New Evidences on Quantitative Easing Effects

Valentin Jouванceu *

First draft: February 16, 2018

Abstract

We explore the impact of Quantitative Easing programs on real and financial variables in the United States using monthly data that ranges from 2008M12 to 2015M12, the zero lower bound period. We build several factor-augmented vector autoregressive models with time-varying coefficients and stochastic volatility. We rely on data for various assets held by the Federal Reserve to build a dynamical Quantitative Easing Index (QEI). We obtain a large set of different models in which QE variables affecting the QEI differ over time by means of dynamic model average and selection techniques. Estimation procedures avoid simulation methods and computational burden by using a two steps Kalman filter and smoother algorithm. The recursive estimation schemes of the covariances matrices depend on decay and forgetting factors estimated from data. Hence, we leave room for an extensive flexibility in which data cast out for a QEI which has a high predictive power for real and financial variables. In search of an accurate measure of fit, we also explore restricted forms of the TVP-FAVAR. In a nutshell, the modeling that produces the best forecasts is the structural model of our causal analysis. Then, we explore the effects of a structural QPI shock through two identification schemes. The effects of a QPI shock of 1% of GDP derived from our impulse response analysis causes statistically significant booms in real GDP and CPI of 0.080% and 0.083% respectively in the baseline model. Over the period considered, the Federal Reserve engaged in a total assets purchases amounts to 15.5% of annualized GDP, which leads to average rise of around 1.25% in real GDP and 1.30% in CPI. We also consider five transmission channels that produce larger impact on real and financial variables. The mechanisms differ over time in amplitude and statistical significance. We deduce from our work that time-variation, heteroskedasticity and flexibility produce more reasonable results, and fit the data better when it comes to identify in the data the macroeconomic effects of QE programs.

Keywords: Quantitative Easing, Dynamic factor model, Dual Kalman filter, Transmission channels.

JEL Classification: C11, C32, C52, E52, E58.

*Univ Lyon, Université Lumière Lyon 2, GATE L-SE UMR 5824, F-69130, Ecully, France; jouvanceau@gate.cnrs.fr