Credit Market Imperfections, Staggered Pricesetting, and Output Dynamics of the Response to Money Shocks

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This paper incorporates credit market imperfections into a dynamic general equilibrium (DGE) model with imperfect competition and staggered pricesetting. We study how credit market imperfections alter the output dynamics of money shocks intrinsic to the DGE model with the staggered setting. In the paper, credit market imperfections are modelled as asymmetric information between financial intermediary and producers called entrepreneurs who require external finance to cover the input costs. Our qualitative result shows that agency costs arising from the informational asymmetry amplify the impact effect of money shocks on real output while reduce the persistence of the shocks. A brief explanation behind this main result is as follows.

It is shown that in the presence of agency costs, an increase in real output corresponds to a more-than proportional increase in entrepreneurial consumption. Given that output is made up of household consumption and entrepreneurial consumption in the model (capital is neglected for simplicity), this implies that an output increase is accompanied by a less-than-proportional increase in household consumption. Another set of producers called retailers are modelled as monopolistic competitors subject to the Calvo-style staggered pricing. The weaker income effect caused by the less-than-proportional increase in household consumption renders the retailers' marginal costs less procyclical. This, in turn, makes the aggregate supply (AS) curve (the new Keynesian Phillips curve) flatter. We also show that the non-proportional change in household consumption makes the aggregate demand (AD) curve flatter.

The flatter AS curve enhances persistence in the real effects of the money shocks, while the flatter AD curve reduces it. We reveal theoretically that the latter effect is dominant over the former: overall, agency costs reduce the persistence. The amplification of the impact effect turns out to be a direct consequence of the less-than-proportional increase in household consumption.

The paper also conducts calibration exercise to quantify the effects of agency costs on the persistence and amplification. The result is that the effect on the persistence is rather small, but the amplification of the impact effect can be significant.

This paper is closely related to a few previous works in the literature. First, in the absence of agency costs, our model nests the baseline model of Chari et al. (2000) as a special case. The compatibility with one of the mainstream models is useful. Second, our model is closely related to Bernanke et al. (1999). They also analyse the role of agency costs in monetary transmission mechanism with staggered pricesetting. However, the main difference between the two works is that they model the agency costs as time-variant in business cycles (known as the financial accelerator), while we limit them as acyclical. We imposed this limitation to solve the model analytically. On the one hand, our analytical approach clearly reveals the channels through which the agency costs interact with the staggered setting in monetary transmission mechanism. On the other hand, with the additional source of dynamics, they proceed numerically to find the quantitative importance of the interaction between them. Thus, the two works can be regarded as complementary.