The Value and Synergies of Successful Pharmaceutical Alliances in FDA Approvals: Estimating A Two-Sided Matching Model of Alliance Formation and Innovation*

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Abstract

We analyze the value and synergies of successful pharmaceutical alliances in the FDA approvals process using a two-sided matching model of alliance formation in a maximum score estimator framework that controls for endogeneity and selection. We extend the literature by: (1) allowing firms to choose to be unmatched, recovering the value of partner-specific characteristics necessary to compute an alliance’s (total) value, and (2) estimating an alliance’s value for an outcome, i.e., new product development. Using data on 2,915 clinical trials between 2002 and 2010 by 272 firms, we find that successful alliances (ceteris paribus) comprise a firm with a partner that has: (i) greater experience working in alliances, with additional synergies from both firms’ alliance experiences, (ii) broader (narrower) scope of experience with diseases, the narrower (broader) the primary firm’s such scope, and (iii) narrower scope of experience with drug classes (e.g., organic compounds, hormones etc.), with additional synergies in this. Thus, a partner’s experience working in alliances should be a critical consideration in forming strategic alliances for innovation. Hence, under certain conditions strategic investment in alliance experience can confer a competitive advantage. We also show the implications of ignoring partner-specific characteristics in estimating the value of an alliance. Our procedure has a microfoundation interpretation in the Heckman (1979) selection framework, and a wider applicability to other two-sided settings (e.g., digital platforms, co-branding, advertisers and media etc.) in estimating the value of alliances for outcomes.

Keywords: Firm Alliances, Two-sided Matching Models, Maximum Score Estimator, New Product Development, Pharmaceutical Innovation, FDA Trials.

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