Assessing the anchoring of inflation expectations

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ABSTRACT

This paper proposes a new approach to assess the degree of anchoring of inflation expectations. We extend the static setup of the predominant news regressions by introducing exponential smooth transition autoregressive dynamics. Our approach provides estimates of a market-perceived inflation target as well as the strength of the anchor that holds expectations at that target. A cross-country study based on a new data set of daily break-even inflation rates for the US, EMU, UK and Sweden shows that the degree of anchoring varies substantially across countries and expectations horizons.

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1. Introduction

Expectations play a key role in the conduct of modern monetary policy. In particular, the New-Keynesian Phillips curve stresses the importance of inflation expectations for the rate of actual inflation. Central banks' ability to achieve price stability is thus directly linked to its ability to anchor inflation expectations at their target. As any central bank, the Federal Reserve, the European Central Bank, the Bank of England and the Riksbank monitor inflation expectations as an indicator of inflation pressure. The quote "inflation expectations are well anchored" is a frequently used phrase in press conferences and monetary policy reports. Yet, in spite of their prominent role in monetary policy, inflation expectations are still under-researched. Specifically, it is not clear how the degree of anchoring of inflation expectations should be defined and measured empirically.

In monetary policy practice it is often argued that inflation expectations are well anchored if their distance to a more or less explicit inflation target is sufficiently small, see BoE (2010) and ECB (2011).

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More sophisticatedly, the empirical literature employs news regressions and a pass-through criterion. The news regression approach exploits the idea that anchored inflation expectations should be insensitive to economic news, compare Levin et al. (2004), Beechey and Wright (2009) and Gürkaynak et al. (2010b). Similarly, the pass-through criterion of Jochmann et al. (2010) and Gefang et al. (2012) defines inflation expectations as anchored if longer-term expectations do not respond to changes in shorter-term expectations. Both approaches provide information on the economic source of contemporaneous adjustments in first differences of the inflation expectations measure.

In the present paper, we propose to model the level of inflation expectations and to assess the anchoring by its speed of mean reversion. It appears economically important not only to study the source of contemporaneous adjustments but also the dynamic propagation of these shocks. For this purpose, a regression that focuses on first differences of inflation expectations is not well suited. Firstly, an econometric model in first differences implies a permanent effect of a shock to the level of expected inflation. It seems difficult to relate an empirical approach that assumes such extreme persistence to the idea of anchored expectations. Secondly, within a first difference regression any information about the level of expected inflation is lost. However, even if the central bank does not announce an explicit inflation target, the level of inflation expectations should be of crucial importance.

We intend to study the degree of anchoring in a more flexible econometric framework. We propose an exponential smooth transition autoregressive (ESTAR) model for the level of inflation expectations. Nobay et al. (2010) recently showed that the ESTAR model captures the dynamics of the actual rate of US inflation remarkably well.[1] As a natural extension, we apply this model to inflation expectations data. The distinguishing feature of the ESTAR approach is given by its flexible dynamics. On the one hand, the model accounts for the locally high persistence typically observed in expectations data, while on the other hand it implies global stationarity, i.e. shocks to the level die out eventually.

The ESTAR model allows inflation expectations to return to some long-run equilibrium value or *anchor*. This value will be interpreted as the *market-perceived* inflation target, which may well deviate from an officially announced inflation target of a central bank. The transition speed within the exponential function determines how fast the reversion to the perceived target takes place and therefore provides a natural measure of the *strength* of the anchor. De-anchored expectations are characterized by convergence of the ESTAR model to a random walk.

The transition function of the ESTAR model implies a stronger pull from the anchor the more expectations deviate from the market-perceived target. These characteristics appear suitable and also intuitive in view of anchored inflation expectations generated by credible monetary policy. If a large shock pushes inflation expectations far away from the perceived target, markets expect a pronounced intervention from a central bank. Smaller and thus economically less meaningful shocks, on the contrary, are expected to be tolerated by the monetary authority.

Since we include macroeconomic news variables as controls in the ESTAR model, our approach represents an extension of the news regression of Gürkaynak et al. (2010b) which is nested as a special case. The crucial difference is that even if economic news affect inflation expectations, they might still be well anchored. The main aspect of our criterion is, how fast the impact of a shock decays.

We investigate the degree of anchoring of inflation expectations in the United States (US), the European Monetary Union (EMU), the United Kingdom (UK) and Sweden (SW). The expectations measure under consideration is based on the so called break-even inflation (BEI) rate that is the most prominent measure of inflation expectations within the news regression and the pass-through literature. BEI rates can be derived from the spread of nominal and real government bond yields, i.e. inflation-indexed bonds. Although the considered countries have issued a significant number of nominal and real bonds, constant maturity yields of real bonds derived from term structure estimates are usually not readily available. Moreover, due to distinct liquidity conditions in the markets of nominal and real bonds, BEI rates are a rather indirect measure of inflation expectations. In order to avoid distortions triggered by different data sources and estimation techniques, we closely follow the

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[1] Altavilla and Ciccarelli (2007) demonstrate a good forecasting performance of ESTAR models for US and Euro Area inflation. Gregoriou and Kontonikas (2009) find inflation in five OECD countries to be well described by ESTAR dynamics. The ESTAR approach is also used to model other macroeconomic time series as, for instance, exchange rates (Kilian and Taylor, 2003).