

Report on Dissertation titled “Essays on Asset Pricing” by Mykola Babiak

Overview

A large body of literature is engaged in linking macro quantities and asset valuations. The big question for decades has been how to reconcile macro quantities (such as aggregate consumption, output, capital stock) which are typically smooth and asset valuations that fluctuate a lot. There is now also a consensus that predictable movements risk premia primarily drive this excess price volatility. This dissertation contributes to our understanding of macroeconomic determinants of risk premia.

The ingredients in generating volatile risk premia that are studied here include (i) a richer class of investor preferences featuring disappointment version, and (ii) a richer model of agent beliefs modeled as learning about parameters that drive technological possibilities in the economy. Both the ideas, that is, studying richer models for risk preferences and belief determination are active areas in finance.

In the rest of the report, I will place the main contributions in the context of the macro asset pricing literature and offer some suggestions that can help with the polishing and publication of the respective chapters in the thesis.

Chapter 1

The first chapter applies Routledge and Zin's formulation of preferences that feature disappointment version along with non-Bayesian learning to study patterns in financial market returns. The main contribution is to show that this setup can reconcile the term structure of variance risk premium as well as premia for skewness, which have been viewed as “puzzling” from the perspective of the existing asset pricing theories. The motivation and exposition are very clear. The current results are quite interesting. I have some suggestions that might be helpful before the paper is sent to a journal:

1. **The model calibration can be tightened:** The paper introduces several new parameters such as the disappointment aversion, disappointment threshold, and parameters that control the degree of non-Bayesian beliefs. These need to be set jointly with the rest of the parameters so that the certain moments in the model fit moments in data. It would be helpful to be clear upfront about the rules of the game. A useful way forward, for example, would be to set the parameters using a simulated method of moments -- state which moments are targeted, what the objective function exactly is including details about the weighting scheme, report standard errors on the estimated parameters.

2. **The comparison to nested models can be made clearer.** In the current form, the model comparisons are comparative static exercises with certain parameters. A stronger message is delivered if the alternative (nested) models are recalibrated to the same set (or at least a subset) of moments. Show the reader where the fit is poor and then how the untargeted moments look in each case.
3. The paper can add more discussion on the **contribution of parameter learning and the deviation from Bayesian learning** to the asset pricing moments. For example, – what are the asset pricing results when agents are Bayesian? What happens if we shut down learning completely? How are the parameters related to non-Bayesian learning identified?
4. A lot relies on the **measurement of variance and skew premia on long-maturity options.** I am worried that measurement issues can drive some of these results. Some discussion along these lines is useful. For example – how liquid are these markets?
5. Connect the results to **Collard, Mukherji, Sheppard, and Tallon (QE 2018)**. This paper uses non-expected utility and Bayesian learning to generate time-varying risk premia. Does this setup also fail in generating the right patterns in variance premia?

Chapter 2 and 3

The second and third chapter introduces parameter learning in production economies. The agents learn about a vector of parameters that underlie the exogenous process for technology growth. In these chapters, the main contribution seems to be that these two ingredients—learning and production—are put together for the first time in an asset pricing context. The setup is computationally challenging, and the chapters show good progress in addressing the computational issues. Below are some comments to improve the exposition:

1. Is the equilibrium with Priced Parameter Uncertainty the same as assuming that the representative agent is Bayesian with appropriately chosen priors? If yes, it might be useful to call it what it is and not **invent new terms**. In any case, there is very little formal development of what exactly is done in terms of modeling of the parameter learning. Some of it is probably buried in the appendix. For example, I was unable to decipher from the main text simple things like what the agents' information set is?
2. In its present condition, these chapters are a **hotchpotch of several cases**; many of them are clearly off in their implications for macro quantities. For example, in Table 2.2, Panel A and B—the model fit for correlations between macroeconomic series is poor. The impulse responses in Figure 2.1 are strange. First, the units in Figure 2.1 are missing. Secondly, do these impulse responses look anything like impulse responses to an identified TFP shock? I doubt they would. For example, the baseline has aggregate dividends higher in recessions. My overall point is that it's not worth frustrating the reader by dragging him through specifications that reflect the history of your thought.
3. It seems that parameters crucial for the results are those involved in the specification of the **adjustment cost function**. At present they are casually picked up from other papers in the literature. To be a convincing quantitative exercise, they should be estimated, say for

example, using maximum likelihood together with the TFP process. I would recommend organizing the paper as follows: Do the estimation in a transparent manner, use the estimated parameters as the baseline and report the macro and asset pricing implications. Then have a short section on robustness. This will make the paper tighter before it can be sent to a good finance journal

4. Both chapters need to be proofread for **typographical errors**. On page 60, 87, 96 the references are not even compiled.

Conclusion

Overall my conclusion is that this dissertation is good, and I recommend that it be defended. All the comments that I have made in the report are suggestions to help improve the papers before they are submitted to top econ or finance journals. There are several interesting results. The first chapter is quite well done. The second and third chapters need more polishing work before they can be sent out.

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