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PRESS RELEASE

Temporal Distribution of Price Changes: Staggering in the Large and Synchronization in the Small

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Temporal distribution of individual price changes is of crucial importance for business cycle theory and for the micro-foundations of price adjustment. In this paper, the authors analyze the temporal distribution of price changes using a large micro data set which contains individual price information for 65% of Belgian CPI observed during the January 1996 - December 2003 period. The data consist of over nine million price observations and over a million and a half price changes. On the basis of this data, two questions are addressed: (a) Are price changes staggered or synchronized? (b) How is the temporal pattern of price changes affected as more and more aggregate data are considered?

The first question is motivated by the role of the temporal distribution of price changes in micro-founded models based on nominal rigidities. First, it determines how persistent the effects of monetary shocks on real variables are. When price changes are synchronized, nominal shocks do not lead to persistent behavior, while even temporary shocks can have long-lasting effects if price changes are staggered. Second, it is common practice to assume uniform staggering when deriving the so-called time-contingent models. The problem with this assumption is that, as pointed out by several other authors, price changes are likely to be synchronized in equilibrium, because of strategic complementarity in price adjustment.

As for the second question dealt with in this paper, an analysis of the effect of aggregation on the staggering/synchronization of price changes enables us to test two competing explanations of the temporal pattern of price changes: strategic complementarity that generates price change synchronization, and incomplete information that favors price-change staggering. On the one hand, the first argument is used by Bhaskar (2002) to suggest that price changes should be more synchronized at the sectoral level than at a more aggregate level. Indeed, firms operating in the same sector share similar cost and demand conditions. They should therefore react in a synchronized way to changes in their common environment. On the other hand, the second argument is used by Ball and Cecchetti (1988) to put the case that more staggering in price-setting should be observed at the sectoral level than at the aggregate level. Based on this argument, firms which have an incomplete knowledge of their economic environment extract more relevant information from the prices of their closest competitors. Before adjusting its price to a change in the economic environment, a firm should therefore wait until its closest competitors change their prices.

To answer the first question, the authors check whether price changes in well-defined product categories are perfectly staggered or perfectly synchronized. The hypothesis of perfect staggering is rejected for 97% of product categories (in CPI weights, 99 % of our sample coverage). However, the observed distribution of price changes is further from perfect synchronization than from perfect staggering for 95% of the product categories (in CPI weights, 91% of our sample coverage).

The authors then turn to the analysis of the impact of sectoral and geographical aggregation on the temporal pattern of price changes, using several nonparametric tests. The results are clear-cut. The more aggregate the data, the closer the price-changing pattern to perfect staggering. Hence, the findings suggest that Bhaskar's (2002) approach is supported by the data but they are not consistent with the incomplete information story of Ball and Cecchetti (1988).