

Comments on Chen, Joslin and Tran

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In Chen, Joslin and Tran's paper (CJT), they only get closed form solutions for different beliefs, and *identical risk aversion when risk aversion is a positive integer*. They do this by expanding the state-price density using the finite binomial expansion. This is an old trick. See for example, Hongjun Yan's job market paper, which is in Management Science (Yan, H., 2008, Natural Selection in Financial Markets: Does It Work?, Management Science, 54, 1935-1950.).

We show that with different beliefs, and identical risk aversion when risk aversion is any positive number, you can get closed form solutions when using the infinite binomial series.

More importantly, we show that with *different beliefs, and different risk aversion*, you can get closed form solutions using Lagrange's Theorem (Lagrange, of course, has many theorems, so we state the one we use in the Appendix). This result is new to the literature. CJT solve their model numerically for this case.

In terms of the results in CJT, I think they will be reversed when both agents have risk aversions less than one. To see why, look at the final term in equation (63) in our paper. You can see that when agents have different beliefs, but identical risk aversion, the risk-free rate is lower when $\gamma > 1$, but higher when $\gamma < 1$. A lower risk-free rate ($\gamma > 1$) will raise asset prices and hence lower risk premia, and a higher risk-free rate ($\gamma < 1$) will do the opposite, thus raising risk premia and increasing the impact of rare disasters. I think the same basic idea will go through with different beliefs and different risk aversions. Note also that in Alex David's paper (David, A., 2008, Heterogeneous Beliefs, Speculation, and the Equity Premium, Journal of Finance, 63, 4183.), he gets a high risk premium when agents have different beliefs but identical preferences when risk aversion is less than one.