suggested ZZ to attend conferences in the following year and to upload his working paper on the website. PJ commented that the preparation for a conference and publications could be quite time-consuming and the current research plan might be too optimistic. NK and PJ suggested ZZ to revise his research plan and extend the time frame accordingly.

**Action:** Revise current action plan and circulate to attendees. (Submitted with minutes).