

The Determinants of R&D and Market Structure

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Understanding the variables that influence research & development (R&D) investment has long challenged researchers and policy makers.

Since the inception of the seminal theorem by Dorfman and Steiner, however, the theorem has not been extended or developed much further, and most studies have focused on the empirical test of the relationship between R&D expenditure and variables that seem to influence it. As a factor influencing R&D, some studies emphasize demand-side variables such as market size and others suggest technology-related variables such as differences in technological opportunity across industries.

This paper derives a demand-pull, technology-push theory of R&D at the firm level, showing that both consumer and technological characteristics jointly determine firm R&D efforts. Then, extending the firm-level R&D model to the industry level yields the determinants of industry R&D performance and suggests as one of the determinants a measure of market structure, which provides an answer to the controversial relationship between R&D intensity and concentration. The new market structure measure reflects the joint distribution of market shares and the levels of technological competence among firms, and shows that none of the conventional measures of market structure, such as concentration ratios and the Herfindahl-Hirschman index, is sufficient to fully reflect market structure characteristics, as far as industry R&D performance is concerned.