



РОССИЙСКАЯ ЭКОНОМИЧЕСКАЯ ШКОЛА

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Imperfect Information and Bounded Rationality with Applications to Macroeconomic Dynamics

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Abstract

There was a time when macroeconomics was a field of its own. Now there is an understanding that macroeconomics should have explicit micro foundations. This project aims to look into several traditional arenas of macroeconomics from the microeconomic standpoint. Specifically, we focus on the role of imperfect information and bounded rationality for the real business cycle, growth, and money.

1 Overview

For a long time macroeconomics has been a field quite of its own. The empirical failures of 1970s have caused a major shift towards understanding of the importance of factors, which had long been within the scope of microeconomic analysis, such as information and expectations. Bringing in of the former has reinforced what we now call a neoclassical economics; bringing in of the latter has resulted in a celebrated rational expectations revolution.

By now there is a wide understanding of a sheer importance of having microeconomic foundations in macroeconomic models; indeed, the very boundary between the two fields is now blurred to the point where it is difficult to discern where one field ends and the other begins. Non-walrasian markets, imperfect information, moral hazard, and many other microeconomic developments are now standard ingredients of dynamic general equilibrium macroeconomic models. The hope is that such models will eventually help to reconcile the theory and the empirics of the world around us.

This project aims to contribute towards development of micro-based macro models. The scope is broad: the topics I offer cover some important aspects of the business cycle, long-run growth, and monetary economics. Here I only very briefly outline some of the topics; one can get a more detailed insight into the subject matter by looking at some of the papers on the reading list below.

First, I plan to look at the *role of reputation in the business cycle*; the aim is to show that costly reputation acquisition can amplify troughs and impede recovery in a manner consistent with the slump of the Great Depression or with those of more recent crises. Indeed, when economy is booming, even not so good entrepreneurs can be successful, which erodes the informational value and, hence, incentives to invest in reputation. Then, a negative shock can suddenly make reputation valuable, yet only a few firms will have reputation and, hence, an ability to demonstrate that they are worth of investment. As a result, a lot of potentially good loans will not be made and a major crisis will break out. The recovery may be slow and may span well beyond the point of subsequent recovery in productivity, meaning that costs of reputation acquisition can generate a deep and persistent decline in output and investment.

Second, it has been long recognized that free dissemination of know-how may impede incentives to innovate. On the other hand, too much of patent protection may depress innovation when innovation is sequential and

complimentary. In environments where the length and/or breadth of patent protection is difficult to manipulate, *incomplete enforcement of patent rights* may become socially optimal as a way to mitigate overprotection implied by full enforcement of patent law. The idea runs counter with conventional wisdom that full patent enforcement is a must, however, it appears to be quite natural in a schumpeterian world with strong “creative destruction” of patents and high enough product diversification.

Third, over the recent years there has been a considerable advance in studying monetary theory and policy in environments which feature nice micro foundations of money. It has been shown that such models have steady states with valuable fiat money, yet under rational expectations these monetary steady states fail to be expectationally stable. This, among other things, implies that prolonged *circulation of fiat money* is difficult to explain if individuals are fully rational. One way to get around the problem is to study price dynamics under bounded rather than full rationality. This can be done by adopting the classifier system as a model of artificial intelligence and by using genetic algorithm as a learning device.

Fourth, the role of public record keeping as a technology which is superior to money has recently been emphasized in a number of studies. However, cash may be a preferred form of payment in the underground economy because its use does not uncover the details of transactions and the identities of trading partners. In a setting where some transactions carry punishment if publicly observed (e.g. drug trafficking), the society may become split into two parts where one part uses record keeping and money and the other part uses money as means of payment. The circumstances which lead to such division can be studied in a model of *money in the underground economy*.

Notice that these are the topics that I find interesting by myself; the fact that I list them here does not mean that I am unwilling to advise students on topics of their choice. However, it should be understood that if someone plans to come up with his/her own topic, that topic should line up with the main direction of this project, which is the effects of imperfect information and bounded rationality on dynamics in macro models. Other than that, there are no restrictions. Welcome to the journey!

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