June 9, 2008

Comments on:

"Forecast Evaluation of Explanatory Models of Financial Return Variability"

A Brief Summary of the Paper:

The paper studies the problem of comparing forecasts of financial return viability from different models. Special focus is devoted to comparing forecasts from explanatory models with forecasts from purely statistical models. Section 2 of the paper, which is purely theoretical, discusses how to compare continuous time models with discrete time models. The discussion follows the General-to-Specific methodology and stresses that including the conditional mean when forecasting volatility becomes more and more important as the sampling frequency decreases.

Section 3 examines four different discrete time models ability to forecast squared returns generated by a fifth discrete time model. The section is mostly based on a simulation study. In large sample one can theoretically derive the true ranking of the four models. The ability of four different loss functions to reconstruct this ranking is studied. The section concludes by providing specific advice on how compare volatility forecasts from different models. Section 4 illustrates the results by a study of the weekly Norwegian-Euro exchange rate.

General Remarks:

The paper addresses a very important problem, namely how to compare volatility forecasts from fundamentally different models without treating any of them as more basic. The recent developments in realized volatility techniques, which are naturally understood in continuous time, but compared to discrete time models, has further emphasized the importance of the problem addressed in this paper. In addition the conducted simulation study is extensive and very carefully explained.

Unfortunately, the theoretical considerations in Section 2, regarding the relationship between continuous- and discrete time models, are not mirrored in the simulation study in Section 3, which solely considers discrete time models. Clarifying the link between Section 2 and the simulation study might also make it easier to understand the implications of the theoretical considerations in Section 2, which are (at least to me) not obvious. In addition, the choice of data generating process used in the simulation study is not adequately justified. Section 3 concludes by providing very specific advice on how to compare volatility forecasts, however, the advice is based on simulations from a single model. One could fear that at least some of the conclusions depend heavily on the chosen model. Finally, the

presentation of the results of the simulation study provides to many details and is at times hard to follow. The author should consider rewriting this section emphasizing the most central conclusions.

Specific Remarks:

1. In the last sentence of Section 2.1 (p. 4) it is stated that smaller absolute values of z_t indicate that $g(\mathbf{x}_t, \mathbf{b})$ and $h(\mathbf{y}_t, \mathbf{c})$ successfully explain the variation in r_t and e_t^2. However, small values of $|z_t|$ can be obtained by simply choosing $h(\mathbf{y}_t, \mathbf{c})$ very large - some identification condition must be missing.

2. On p. 8 it is stated that the condition $\alpha + \beta \leq 1$ implies non-stationarity. This is not true in general ($\alpha + \beta \leq 1$ implies non-covariance stationarity).

3. When introducing the DGP used for simulation in Section 3.1 it is regrettable that the choice of model is not justified any further. Has it for instance been employed in other studies?

4. The last few lines on p. 8 compare the value 0.45 to Table 1, but this table does not contain anything resembling this value. Indeed Table 1 seems to be a copy of Table 4.

5. The parameters of model 1 (used for forecasting, see (6) on p. 10) are kept fixed at their true values, but the author admits these must be estimated in empirical applications. This seems like an unnecessary simplification and I would suggest that these parameters be estimated in the simulation study as well.