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Systemic Risk and Dynamic Contract Theory

Prof. Jean-Charles Rochet, University of Zurich (Principal Investigator)

1) Mathematical methods of Risk Management. Advanced mathematical methodologies are used to study liquidity management in terms of dividend distribution and costly refinancing. The impact of a fluctuating short rate on managerial decisions is also considered. Moreover, the interaction of the manger's decisions and risk management, in terms of exposure to risky production technologies is analyzed. Risk management is also studied from a regulatory point of view. Namely, through the design of capital adequacy tests that take into consideration the limited liability of firms.

2) Dynamic Contracting. Game--theoretical tools are employed to study the strategic adoption of clean production technologies by firms that participate in a pollution--permits market. The ways in which the long--term incentives of a firm to adopt a less polluting technology depend on the future value of said permits is studied. Furthermore, a price--support contract that is contingent on the adoption of new technologies is suggested as a regulatory tool. The impact of the latter in pollution profiles and ultimately on social welfare is analyzed.

3) Static Contracting and Market Structure. A principal--agent model under asymmetric information is used to model a limit order book. A dark pool is introduced through a type--dependent ``side option'' that feeds back to the price--generation mechanism. This is done to study the circumstances under which the presence of alternative trading venues reduces the spread in book--driven exchanges.

4) Sovereign Default Risk. A novel approach to fiscal sustainability is taken. Due to the fact that, until recently, it was believed that the default of an advanced country was impossible, specialists on sovereign debt have mostly focused on emerging countries. This belief has been proved wrong by the sovereign debt crisis in the Euro area, as well as the issues that Japan and other developed countries are facing. A simple method for evaluating debt sustainability in advanced countries is proposed.

5) Banking Regulation. The impact of bank--closure rules on the risk taking incentives of commercial banks is studied, together with the interactions between the intensity of competition on the loans market and risk taking.

6) Financial Innovation. The drivers of financial complexity on the retail market for structured products are put under the microscope. As a result, it is concluded that banks strategically use complexity to escape competition and exploit unsophisticated investors.

7) Wages in the Finance Industry. The observed wage premium in the financial industry is shown to obey an intense competition for talent. Moreover, increasing returns to talent over the years are documented. This is done by exploiting an innovative measure of talent.

8) Access to mainstream finance. Can bank practices and discrimination account for the large share of unbanked households in the United States? We exploit an exogenous shock on banking competition and show that bank competition has an impact in terms of access to a bank account and racial discrimination.

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Research Team

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Fields of Research

Banking