The Information Content and Redistribution Effects of State and Municipal Rating Changes in Mexico

Referee Report 2

First of all we thank the time devoted by the revisor to comment our paper. His/her suggestions are deeply acknowledged and are certainly improving the new version of the paper. We now present the comments made by the referee followed by the answers and actions taken.

Comments by Referee and Answers to Comments

Comment: First of all, the topic and setup of the paper is interesting. I did also benefit from the descriptive part. There is an interesting observation on the "trust fund effect" in Mexico, which I would expect to cause some negative trend to ratings, but a positive trend to bond returns in the period under examination. *I do not understand why the effect is introduced but not used in the empirical part of the paper.*

Answer

The referee is right to point that no emphasis was given to the discussion of the Trust Fund Effect which is actually found for two cases: the Governments of Hidalgo (HG032) rated by Moody's and Nuevo León (NL-03) rated by Standard and Poor's. Section 5.3 iii of the new version includes now a paragraph discussing the Trust Fund Effect for the cases where there is a negative association between rating upgrades and bond returns.

Comment: Discussion the bank regulation motive for having a rating the authors might mention the likely influence of the discussions on Basel 2 capital standards in the late nineties.

Answer

Acknowledgement of the influence of Basel II agreements has been included in page 6 of the new paper version.

Comment: I do not understand the asset wealth redistribution hypothesis.

Answer

The explanation of the hypothesis for local governments has been reworked and re shaped in the last paragraph of page 8-9. Footnote four also provides additional arguments to clarify.

Comment: A bit more discussion of tail shape of bond returns and empirical alternatives might have been helpful, though

Answer

A footnote 7 is included in the new version of the paper to discuss some other distributions that could capture the thickness of tails.

Comment: Using equation (1), the authors perform some initial analysis of the data. They find that bond returns on *four* state offerings (among a total of 40 issues, see p. 5) „converge satisfactorily and do not exhibit correlation in the residuals nor squared residuals" (p. 13). Rather than rejecting the model, they reject the other data and restrict their further empirical analysis to the four bond issues that behaved well. I tend to consider this the crucial issue in the paper.

Answer

Part of this exhaustive search was to contrast the model with many other different univariate GARCH models among them: GARCH(1,1) of Bollerslev (1990); Garch in Mean Models by Engle (1986) with different variables in variance such as standard deviation, variance and the log of variance; EGARCH in Mean models. From all these specifications and using different conditional distributions (normal, t-student, double exponential and GED distribution) we found that the models presented in the paper are the ones that give the best empirical fit.

The aim of the paper is not to select the best process to model the behavior of bond market returns but in fact to investigate the effect of rating changes on returns. It is acknowledged in the paper however that given the very small sample presented here the results can hardly be generalized to the market of local bonds. This argument and further description is included in the new version of the paper in footnote 13, page 14.

Comment: Further, I cannot judge the pros and cons of explaining the stochastic process for bond returns *and* the impact of rating events in one model. However, as far as rating changes may affect not only returns (the dependent variable) but also the volatility term (an explanatory variable) the method may call for some further explanation for the benefit of non-specialists like myself.

Answer

The stochastic process used in this paper is explained in section 4 and specifically in equations (1), (2) and (3). It is explained there in particular how rating changes can affect returns AND volatility.

Comment: At one point, the authors start to refer to *expected* returns. They do not explain how they observe expected returns, though. Does expected refer to estimated returns from the model? Or does the term mean average returns (the authors refer to table 2)? On this issue, the reader would need some clarification.

Answer

I refer to average returns. In order to avoid confusion I substitute the word 'expected returns' by 'mean returns'.

Comment: The results are to a large part surprising (positively speaking) or implausible (negative view). Estimated bond returns are close to zero, the variance being 30 times higher than the returns. Would this suggest that investors in these bonds are not only satisfied with a zero (nominal) return but would also be risk-neutral? Or, given that the volatility parameter has a negative sign, do investors happily forego return, because they get some risk instead??? Note that the negative volatility parameter is all the more puzzling since the authors assume that the distribution of returns may have fat tails.

Answer

I am not sure which table or result the report is referring to. In Table 2 we are presenting *unconditional* mean returns and in Table 3 *conditional mean returns* are presented. Both estimates confirm that on average both returns are close to zero. In Table 2 it is also confirmed that the standard deviation is very high. The results in my view do NOT imply that investors are satisfied with zero MEAN returns and are also risk neutral. Mean returns are always in any application close to zero and the variance is often found to be much greater than mean returns. Hence this is just an statistical result and does not imply anything about the behavior of investors.

The negative parameter (I assume the referee is looking at the negative risk premium parameters in Table 3 since there are no negative variances or standard deviations reported in Table 2) is explained in some detail in section 5.3.i. The intuition on how to interpret this and the relationship with other studies is explained there.

Finally, fat tails are usually a feature that is captured by the third moment (kurtosis). We are presenting in table 2 the estimates of kurtosis, all in excess of

the normal distribution which suggest the distribution exhibits fat tail. Negative variances do not exist and are certainly not reported in this study, kurtosis and fat tails are not affected by such finding.

References

Robert F. Engle (2001). "GARCH 101: The Use of ARCH/GARCH Models in Applied Econometrics", *Journal of Economic Perspectives* 15(4):157-168.

Tim Bollerslev (2006). "Generalized Autoregressive Conditional Heteroskedasticity", *Journal of Econometrics*, 31:307-327.