Peer Review for Zhenpei

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1 Introduction

Hi Zhenpei, I reviewed the Cheese problem solution in **exercises-04-SDS383D** and **exercises-04-Cheese** documents on your github repository. I have a few pointers for you.

2 General Comments

2.1 Exercise Remarks

1. It would be nice to have the hierarchical model listed first. This avoids readers from guessing one knows what to expect when looking at different posteriors.
2. You do not make any distinction between fixed and random effects in your model. However, your non-bayesian code suggests that you have considered fixed effects in your hierarchical model.
3. Random effects in the linear model have zero mean by design. I strongly think that Normal-Wishart is not an appropriate model to consider for random effects.
4. I would have liked to see some more algebra describing the results in the equations you have in your document. Especially, the covariance update for θ uses i instead of a t is incorrect. Also, the capitalization to distinguish between vector and matrix notation could be better.
5. In equation 19 you need a t instead of j

2.2 Coding Remarks

1. I did not see any writup describing the problem you were trying to solve. Some context and plots would be nice.
2. I would separate my gibbs sampler from all the other code with a dedicated function. That would make the code more modular and easy to read.
3. I see that you also did not consider log quatities when evaluating your gibbs sampler. Based on our model, $\ln(Q_{it}) = \alpha + \ln(P_{it}) + \epsilon_{it}$
4. The variable names descriptive and the code is easy to follow

5. Not sure why you need to print an i in the loop. You may consider other ways of updating the user about the progress of your code
6. The code breaks because the burn parameter is not specified
7. I would also encourage thinning of the markov chains
8. I would encourage you to take means of the chains after the procedure is done
9. Some plots of the performance of posterior would be good to see

3 Conclusion

I hope this review will help you fix some of the gaps in your understanding. I will be happy to help on clarifications on the remarks in this document.