Time-dependent or state-dependent pricing? Evidence from a large devaluation episode

CFMDP2015-4

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The real effects of monetary policy depend on the reasons behind price stickiness. In models with time-dependent pricing, firms readjust prices at previously (and possibly endogenously) determined times. In contrast, with state-dependent price setting, prices are readjusted whenever they are far enough from their desired levels, so a monetary shock leads firms to adjust their prices, which dampens the real effects of monetary policy.

This paper explores the distinct predictions of price-setting models on how the frequency and magnitude of price adjustment react to shocks in order to distinguish between models. In state-dependent models, a positive shock to desired prices raises the frequency of price changes but has little (or no) effect on the magnitude of price changes. Models with time-dependent pricing yield the opposite prediction: a shock that raises desired prices does not affect how long it will take for the next price change, but raises the magnitude of the price increase when it happens.

The Brazilian devaluation of 1999 allows us to distinguish between time-dependent and state-dependent models. Between January 12 and the end of February 1999, the price of 1 dollar increased from 1.2 to more than 2 Reais. Firms in the tradable sector thus experienced large shocks to their desired prices in this period. Non-tradable goods (services) can be used as a control group.

Using a large data set on consumer prices in Brazil from 1997 and 2000, we estimate patterns of pricing behavior for different groups of items. For the group of tradable goods, the devaluation pushes up the probability of a price change but has no effect on the magnitude of price increases. No significant effect is observed in the group of non-tradable goods. The results thus corroborate the strong predictions of state-dependent models.