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FINANCING CONSTRAINTS, TECHNOLOGICAL SHOCKS, AND THE RESOURCE CROWDING-OUT EFFECT OF CORPORATE R&D INVESTMENT

Technological paradigm shifts have become a central source of uncertainty in firms' pursuit of sustained competitive advantage. When an industry experiences a technology shock, firms need to adjust promptly their R&D investment to keep pace with technological catch-up pressures. This adjustment process, however, is frequently constrained by external financing frictions. Existing literature has largely examined the inhibitory effect of financing constraints on the *level* of R&D investment from a static perspective, while offering limited systematic evidence on how financing constraints shape firms' **prioritization of resource allocation** under technology-shock conditions — specifically, whether R&D investment is sustained at the expense of other capital expenditures.

Using panel data on Chinese A-share listed firms from 2010 to 2023, this paper investigates the crowding-out mechanism linking financing constraints, technology shocks, and firms' internal resource reallocation. Technology shocks are identified through structural breaks in industry-level patent structure drawn from patent database records, while financing constraints are measured using the SA index. The paper examines whether, following a technology shock, financially constrained firms exhibit a significant crowding-out effect of R&D investment on other long-term capital expenditures, such as fixed-asset renewal and employee training. To address the endogeneity of financing constraints, the paper draws on an industry-peer instrumental variable strategy, using regional bank branch density as an instrument, and estimates a two-stage least squares (2SLS) model. Ownership type (state-owned versus private) is further introduced as a moderating variable to test for heterogeneity in crowding-out patterns across firms.

The study anticipates the following findings: (1) following a technology shock, the severity of financing constraints significantly intensifies the crowding-out effect of R&D investment on other capital expenditures; (2) this crowding-out effect is more pronounced among private firms, while state-owned firms exhibit greater buffering capacity due to higher resource slack; and (3) the presence of crowding-out ultimately erodes firms' technological catch-up performance, revealing a potential "short-term resource reallocation — long-term competitiveness erosion" risk.