There is a long tradition in macroeconomics in assuming that economic agents populating our models are endowed with Rational Expectations (henceforth, RE), that is, they have full knowledge of the equilibrium probability distribution of economic variables. While this has brought much desirable discipline in the way macroeconomists were previously modeling expectations, it comes with the unrealistic assumption that agents have unlimited computational power in the form of complete knowledge about each others' preferences, incentives, beliefs, and market clearing conditions. In addition to this, we have come to understand that unless we impose structural frictions and other forms of sluggish adjustments of sufficient magnitude (often exceeding what observed in reality) RE models have a hard time replicating some salient features in the data, such has the excess persistence and volatility of key macro indicators (e.g. stock prices, inflation, etc...).

Due to the self-referentiality of equilibrium systems - namely, the fact that current endogenous variables depend on subjective expectations and viceversa - other types of near-rational equilibria are possible within most macroeconomic models. In particular, agents may form forecasts based on a mis-specified perceived law of motion (PLM), which they will not be able to reject based on simple statistical testing: a self-confirming restricted perception equilibrium would then arise instead of a REE.

Within this class of equilibria, an appealing concept is the Stochastic Consistent Expectation Equilibrium (henceforth, SCEE). Boundedly rational agents make forecasts using a parsimonious linear model, say a stationary AR(1) process. A SCEE arises when the unconditional mean and autocorrelation of the forecasting model coincide with those generated by the unknown true data generating process.
- namely, the unknown self-referential structural model. This equilibrium concept is rather appealing as it imposes minimum knowledge on behalf of agents, and, most importantly, yields serially uncorrelated expectational errors. A concise overview of SCEE can be found in Hommes and Zhu (Journal of Economic Theory, 2014).

In this paper, we study the existence and dynamic properties of SCEE in an infinite horizon framework where markets are incomplete and firms face nominal rigidities in price setting (the baseline New Keynesian model used for monetary policy analysis). For generic beliefs satisfying standard probability laws, lack of common knowledge makes optimal consumption and pricing decision rules depend on, respectively, consumers’ and firms’ infinite-horizon forecasts about pay-off relevant variables (such as future real interest rates, marginal costs, etc...). We show that, for any realistic parameterization of the model, at least one SCEE exists. We show that such SCEE can display excess persistence and volatility with respect to its RE counterpart depending on the intertemporal elasticity of substitution, the Frisch elasticity of labor supply, and the degree of aggressiveness towards inflation in the policy rule.

As the proposed framework naturally delivers a “discounted linear Euler Equation”, we assess the model’s potential to resolve/tame the so called forward-guidance puzzle, i.e., the fact that in the baseline RE New Keynesian model the quantitative impact of forward guidance (a credible announcement of future interest rate paths) is much greater than what observed in the data and grows exponentially with the forward guidance horizon. Preliminary results show that, along a SCEE, credible forward guidance announcements are much less powerful than under RE.

The following figures displays the on-impact response of output and inflation to a 1% cut in the real interest rate at a future date, as function of the forward guidance horizon. Under RE, the initial output response does not depend on the length of the horizon, while the magnitude of the inflation response is a steeply increasing function of it (as current inflation depends on the discounted sum of future changes in real activity (via the Phillips curve). On the contrary, in a SCEE, the response of current output is weaker as the date of the announced cut is further away in the future. As a consequence, the response of inflation is tamed at any
horizon, and does not display a significant positive relationship with the length of it.