

# Provider-driven complementarity and firm dynamics

Business dynamism has been declining in the U.S. since the mid-1980s. This decline is characterized by the following trends: i) the entry rate of new firms has declined; ii) market concentration, measured by the share of sales accruing to the biggest firms, has increased; iii) expenditure on R&D activities, measured both as a fraction of total cost or total sales, has increased; and iv) the growth rate of the economy has slowed down. In my paper, *‘Provider-driven complementarity and firm dynamics’*, I offer a new explanation based on the assumption of provider-driven complementarity, which makes seemingly independent products become complements when provided by a single firm.

Provider-driven complementarity boils down to the idea that during the process of product innovation – the introduction of new and improved products to the market – firms can embed differential characteristics to their products such that, absent quality differences across products, consuming several goods from a single provider is preferable to purchasing each good from a different firm. Based on this idea, I propose a framework that explains increasing R&D expenditures and concentration yet decreasing entry rates and economic growth.

Theoretically, I develop a quality ladder growth model where provider-driven complementarity is crucial in determining firms’ incentives to challenge incumbents in their established markets. Specifically, I assume that the complementarity effect increases in the number of products supplied by each firm. Consumers buy each good from the firm that supplies the highest quality, adjusted by provider-driven complementarity, relative to its market price. I show that provider-driven complementarity generates an endogenous barrier to entry in new markets. Consequently, despite firms use innovation to increase profits, it also has effects on the industrial organization of firms and can ultimately deter firm entry.

I use the theory of provider-driven complementarity to perform a quantitative exercise in which I reduce the size of the average quality jump obtained after any successful innovation. The exercise is motivated by the recent literature on ideas becoming harder to find and can also be thought of as innovations becoming less radical over time. I show that such decline induces a growth slowdown, and I find that the entry rate declines and incumbents become bigger and spend more resources on R&D, even as the overall growth rate of the economy declines. This contrasts with the predictions of a standard quality ladder model without provider-driven complementarities, which implies the reverse.

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