

Firm Heterogeneity, Capital Misallocation and Optimal Monetary Policy

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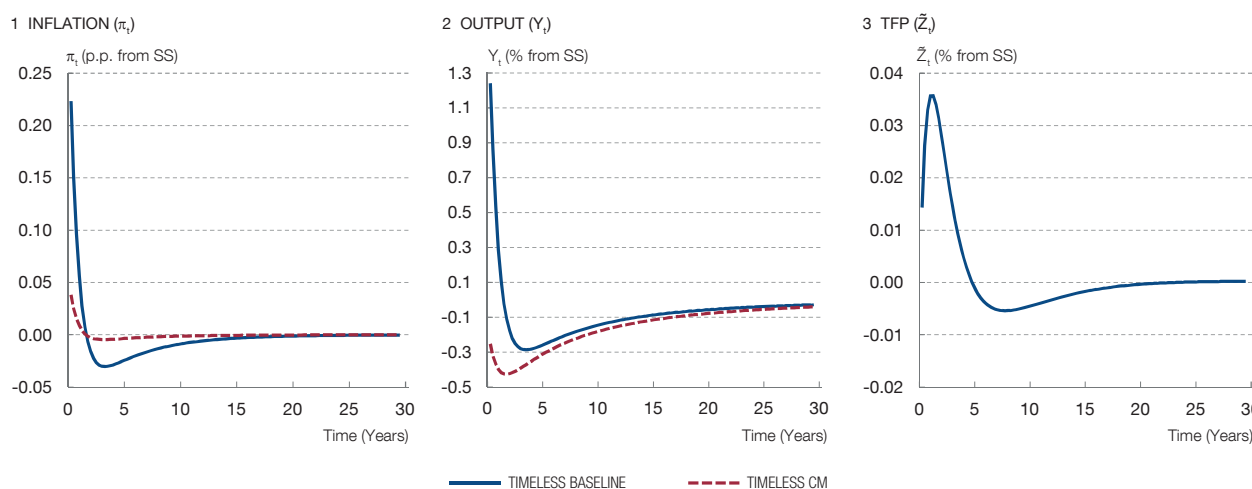
Firms’ investment decisions are one of the key transmission channels of monetary policy. However, financial constraints may limit firms’ investment, thus preventing capital from being efficiently allocated. This opens the door to the possibility of monetary policy affecting productivity by influencing the allocation of capital through the investment decisions of individual firms. This interaction raises important questions. First, what are the channels through which monetary policy affects capital misallocation and endogenous TFP? Second, which are the implications for the optimal conduct of monetary policy? To answer these questions, in González et al. 2021 we introduce a framework that combines the workhorse model of monetary policy – the New Keynesian model – with a tractable model of firm heterogeneity, in which capital misallocation arises from financial frictions.

MECHANISMS

In our model, a reduction in real rates – holding everything else constant – crowds in low productivity firms by reducing their financing costs, thus increasing misallocation. This result, however, provides an incomplete picture of the effect of monetary policy on misallocation: in general equilibrium the rest of prices (wages, capital prices, pieces of intermediate goods) also change in response to monetary policy, and, in turn, these changes affect capital misallocation. When accounting for the net effect of all price changes in response to a surprise reduction in interest rates, we find that high-productivity firms’ profits increase relative to those of low-productivity firms. This allows high-productivity firms to invest and grow faster, and thus gain market share. As a result, misallocation decreases and aggregate productivity increases.

Using firm-level data for the quasi-universe of Spanish firms, we test this theoretical mechanism empirically. In a reduced-form estimation, we assess whether high productivity firms increase their investment relatively more than low-productivity ones, following an expansionary monetary policy shock. Using firms’ marginal revenue product of

Figure 1
OPTIMAL RESPONSE TO A COST-PUSH SHOCK



NOTE: The figure shows the optimal response with pre-commitments (in deviations from steady state) to a 10% decrease in the elasticity of substitution, which implies an increase of mark-ups from 11% to 12.5%. This cost-push shock is mean reverting with a yearly persistence of 0.8. The baseline economy is the solid blue line, and the complete markets economy the dashed red line.

capital as proxy for productivity, we find that firms whose marginal revenue product of capital is one standard deviation above average, increase their investment rate by an additional 29pp in response to a 1pp surprise decrease in interest rates. This confirms our models predictions.

OPTIMAL MONETARY POLICY

Which are the implications for monetary policy design? We first analyze optimal monetary policy, assuming that the interest rate is the only policy instrument and that the central bank can commit to a future policy path. If the central bank is not bound by any past promises, the optimal strategy is to tolerate a temporary increase in inflation in order to achieve a persistent rise in productivity, brought about by a more efficient allocation of capital. This contrasts with the prescriptions of the textbook New Keynesian model with subsidies that correct for distortions due to monopolistic competition, which recommend price stability in this situation.

We then turn to the more interesting case where the central bank is bound by a commitment to an optimal policy rule. In this case we study the optimal response to inflationary pressures due to a cost-push shock (see Figure 1). The prescription in the standard New Keynesian model is that the central bank should “lean against the wind” (Gali, 2008), by tightening the monetary policy stance but tolerating some inflation to minimize the reduction in the output gap (see dashed red line in panels a and b). Once financial frictions are incorporated, the central bank should instead “lean with the wind”: it should loosen monetary policy despite the rise in inflation (solid blue line, panel a), as the increase in demand boosts high-productivity firms’ investment and thus increases TFP (solid blue line, panel c), amplifying the expansionary demand effect on output (solid blue line, panel b).

CONCLUSION

Summing up, we find that expansionary monetary policy, through a range of general equilibrium effects, boosts highly productive firms’ investment. The resulting increase in aggregate productivity have important implication for the

design of optimal monetary policy: central banks should “lean with the wind” in response to cost-push shocks in order to maximize the expansionary demand effect on output.

REFERENCES

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- González, B., Nuño, G., Thaler, D., & Albrizio, S. (2021). *Firm Heterogeneity, Capital Misallocation and Optimal Monetary Policy*. Documento de Trabajo 2145, Banco de España.