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Credit and equity rationing in markets with adverse selection

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Abstract

Previous theories of financial market rationing focussed on a single market, either the credit or the equity market. An interesting question is whether credit and equity rationing are mutually compatible, and how they interact. We consider a model with two-dimensional asymmetric information, where entrepreneurs have private information about both the expected returns and the risk of their projects. We show that credit and equity rationing may occur individually or simultaneously. Moreover, competition between the two markets may generate the adverse selection that leads to rationing outcomes. © 2000 Elsevier Science B.V. All rights reserved.

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1. Introduction

In their 1981 paper, Stiglitz and Weiss showed that credit rationing could occur when investors have less information than the entrepreneurs about the

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risk of an investment. A literature developed on the basis of this simple model. Cho (1986) noted that adverse selection would disappear in the 1981 model if investors used equity instead of debt. Using a different set of assumptions – the most important difference being that expected returns and not risk was the parameter of asymmetric information – Myers and Majluf (1984) and Greenwald et al. (1984) showed that equity markets could have rationing too. This raised the issue of whether theories of credit and equity rationing could be made compatible. DeMeza and Webb (1987) integrated the various approaches and showed the following result: If there is asymmetric information about expected returns, then investors prefer debt over equity and there cannot be any credit rationing. But if there is asymmetric information about risk, then investors prefer equity over debt and there cannot be any equity rationing. At a first glance, this result seems to solve the issue: as long as investors use the appropriate financial instrument, there cannot be any rationing. The analysis of DeMeza and Webb, however, did not allow for asymmetric information about *both* expected returns and risk.

A number of other papers also questioned the rationing outcome. Bester (1985a), Milde and Riley (1988) and Grinblatt and Hwang (1989) introduced variable loan sizes to give investors a second instrument besides price to screen loan applicants. Wette (1983) and Bester (1985b) allowed investors to extract information from the entrepreneurs through the use of collateral requirements.[2] The work of Leland and Pyle (1977), Stiglitz (1982) and Brennan and Kraus (1987) similarly suggested that co-investment requirement and capital structure could be used to screen applicants. This line of research showed how investors can solve the rationing problem by offering more complicated financial contracts. In the ensuing separating equilibrium investors offer a menu of contracts that induces self-selection among entrepreneurs in such a way that the equilibrium actually reveals the asymmetric information.

One issue with this approach is that the structure of optimal contracts is very sensitive to the specific nature of asymmetric information and the particular instruments available to investors. Contracts are chosen solely to induce self-selection and the asymmetric information is sufficiently small so that the optimal contracts can separate most or all types. In many real economic situations the environment may be too complex for investors to separate out all relevant information through the clever use of financial contracts.

Another limitation is that investors are all the same, all offering the same optimal menu of contracts. In reality investors are often heterogeneous and they specialize in particular forms of financing. Banks, for example, specialize in

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[2] The work of Leland and Pyle (1977), Stiglitz and Weiss (1981) and then Stiglitz and Weiss (1986) also considered collateral requirements and showed that these may not always suffice to eliminate the rationing outcome.