PROPOSAL: FIRM ALLIANCES, R&D AND PRODUCTIVITY: EVIDENCE FROM COOPETITION IN THE PHARMACEUTICAL INDUSTRY AND FDA TRIAL OUTCOMES

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Coopetition is defined as the phenomenon when firms collaborate in some domain, e.g., R&D and product design, while at the same time competing in others, such as markets for existing products. There are several reasons for such collaboration, e.g., reduced costs due to economies of scale, pooling of complementary knowledge and technology that is proprietary to one or more firms, sharing of scarce or limited resources such as inputs. However, there are disadvantages as well, such as potential asymmetry in sharing of risk (especially in event of failure), division of rights (especially in case of success), and lack of trust or confidence about transfer of technology from the joint venture or corporate espionage. There remains a paucity of evidence about whether such alliances between firms are beneficial and lead to successful outcomes. An important reason for lack of such evidence is because of two forms of selection. (1) Often, alliances that are unsuccessful are not disclosed to avoid bad publicity. (2) On the other hand, alliances that are successful may also be sometimes kept confidential in order to protect trade secrets and competitive advantage. Even if the alliances are revealed and information about these is available publicly, a third reason the value of the alliance may be difficult to evaluate is because it is often not possible to measure and quantify the outcome of the joint venture, and hence, its success or failure. Understanding the roles of such firm alliances is of critical importance not just to managers, entrepreneurs and investors but also to regulators and policy makers because of the consequences for fair competitive practices and consumer welfare. Using a unique data set that documents the outcomes of all FDA trials from 2000 to 2011 this project examines the role of alliances in R&D and productivity in the pharmaceutical industry. In particular, it attempts to understand how its network of partnerships with other firms affects the success of new drugs that it submits for approval to the FDA controlling for the past portfolio of a firm's experience with different kinds of products, and other firm and product characteristics. The data includes information for 3,547 firms among which 1,228 were in alliances. The data comprises applications for 2,506 new drugs out of which 166 were approved. These drugs were involved in 34,614 trials (as often the same product undergoes trials for multiple therapies) and 6,627 were in partnerships with one or more firms. The data set includes information about firm and

drug characteristics as well as information about the trials and their outcomes making it well suited for this analysis.

The undergraduate student will help organize and structure the data, and perform preliminary statistical analyses. The student will also help with a general literature review. The skills required will be familiarity with Excel and STATA (or some other comparable statistical software package). Additional knowledge of computer programming (e.g., MATLAB) or a willingness to acquire such a skill is desirable but not necessary.

The student will learn how to use and manage very large datasets. The student will also learn how to conduct a literature review, perform statistical analyses (e.g., regression analysis) and interpret results of such analyses. These skills will be valuable preparation for a research project in any area of economics, and especially a senior essay or thesis.