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The dynamic relationship between core and headline inflation[☆]



Edward N. Gamber^{a,1}, Julie K. Smith^{b,*}, Raluca Eftimoiu^{c,2}

^a Macroeconomic Analysis Division, Congressional Budget Office, Washington DC, USA The views in this paper are the author's and should not be interpreted as the Congressional Budget Office's.

^b Department of Economics, Lafayette College, Easton, PA 18042, USA

^c Precision Filters, 240 Cherry Street, Ithaca, NY 14850, USA

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ABSTRACT

This paper investigates the dynamic relationship between headline and core inflation across monetary policy regimes for both the Consumer Price Index and Personal Consumption Expenditure deflator. Our work differs from previous work in that we consider a broader set of core inflation measures. Core inflation measures considered include the respective less food and energy inflation rates and the respective weighted median or trimmed mean inflation rates. Our bivariate vector autoregressions reveal that shocks to headline inflation account for a larger fraction of the forecast error variance of most core measures in the pre-1980 samples. This result is broadly consistent with the findings of previous studies that shocks to headline inflation feed back into core inflation during periods when monetary policy is more accommodative. But our examination of this broader set of core measures also reveals important differences across those measures. In particular, shocks to headline inflation have no impact on the trimmed mean CPI inflation rate in both the pre-1980 and post-1984 samples.

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* Corresponding author at: Simon Center, Department of Economics, Lafayette College, Easton, PA 18042, USA.
Tel.: +1 610 330 5301.

E-mail addresses: ed.gamber@cbo.gov (E.N. Gamber), smithjk@lafayette.edu (J.K. Smith), ralucaeftimoiu@gmail.com (R. Eftimoiu).

¹ Tel.: +1 202 226 2777.

² Tel.: +1 607 277 3550.

1. Introduction

Movements in headline inflation are a combination of movements in the underlying trend inflation rate as well as transitory price movements. The various measures of core inflation (less food and energy, weighted median, trimmed mean) represent various approaches to stripping out the transitory movements in prices. The degree to which a measure of core successfully captures the underlying trend inflation rate is usually assessed by looking at its ability to forecast headline inflation over some medium term (1–2 year) horizon.³ If a measure of core inflation contains information that is useful for forecasting the headline inflation rate at some future date, it necessarily follows that when there is a difference between headline and core inflation in the current period, headline inflation will, to some extent, revert back to core inflation.

In this paper we measure the strength and direction of movement between headline and core over various horizons in a series of bivariate vector autoregressions (VAR) containing headline and core inflation. We present evidence on the dynamic relationship between core and headline inflation for various measures of core inflation, and over various sub-samples. Our overall objective is to determine whether the strength and direction of the dynamic interaction between core and headline inflation have changed over time and whether those changes are related to changes in the degree of monetary policy accommodation that have been identified in previous studies.

We specifically investigate the following questions: do shocks to headline inflation feed back into core inflation? Does the existence and strength of that feedback differ across monetary policy regimes? And does the existence and strength of that feedback differ across measures of core inflation?

Kiley (2008) and Mehra and Reilly (2009) look at a similar set of questions. Kiley (2008) examines both the Consumer Price Index (CPI) and the Personal Consumption Expenditure deflator (PCE) and considers the respective less food and energy (LFE) measures as core inflation. Using an error-correction approach he finds that during the 1970s and early 1980s both headline inflation and core inflation adjust to close a gap between headline and core. After the early 1980s, headline inflation does the adjusting. Kiley does not discuss this result in relationship to monetary policy regimes.

Mehra and Reilly (2009) use the CPILFE as the measure of core inflation. They show that both the speed and direction of adjustment between core and headline inflation appear to depend on the monetary regime. When monetary policy is accommodative (pre-1979) and there is a gap between the CPILFE and headline CPI inflation rates, the gap is closed mainly through adjustments in the CPILFE inflation rate. When monetary policy is less accommodative (post-1979) the gap is closed mainly through adjustments in the headline inflation rate. We expand on their work by using a different estimation methodology and by looking at several different candidate measures of core inflation for the CPI as well as the PCE.⁴

Our research on the dynamic relationship between core and headline inflation is also related to the literature on inflation persistence. Several authors have investigated whether inflation persistence is structural, or varies with changes in monetary regimes. Beechey and Osterholm (2012), Kang, Ho and Morley (2009) as well as others⁵ present evidence in support of the hypothesis that inflation persistence varies over time and may vary systematically with changes in monetary regimes. Alternatively, Pivetta and Reis (2006) present evidence that inflation persistence in the US has remained roughly unchanged since the mid-1960s.

Erceg and Levin (2003), Orphanides and Williams (2005) and Williams (2006) describe the various mechanisms through which changes in monetary regimes might affect observed inflation persistence.

³ Most previous research has examined whether core inflation measures are good forecasters of future inflation. See Bryan and Cecchetti (1994), Clark (2001), Cogley (2002), Dolmas (2005), Liu and Smith (2014), Rich and Steindel (2005), Smith (2004), Wynne (1999) for discussions of forecasting in the United States. See Le Bihan and Sédillot (2002), Bagliano and Morana (2003) and Stardev (2010) for discussions of forecasting in Europe.

⁴ Differences in the dynamic relationship between core and headline inflation across a 1979 or early 1980s sample split have been identified by other authors as well: Blinder and Reis (2005), Ball and Mazumder (2011), Clark (2001), Mishkin (2007), Rosengren (2011), Rich and Steindel (2005), and Smith (2005).

⁵ See also Benati (2008), Dossche and Everaert (2005), Hondroyannis and Lazaretou (2004), Lansing (2009), Levin and Piger (2002), Leduc, Keith, and Tom, 2007. See Fuhrer (2009) for a comprehensive review of the literature on inflation persistence.

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