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### **Firm entry, inflation and the monetary transmission mechanism**

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The monetary transmission mechanism describes the way in which shocks to monetary policy, reflected by unexpected changes in the interest rate, are transmitted to the rest of the economy, especially to output and inflation. Up until now, fluctuations in the number of firms have been ignored in this process, in spite of the established fact that firm entry and exit, and the associated product turnover, are important cyclical phenomena.

Recent theoretical work on business cycles takes firm entry into account. It highlights two channels through which entry may affect inflation: the competition effect and the variety effect. We explain these two channels in turn.

First, when there are only few producers in an industry, the arrival of a new entrant can lead to tougher competition, which reduces firms' desired markups. These are markups that firms charge if they face no price-setting restrictions. This effect has been well documented in the industrial organisation literature. It has also been shown that models incorporating the competition effect do better at matching the cyclical volatilities of markups and profits than do standard models. In an expansion, the competition effect tends to dampen inflation.

Second, if consumer preferences display love of variety, this means that people are happier if they have a wider range of differentiated products. Assuming that each new firm introduces a good into the market that is different from existing ones, firm entry is associated with a more diverse consumption basket. Consumers therefore need to spend less money to be as happy as before. Consequently, a cost-of-living index that takes proper account of the variety effect, by tracking the composition of the consumption basket, should fall. If the prices of individual goods are unchanged while the price index falls, markups and profits increase. Under price stickiness, the markup and inflation are negatively related. (Consider a shock that raises production costs and induces firms to charge higher prices. If prices adjust only partially, costs increase more than prices, resulting in lower markups.) Thus, the variety effect implies that an increase in the number of firms has a negative effect on inflation.

In this paper, we test empirically whether the competition effect and the variety effect are important features of the monetary transmission mechanism. We know from existing research that firm entry rises significantly whenever there is an expansionary monetary policy change, i.e. an unexpected drop in borrowing costs. We want to investigate whether the expansion in the number of firms has a dampening effect on inflation through the two mechanisms outlined above. Such an effect works in the opposite direction to the usual channel through which a fall in the interest rate creates inflationary pressure by stimulating aggregate demand.

The paper proceeds in two steps. First, using vector autoregression analysis, we estimate impulse response functions to monetary policy shocks in US data. These are the time paths that variables would follow in the event of a one-off fall in the Federal Funds Rate with no policy change - or indeed any other shocks - thereafter. We compute the responses of output, investment, consumption, price inflation, wage inflation, interest rates, markups, profits and firm entry. Second, we build a business cycle model with an explicit firm entry process and many other empirically relevant features. We estimate the parameters of the model by impulse response matching. That is, we search for the parameter values that minimise the distance between the model-predicted impulse responses and their empirical counterparts.

Our proposed model with firm entry does a good job matching the observed dynamics. Nevertheless, markups and profits remain substantially more volatile in the data than in the model. Our results lend support to the variety effect, but we find no evidence for the competition effect.