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Monetary policy transmission under different banking structures: The role of capital and heterogeneity

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Abstract

This work deals with the transmission of monetary policy through the bank loan market, in the presence of a capital requirement regulation. Unlike standard models, based on the "representative bank" shortcut, we adopt the heterogeneous agents approach: this allows us to explicitly model the strategic interaction between well-capitalized and under-capitalized banks. The main results are the following. (I) The propagation of a monetary policy impulse through the loan market differs considerably, depending on the market structure: under monopolistic competition, strategic complementarity among well-capitalized banks leads to a "multiplier effect"; in the Cournot oligopoly framework, an effect of the opposite sign is at work, due to strategic substitutability. (II) Well-capitalized banks are more important, in shaping the adjustment following a monetary policy shock, than what is implied by their relative number over total; this fact strengthens the monetary policy effectiveness. This result holds under both monopolistic competition and oligopoly, although the interaction among banks, leading to such a result, differs across the two banking structures.
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1. Introduction

The transmission of monetary policy through the banking channel has been extensively analyzed, both on theoretical and on empirical grounds. This work provides a theoretical contribution in this field, addressing two specific issues:

– Which are the implications of the banking structure for the transmission of monetary policy? Does the market structure of the banking sector affect the propagation of a monetary policy impulse through the banking channel?
– How does the capital requirement regulation modify the reaction of banks to a monetary policy shock? To what extent the capital constraint, by limiting the scope for expanding the supply of loans, reduces the impact of a monetary policy expansionary intervention?[1]

The innovation we introduce, relative to the existing literature, relies on the heterogeneity approach, which we adopt for the reasons outlined below. We analyze the transmission of a monetary policy impulse–namely a change of the policy interest rate–through the market for bank loans, allowing for the presence of both well-capitalized and under-capitalized banks. The strategic interaction among them is studied under two quite different specifications of the market structure: (i) monopolistic competition, where banks compete in prices and each of them is negligible; (ii) Cournot oligopoly, where banks compete in quantities and the action of a single agent affects the aggregate outcome. The first environment exhibits strategic complementarity, while the second one is characterized by strategic substitutability.

We will show that the propagation mechanism, following a monetary policy impulse, differs considerably across the two market structures: while monopolistic competition exhibits a “multiplier effect”, the opposite holds in the oligopoly context.

Moreover, the heterogeneous agents approach allows us to show that the adjustment, taking place in the loan market after a central bank intervention, is more driven by well-capitalized than by under-capitalized banks: this implies a stronger monetary policy effectiveness than simply looking at the proportion of the former to the latter in the population of banks. This result holds under both the different market structures we analyze, although the interaction among banks, leading to such a result, differs somewhat across the two banking structures.

1.1. Why heterogeneity?

The models of bank behavior traditionally rely on the “representative bank” shortcut: the analysis is focused on the behavior of a single bank; the conclusions are then extended to the whole banking system. This is equivalent to assuming that all banks behave in the same way: in particular, they show the same reaction to monetary policy.

When it is used for analyzing the implications of capital regulation, this approach reveals all his limits. The representative bank may be either well-capitalized or under-capitalized: in the first case, it is able to expand its supply of loans, following an expansionary monetary policy, as the capital constraint is not

[1] Actually–as we will see below–the capital constraint may reduce the effectiveness of a contractionary monetary policy as well.

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