Summary of *AlphaManager: A Data-Driven-Robust-Control Approach to Corporate Finance*

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1. **What are the research questions?**
   - How to apply deep reinforcement learning(DDRC) to predicting corporate outcome and giving advice to managerial decision-making?
2. **Why are the research questions interesting?**
   - For a given managerial objective, corporate decision-making is a high-dimensional, nonlinear stochastic control problem. Existing approaches in corporate finance and stochastic control often prove inadequate for solving this problem.
3. **What is the paper' s contribution?**
   - the literature on AI in finance
     - Existing literature: apply AI in investment and asset pricing, limited to corporate finance.
     - Innovation: apply model-based online RL in economics to offer a data-driven alternative to reduced-form models and structural estimations.
   - the literature on model uncertainty and robust control
     - Existing literature： mostly theoretical.
     - Extension：first empirical application of the ambiguity concept in corporate nance.
4. **What hypotheses are tested in the paper?**
   - DDRC framework is effective to predicting corporate outcome and giving advice to managerial decision-making.

   a) Do these hypotheses follow from and answer the research questions?
   - Yes, the research question is on the effectiveness of the DDRC framework.

   b) Do these hypotheses follow from theory? Explain logic of the hypotheses.
   - This paper is a framework paper introducing a new approach to corporate finance using AI-assisted data-driven robust control, it does not explicitly state traditional hypotheses. But the model should be effective based on high-dimensionality, nonlinearity and complexity of the problem.
5. **Sample: comment on the appropriateness of the sample selection procedures.**

- Data from CRSP and Compustat is applied, abundant for predicting and reinforcement learning.

6. **Dependent and independent variables: comment on the appropriateness of variable definition and measurement.**

   - There are no traditional dependent or independent variables listed in this paper. The DDRC uses market data and corporate data to predict future corporate financial situation and generate advice.

7. **Regression/prediction model specification: comment on the appropriateness of the regress/predict model specification.**

   - The prediction model not only explains and predicts corporate outcomes in- and out-of-sample, but also identifies important managerial decisions.

8. **What difficulties arise in drawing inferences from the empirical work?**

   - Deep reinforcement learning procedure may deviate from reality.

9. **Describe at least one publishable and feasible extension of this research.**

   - The methodology (predict and generate advice) can also be applied to other aspect of corporate finance, risk management for instance.