

**Response to *Anonymous - Referee Report (13-11-2015)* and rejoinder to *Paul Frijters, David W. Johnston, Michael A. Shields – Reply (20-11-2015)*.**

Thank you for the interest in our *Comment*. Together with this ongoing discussion, we hope this will raise awareness of dynamic modelling in the “economics of happiness” and, in particular, be of practical assistance to researchers new to the field and/or to dynamic modelling. To these ends, the document above – *Alan Piper – Reply to reviewer (09-11-2015)* includes some useful references.

The *Anonymous - Referee Report (13-11-15)* succinctly summarises the main points in our critique of Frijters et al. (2014):

1. potential bias in their parameter estimates when using lagged life satisfaction as an independent variable under OLS; and
2. potential variability in their findings depending on the number and types of instruments used under GMM.

The Referee considers that: “Both points are very valid, and they raise questions about the accurateness of the findings in Frijters et al. (2014).” That granted, the Referee also criticizes our note for not properly replicating Frijters et al. (2014):

At the same time, however, the authors do not report details, such as which variables and variable definitions are used, in their replications. Ideally, any methodological note that aims at pointing towards differences in findings should use the same variables and variable definitions, as well as models, to the extent possible. It is difficult to say whether this is the case here.

In their *Reply (20-11-2015)*, Frijters, Johnston and Shields also criticize our failure to replicate their study as the context for our critique:

We first note that PP have chosen not to investigate our analysis using data from the NCDS or BCS, and instead use data from the British Household Panel Survey (BHPS) and the German Socio-Economic Panel (SOEP), which have a very different sample and survey design than the cohort studies.

We take this opportunity to clarify our intentions. The purpose of our comment was not to replicate Frijters et al. (2014). Rather, our intention was to highlight two methodological points of potential interest to researchers considering dynamic analysis of “happiness” models, which in our view is oddly neglected in this field of enquiry.

1. The use of OLS to estimate panel models including a lagged dependent variable – i.e. a dynamic model – gives rise to biased estimates. Frijters et al. (2014) reject our view that this practice is “problematic” in the particular context of their study. Yet, even if biases induced by OLS estimation make little or no practical difference to their particular estimates of interest, in general OLS estimation of dynamic panel models is not good practice. To resolve the particular implications of OLS bias for the estimates and conclusions of Frijters et al. (2014) would indeed require a full replication; our general point does not. It is the general point that we want to highlight.
2. The main alternative to OLS is system GMM estimation. Here, we make two points, neither of which seems to be disputed by Frijters, Johnston and Shields.

- a. According to Frijters et al. (2014): “Equation (8) is estimated using the Blundell and Bond (1998) system estimator, which assumes no autocorrelation in the random error term and that the fixed-effect is uncorrelated with the first observed first-difference”. Our first point is that assumptions need to be not only stated but also to be tested, especially when the corresponding diagnostic tests are well established and readily available.
- a. The authors acknowledge that: “PP demonstrate using BHPS and SOEP data that estimates from dynamic panel data models can be sensitive to the type and number of instruments employed ....” We used other datasets rather than replication of Frijters et al. (2014) not only for convenience but also to demonstrate that this is *in general* a most important issue for the estimation of dynamic panel models. Frijters, Johnston and Shields (20-11-2015) dismiss this issue on two grounds: “because the dynamic panel data model was itself a secondary robustness analysis for our main results”; and “given journal space constraints ... it is even more difficult to explore the sensitivity and robustness of every sensitivity and robustness result”. Our rejoinder is that without diagnostic testing and careful reporting of instruments and their mode of selection there can be no confidence in the validity of such “robustness” testing.

We leave to readers to judge whether or not our “critique of PP is misplaced and poorly thought through”. As stated above, our interest is not in replicating Frijters et al. (2014). Hence, our lack of challenge to their specific results or conclusions is not, as they claim “telling”. Our interest in Frijters et al. (2014) is to highlight methodological issues arising from dynamic estimation, an approach which – in our view – is still rather neglected in the “happiness” field of enquiry. The corollary for other researchers is two-fold: OLS estimation of dynamic linear models entails biases; system GMM can yield valid estimates but is convincing only if conducted by a range of good practice guidelines.<sup>1</sup>

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<sup>1</sup> References to sources of good practice guidelines and examples of studies that attempt to adhere to them are provided in a previous document in this discussion, in: *Alan Piper – Reply to reviewer (09-11-2015)*.