Discussion

Comment on: "A probability-based stress test of Federal Reserve assets and income" by Jens H.E. Christensen, Jose A. Lopez and Glenn D. Rudebusch

David Archer *

Bank for International Settlements, Centralbahnplatz 2, 4002 Basel, Switzerland

1. Introduction

Christensen, Lopez and Rudebusch's (CLR's) paper is primarily about generating interest rate scenarios for stress tests when a significant proportion of interest rate paths might encounter the Zero Lower Bound (ZLB). CLR illustrate the use of the technique by stress testing the Federal Reserve System's (Fed's) balance sheet and profit transfer outlook. The technical innovations are important, and the application is of wider interest – especially in the context of the Fed's balance sheet having been swollen by Quantitative Easing (QE). Having said that, the application is essentially distracting from the main, technical, contribution. In these comments, I will allow myself to be distracted, and focus more on application than the technique. But first, a comment on technique.

2. Technique

Drawing probabilistically from historical distributions of interest rate behaviour becomes awkward when history has few encounters with the ZLB yet the starting point for the stress tests ensures that a notable proportion of simulated paths would hit the ZLB. Not only should short rates along such paths behave differently from their historical counterparts; the evolution of the yield curve will also be affected. The CLR's previous work on yield curve modelling comes in handy (Christensen et al., 2010, 2011, 2012), as do newly developed methods for modelling the impact of negative shadow rates on yield curve dynamics (Krippner, 2013). The technical problems are solved.

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* Tel.: +41 61 280 8190.
  E-mail address: david.archer@bis.org

But are they? First, one cannot escape the fact that the history of short rate and yield curve dynamics away from the ZLB that is used to build yield curve models embeds fundamentally different central bank behaviour from that observed at the ZLB. Central banks used to presume that they could not much influence long term rates, or in the attempt achieved only limited success and collateral damage. That presumption seems to have changed (Bernanke, 2013). Moreover, we have been witnessing a specific form of forward guidance that seems entirely new. This form involves trying to persuade market participants that short rates will not rebound with measured economic activity in proportions that history would suggest (Bean, 2013). From both perspectives, historical dynamics must be a risky guide to future dynamics.

Second, that new techniques are required for ZLB modelling itself highlights the existence of a downtrend in nominal interest rates whose presumed future is crucial to empirical assessments of relevant yield curve probabilities. Fig. 1 presents the history of representative interest rates over the sample period used, placing CLR's interest rate outlook in context. Should one presume a continuation of such a down trend? At least, to its ZLB limit? Or a return towards historical norms as perhaps represented by historical averages? At the historically-normal pace of adjustment, or in a more measured fashion, as depicted in Fig. 1? Each is as plausible as the other, giving rise to a fundamental uncertainty that does not seem adequately reflected in the benign central path that falls out of the CLR methodology, or in its (by design) historically normal distribution of shocks around that path. Against this background, the concept of "probabilistic stress tests" seems somewhat misleading. I have no answer.

What does this mean for the results? Given this fundamental uncertainty, the allowance for a sharp bounce back in yields causing large scale capital losses, or a sharp rise in funding costs of the portfolio that would halt surplus transfers to the Treasury, seems oddly low for a stress test context. At the same time, the probability of continuing to record very high earnings from a still-swollen portfolio of securities funded at no cost also seems oddly low. It is as though Magellan had been no more discomforted on first losing sight of shore on heading into the unknown Atlantic than on first losing sight of shore when heading into the well-travelled Mediterranean.

3. Application

Now to the application to the Fed's financial results. I have three points to make.

3.1. Stress tests

First, stress tests can in principle involve shocks to prices to which the balance sheet is exposed, shocks to the balance sheet, or both. A major lesson from the financial crisis was that for central banks, historically-normal balance sheets are a poor guide to the future (Archer and Moser-Boehm, 2013). Yet CLR's stress test involves running off the assets accumulated in QE at the pace currently foreseen, i.e. as determined by maturities. Given the income recognition standards in place at the Fed, this has important implications for the outlook for profit transfers.

3.2. Policy cost-benefit analysis

My second point concerns the context for the financial stress tests conducted by CLR – QE at the ZLB. Although CLR's objective is explicitly a narrow one – to apply a new technology to yield curve modelling at the ZLB so as to enable interest rate based stress tests that have probabilities attached – the reader is tempted to consider this contribution as speaking to a policy cost-benefit analysis of QE at the ZLB, or at least the component thereof that deals with public sector finances. CLR carefully state that "we are not conducting a comprehensive assessment of the costs and benefits of the Fed's programme of
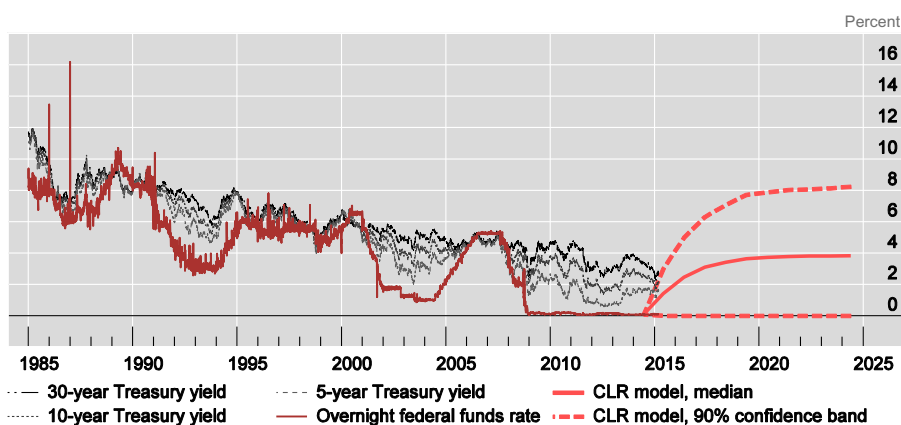

Fig. 1. US Fed funds rate and Treasury yields.
Sources: Bloomberg; data supplied by CLR