THE INTERDEPENDENCE OF R&D ACTIVITY AND DEBT FINANCING OF BUSINESS START-UPS (SUMMARY)

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Summary

The Interdependence of R&D Activity and Debt Financing of Business Start-Ups

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Principal Topic

Business start-ups and young enterprises introduce new products to the market and employ new processes for production. To create these new products and processes, firms often engage in R&D. Since conducting R&D is an expensive task, substantial financial resources are required. However, the internal financing capacity of young firms is limited. In this case, loans can relieve financing constraints on R&D activities.

The relationship between R&D activities and loan financing can, however, also be argued to go in the opposite direction: The ability of young enterprises to tap external financing sources depends, among other things, on growth opportunities that may be generated by R&D activities. Moreover, R&D expenditures are rather allocated into intangible assets that cannot serve as collaterals.

Method

In this paper, we explore empirically the bidirectional relationship between R&D and loan financing. In doing so, we use data of the first two survey waves of the KfW/ZEW Start-up Panel, a unique data set of young firms in Germany founded in the period from 2005 to 2008.

In a first step, we estimate single-equation Tobit models that explain, first, the share of loan financing in total financing and, second, firms’ R&D intensity, defined as R&D expenditures over total sales. The single-equation estimates reveal that the share of loan financing is basically determined by firm-specific variables derived from traditional theories of corporate finance like the static trade-off theory or the pecking order theory, whereas both firm-specific and entrepreneur-specific variables are decisive for the level of a firm’s R&D intensity.

Results and Implications

In order to account for the interdependence between R&D and loan financing, we estimate a simultaneous, bivariate Tobit model. It proves that there is in fact a significantly positive, interdependent relationship between the share of loan financing and R&D intensity. In the bivariate Tobit model, unobserved random shocks are negatively correlated across the two equations. In response to such a random shock, firms simultaneously adjust both their capital structure and their R&D activities.

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