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Input-output connections between sectors and optimal monetary policy

by Engin Kara

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Over the last decade, many central banks have adopted inflation targeting as a framework for monetary policy-making. Most, if not all, inflation-targeting central banks use a measure of consumer price inflation or one of its variants as a target. The use of consumer price inflation seems to be the most appropriate measure of inflation if one views the ultimate goal of monetary policy to be household welfare, as this measure is the most relevant for calculating the cost of living.

This practice raises the question whether central banks should ignore developments in other measures of inflation, such as the producer price index (PPI). The answer to this question depends mainly on whether higher prices of intermediate goods or raw materials imply a significant increase in inflation risk at the consumer level? If this is true, then an inflation-targeting central bank may also want to target PPI inflation to minimise the disruptive effect of producer prices on consumer prices. However, this assessment stands in sharp contrast to the view taken by Ben Bernanke (2004). The Chairman of the US Federal Reserve argues that the main reason behind this is that "raw materials costs are a small portion of total cost". A similar view has been expressed by ECB President Jean-Claude Trichet (2004). If we were to construct an "optimal inflation index" that is an appropriately weighted average of CPI and PPI inflation rates, the Bernanke view would dictate that the CPI should receive substantial weight and the weight on PPI inflation would be small.

Recent work by K. Huang and Z. Liu [2005, "Inflation targeting: What inflation rate to target", *Journal of Monetary Economics* 52, pp. 1435-1462], calls this view into question. Using a Dynamic Stochastic General Equilibrium (DSGE) model that features input-output connections between the stages of production, the authors argue that a simple inflation-targeting rule under which the short-term interest rate responds to an "optimal inflation index" results in a welfare level close to the optimum only in cases where the "optimal inflation index" places substantial weight on both CPI inflation and PPI inflation. More specifically, they find that, with their calibrated parameters, the target weight of PPI inflation in such an index is far from negligible, at around 50%. Obviously, this finding stands in sharp contrast to the views taken by Bernanke and Trichet.

Unfortunately, in arriving at this conclusion, Huang and Liu ignore the possibility that the CPI sector and the PPI sector may have different characteristics and instead make a strong assumption that the sectors are identical in all respects. For example, they assume that the degree of nominal rigidity between the sectors is the same. This assumption, however, is inconsistent with recent microevidence provided by the Eurosystem's Inflation Persistence Network (IPN), which reveals that producer prices adjust more frequently than consumer prices. Findings reported by Nakamura and Steinsson (2007a) suggest the same conclusion for the US economy.

This paper aims to answer the question as to which inflation index the central banks should target, by studying the options in a model that accounts for the asymmetries between the CPI sector and the PPI sector. Two asymmetries will be the primary focus of the analysis: differences in the degree of nominal rigidity and differences in the degree of competition.

The findings reported in the paper suggest that central banks should use an optimal inflation index that gives a lot of weight to CPI inflation. The main reason for this conclusion is the fact that producer prices adjust more frequently than consumer prices. Moreover, a variety of experiments reported in the paper suggest that this policy leads to a more robust policy than one that places substantial weight on stabilising both PPI inflation and CPI inflation.