The Perfect Match: Assortative Matching in International Acquisitions and the Source of Multinational Advantage

Maria Guadalupe (Columbia University, NBER, CEPR)
Veronica Rappoport (Columbia University)
Catherine Thomas (Columbia University)

Extended Abstract

Ninety percent of FDI between developed countries takes the form of a merger/acquisition rather than greenfield investment, and as shown by Guadalupe, Thomas and Kuzmina (forthcoming), multinationals tend to buy the most productive firms within countries. Two thirds of the MNC productivity premium is the result of selection. This paper delves deeper into the selection process by explicitly studying the characteristics of both the multinational and the acquired firm: who matches with whom? Specifically, we characterize the acquired and acquiring firm in terms of their ex-ante size and productivity, and also the productivity upgrades upon the acquisition. We argue that it is crucial to understand how the selection process takes place in order to uncover the mechanisms that determine how FDI impacts host country productivity.

Our empirical analysis is guided by a theoretical framework constructed following the premises of new trade theory and assumes that firms are heterogeneous. We allow for two dimensions of heterogeneity: the unit cost of production (i.e. some firms are more productive than others, as in Melitz, 2003) and investment cost (i.e. some firms face a higher cost of external capital than others). These two characteristics endogenously result in a joint distribution of firm productivity and size. This modeling choice is motivated directly by the data: larger firms are on average more productive, but there is substantial heterogeneity of productivities (measured as production per worker) for a given size (measured by total assets or sales), by industry of operation. In addition, at any point in time, the size of a firm’s global production system varies with the characteristics of its existing network of subsidiaries, and can be measured by the sum of its worldwide affiliates’ sales.
Our model focuses on “horizontal” FDI; that is, where foreign affiliates’ sales are destined to the host market. Firms decide whether to acquire a foreign affiliate and choose the characteristics of the acquired firm. By a revealed preference argument, if an acquisition takes place, it necessarily implies that there is some source of complementarity between the characteristics of the parent and acquired firms. Otherwise, the market price of the acquired firm will match its expected discounted flow of profits and, any positive transaction cost would mean that the acquisition was inefficient.

In this model, scale, productivity, and productivity-upgrading on acquisition are potential complements and jointly increase the profits of the firm. This modeling choice reflects the empirical findings of Guadalupe, Thomas and Kuzmina (forthcoming). For example, it is intuitive that firms that are initially more productive, or those that upgrade their productivity by a given amount, can extract relatively more profits from new access to larger markets where they have a larger scale. We derive different predictions with respect to the match between the acquired and acquiring firms, depending on the nature of the complementarities within the boundaries of the multinational corporation that dominate in the data. If firms transfer their technology to their newly-acquired subsidiaries, only the most productive firms will choose to acquire foreign affiliates (this result mimics the prediction for “greenfield” FDI in Helpman, Melitz, Yeaple, 2004). In addition, those firms with better technology will acquire larger but relatively unproductive subsidiaries. Intuitively, if acquiring firms can transfer their technology to the affiliate, they would be unwilling to pay a premium for the affiliate’s productivity level. On the other hand, given that size and productivity are complementary characteristics: the most productive firms are willing to bid more for market size. The predictions are reversed if firms can only transfer their investment cost differential. In this case, only those with a lower investment cost will choose to acquire foreign firms. Moreover, the lower their investment cost, the higher the productivity (relative to size) of the acquired firm. This implies that taking the predictions of the model to the data can shed light on which characteristics of the firm are “transferrable” within the boundaries of the multinational firm. We argue that this allows us to understand the nature of the multinational comparative advantage.

In order to determine the drivers of selection and matching process between multinationals and their subsidiaries empirically, we construct a large cross-country dataset of mergers and acquisitions using the Zephyr and Amadeus databases. Our data include all transactions (both between domestic firms and involving a foreign firm) over eleven years (2000 to 2010) in five large European countries (UK, France, Italy, Germany and Spain). The transaction data includes information on both parties in the transaction.

1 Domestic unaffiliated parties are shown to be the most important destination of affiliate sales (see Ramondo, Rappoport, and Rhul, 2011).
2 The “transferability” of the firm’s characteristics is also the crucial parameter in Nocke and Yeaple (2007).
and financial information on the transaction itself. In addition, using a ten year panel of income and financial statements of public and private firms in those economies from Amadeus we characterize where each firm lies within the distribution of its country/industry, in terms of output per worker, size and total assets. We then observe which firms match in a merger or acquisition and ask: Is there positive or negative assortative matching on size? How do the results change if we allow for more than one selection variable in the matching process? Do cross-border and purely domestic acquisitions look similar? How does the price paid in the transaction relate to the match? How do the size and productivity of the acquirer and target affect the probability of a match? The answers to these questions may well vary with industry and with the host and origin countries of the acquiring and acquired firms. Through the lens of our model, the characteristics of the match in terms of size and productivity will shed light on the sources of comparative advantage for the multinational corporation.

Finally, we intend to parameterize the model to compute the effect of FDI on the aggregate productivity in the host country and the distribution of firm size. To do so, we plan to parameterize the joint distribution of size and productivity to match the data on the population of firms in Amadeus. The degree of “transferability” of the unit cost of production and investment cost, which are crucial parameters in our model, will be chosen to match the results on the assortative matching between acquired and acquiring firms.

REFERENCES


