Referee's Report on "Some falacies [sic!] **in econometric modelling of climate change" by David F. Hendry and Felix Pretis**

General remarks

1. This manuscript contains comments on the unit root test results obtained by Beenstock et al. (2012) for climate data, including CO_2 and N_2O time series from 1850 to 2011. It also contains a pedagogical section (Section 2) listing mistakes that can be made when analysing and modelling (nonstationary) time series. While the comments and the pedagogical example both make sense, the contents of the manuscript give rise to a couple of short remarks.

2. The sentence beginning with 'Indeed it does not even imply that they are not ... '. 'They' obviously refers to the elements of the sequence $\{Z_t\}$, but because $\{Z_t\}$ is only mentioned as a sequence (i.e., in a plural form), this pronoun is slightly confusing. How about 'Indeed it does not even imply that the elements of $\{Z_t\}$ are not ... '?

3. The reference to Mizon (1995) is a bit cryptic but is probably intended to recall Section 4.1 of that article. It may, however, give the erroneous impression that nonlinear approximations or unmodelled shifts are discussed in that paper. It seems not, as one might also think given the title of Mizon's paper, to have much to do with the autocorrelation tests in Beenstock et al. (2012) (Durbin-Watson, not appropriate because the model in question is dynamic, and the Godfrey-Breusch LM test). A clarification could be useful.

4. Comparing Tables 1 and 2 it is seen that for $\Delta \mathrm{rf}CO_2$ the null hypothesis is rejected using the ADF test with constant and trend, whereas for $\Delta \mathrm{rf}N_2O$ the rejection is obtained using the ADF test with constant only. This may make the reader wonder whether the series are, after all, rather different: one is trend stationary, whereas the other is difference stationary. But then, a visual comparison of panels a and c in Figure 2 would make one guess that if there were better measurements for the period 1959–1978 to be used in tests, both series would be deemed trend stationary. Since this is not the case, it would be interesting to also test the unit root hypothesis for the $\Delta \mathrm{rf}CO_2$ using the data from 1978 to 2011 and see whether the ADF test with the constant would then reject the null hypothesis. By the way, the

level shift in the early 1900s is mentioned as a contributor to the test results of Beenstock et al. (2012), but nothing is said about the more dramatic step shifts from about 1960 to 1978.

Typographical errors etc.

5. p. 3, 13a: 'these' not 'theses'.

6. p. 3, 8b: 'fallacies' not 'falacies'.

7. p. 4, Figure 1: The labels are very unclear (the characters are jumping all over the place).

8. p. 4, 6a and 12b: There is no Figure 3.2: the reference must be to Figure 3.