Inflation in Europe after the Great Recession☆

Sandeep Mazumder

Department of Economics, Wake Forest University, USA

A R T I C L E   I N F O

A B S T R A C T

Inflation in Europe fell sharply after the Great Recession in 2008 due to the severity of the financial crisis. However, the post-recession sharp decline in inflation in 2012 was not anticipated by most observers. This paper seeks to explain this behavior of eurozone core inflation, which we do by estimating a Phillips curve with professional forecasters' inflation expectations. Doing so produces inflation predictions that closely match the observed behavior of core inflation, whereas lagged expectations fail to predict the 2012 disinflation. Furthermore, we find that short-term inflation expectations are most relevant for the euro area, rather than longer-term ones. Indeed the evidence suggests that the ECB's inflation anchor of 2% has weakened since the Great Recession, and is something that should cause policymakers a lot of concern.

1. Introduction

The Great Recession of 2008–2009 was one of the most severe recessions for decades, and the impact this recession made on inflation dynamics across different countries has been widely researched, yet not fully understood. In particular, inflation in the euro area fell sharply after 2012, and has remained well below the European Central Bank's (ECB) target. To see how this puzzled economists, one can estimate a backward-looking Phillips curve for the euro area until the Great Recession, and then use the model to forecast post-recession inflation. This produces forecasts suggesting that inflation should have stayed somewhat near the European Central Bank's target of two percent. As the Vice President of the ECB stated at the Jackson Hole Economic Policy Symposium in 2015: "the fact remains that forecasters were not able to anticipate the disinflation for the euro area as a whole from 2012, or for the larger member countries" (Constancio, 2015).

This paper seeks to demonstrate that the Phillips curve actually does well at explaining core inflation data in the euro area, which is something that few papers in the literature have sought to explain. We first estimate the Phillips curve using traditional backward-looking inflation expectations. While this model fits the inflation data somewhat well, it does a poor job of forecasting future inflation. Specifically, post-2008 Phillips curve forecasts with adaptive expectations predict that core inflation should have been in the region of 2.6% by the end of 2015, whereas in reality it was about 1.0%.

However, when we then use direct survey measures of inflation expectations using the ECB's Survey of Professional Forecasters (SPF) data, as is done in papers such as Fuhrer et al. (2009) and Ball and Mazumder (2014), we find that the post-Great Recession inflation forecasts produced from the Phillips curve align almost exactly with the observed behavior of eurozone core inflation dynamics. Indeed, this Phillips curve model with survey forecasts explains the vast majority of the dynamics in eurozone core inflation since the inception of the single currency in 1999. Therefore, our Phillips curve model shows there is no puzzle of excessive disinflation in the euro area since 2012. Moreover, much of the recent work on post-recession inflation dynamics (such as Krueger et al., 2014) has emphasized that the duration of unemployment that is used in the Phillips curve matters. We find that this distinction is not important when it comes to explaining core inflation dynamics in Europe.

Instead, inflation dynamics in Europe appear to be mainly driven by inflation expectations. These expectations–both short-term and medium-term–were strongly anchored until the end of 2008, after which the anchor has weakened. In particular, when one looks at the one-year and two-year ahead SPF forecasts of inflation, the decline in forecasts and the loosening of the anchor have led to the actual fall in core inflation in Europe. This all suggests that the inflation expectations anchor has weakened in the euro area since the Great Recession, and the weakening of this anchor has led to low inflation rates since 2012. This also shows how inflation in Europe has hinged on short-

term expectations and not longer term ones, which is a new finding of this paper which has not yet been reported in the literature. This has large policy implications for Europe, where the desire to keep inflation low and stable rests largely on the ECB's ability to stabilize inflation expectations. Yet the weakening of this inflation anchor suggests the ECB has much more work to do in shaping inflation expectations in the future.

The rest of the paper is organized as follows: section 2 summarizes the current literature on inflation dynamics in the U.S. and the euro area, section 3 discusses the measure of inflation that we focus on, section 4 presents our empirical models, while section 5 contains results and discussion. Finally, we conclude in section 6.

2. Literature

2.1. Inflation dynamics in U.S.

The behavior of post-Great Recession inflation dynamics in the U.S. is an area that has received a lot of attention in recent years. Two main theories have been put forth to explain the missing disinflation puzzle. The first of these is the idea of anchored inflation expectations. Officials from the Federal Reserve (such as Bernanke, 2010) have stressed this theory, as well as others like IMF (2013). This theory suggests that the Federal Reserve's commitment to a two percent inflation target has forced inflation expectations to remain near two percent as well. This in turn has prevented actual inflation deviating much from its target.

The second explanation is that the relevant measure of economic slack in a Phillips curve is no longer the aggregate unemployment rate but rather the short-term unemployment rate. This is particularly crucial when it comes to explaining U.S. inflation since 2009. Stock (2011), Gordon (2013), and Krueger et al. (2014) all emphasize this point, where the long-term unemployed are considered to be on the margin of the labor force and thus are exerting less pressure on U.S. prices than they have in the past. Therefore those who have been without work for a shorter period of time are more relevant when it comes to wage negotiations and subsequent price changes.

These anchored-expectations and short-term-unemployment explanations of post-recession U.S. inflation are often considered to be rival stories for recent inflation dynamics, although Ball and Mazumder (2014) provide evidence that both are simultaneously necessary to explain the data. Their work provides evidence that a Phillips curve with both anchored expectations and short-term unemployment does an excellent job of explaining recent U.S. inflation behavior.

2.2. Inflation dynamics in Europe

Several commentators and researchers have sought to explain why inflation in Europe has been low, and in particular why inflation has been stuck below its target since 2012. Fig. 1 plots the movement of the euro area's harmonized index of consumer prices (HICP) quarterly inflation rate against the ECB's two percent target, along with one measure of core inflation, namely the HICP inflation rate for all items excluding energy and unprocessed food (HICPX).[1] From 1999 until 2012, both headline and core inflation have moved similarly, centered around the ECB's target inflation rate, where the HICP inflation rate is more volatile as one might expect. From 1999 to 2012, the mean rate of HICP inflation is extremely close to the target at 2.1% (1.7% for core inflation). With the exception of late 2008, when world crude oil prices fell (for instance, the Brent crude oil price fell by about 63%, equivalent to $77 per barrel, from 2008Q1 to 2009Q1), both headline and core inflation seem to track each other somewhat closely.
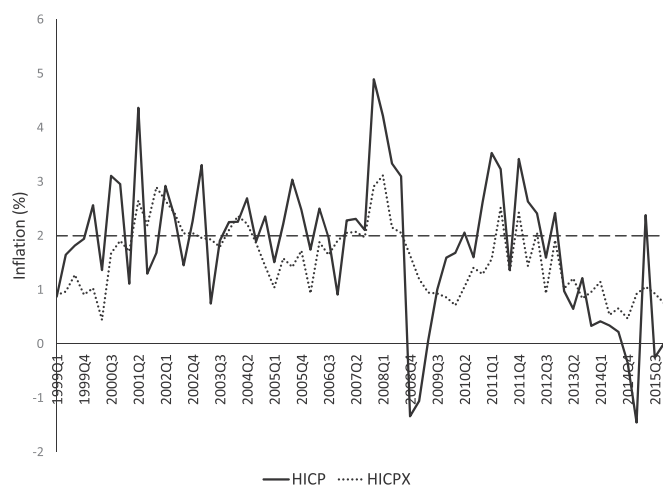

Fig. 1. Euro Area HICP vs. HICPX Inflation, 1999–2015.

The relationship between these inflation rates and the target changes substantially post-2012, where both inflation rates are permanently below the ECB's 2% target.[2] At the end of 2012, a four-quarter moving average of headline inflation was 2.3%, and it falls to 0.2% by the end of 2015. Core inflation moves from 1.6 to 0.9% over the same time period. The mean inflation rate for 2013–2015 is 0.4% for headline prices and 0.9% for core prices.

Almost all of the papers written on this subject have addressed the potential causes of lower-than-expected headline inflation in Europe, while paying little attention to core inflation. Broadly speaking, the literature proposes two solutions to the issue of excessive disinflation with headline inflation: domestic factors through aggregate demand and external factors through supply shocks (specifically, world oil prices).

For instance, Halka and Szafranek (2015) argue that the decline in European inflation in 2013 and 2014 is commonly attributed to positive supply shocks through declining oil and food commodity prices, but that non-food and non-energy components of the harmonized index of consumer prices (HICP) have also declined substantially. The authors postulate that external factors have played a key role here, where prices in service sectors have declined due to globalization. In a similar vein, a report by IMF (2015) argues that euro area inflation has been particularly low due to global inflation trending downwards since 2012. Relatedly, the report attributes low inflation in Europe to sizable output gaps and debt overhangs which have tempered economic growth. Landau (2014) also argues that low inflation in Europe has mainly been caused by low aggregate demand. He builds on work done by Caballero and Farhi (2013) to argue that there has been an excess demand for 'safe assets' which has led to economic agents holding money and government bonds in preference to other financial assets. As a result, this has led to a reduction in spending, which in turn has led to disinflationary pressure.

Conti et al. (2015) find that both domestic and foreign demand shocks have been the main drivers of eurozone HICP inflation. Specifically, they find that oil supply explains rising inflation in the first half of 2008, while it did not play as large of a role in the subsequent disinflation. For the period of 2013 and 2014, where euro area inflation declined substantially, the authors argue that both oil prices and aggregate demand shocks are the causes. In addition, they find that the zero lower bound on nominal interest rates contributed to falling inflation as well. The comments given by Constancio (2015) are a little more

---

[1] Both HICP and HICPX data are for 19 euro area countries, where the data for HICP inflation are obtained from Eurostat, and the data for HICPX inflation are taken from Andrle et al. (2013), where the authors supplied updated data until the end of 2015.

[2] With the exception of one observation, namely the second quarter of 2015 for HICP prices.