Research Spotlight

Foreign Location Choices by U.S. Multinational Companies

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THE INCREASING globalization of the U.S. economy has heightened interest in the process and criteria by which U.S. multinational companies (MNCs) select locations for investments abroad. Although this issue is not new, it has become more relevant. Continuing reductions in barriers to foreign trade with, and investment in, emerging markets—such as China, India, Mexico, and Eastern European countries—have given MNCs more options, increasing their opportunities to lower costs by expanding production abroad. The attractiveness of establishing new foreign production facilities may be further enhanced by concurrent increases in manufacturing and technological capabilities that have occurred in some of these countries. Moreover, economic theory suggests that MNCs can heighten their efficiency by creating international production networks in which high value-added activities, such as technical production processes, are performed in countries that are relatively well endowed with highly skilled workers, and lower value-added activities, such as assembly, are performed in countries where wages are lower.

Bureau of Economic Analysis (BEA) data show that as of 2005, more than 70 percent of worldwide production by MNCs occurs in the United States. Of the 28 percent of production that occurs abroad, over 80 percent occurs in other high-income countries (table 1). Although the global allocation of MNC production has shifted moderately toward lower income countries in recent decades, the production that occurs in those countries is overwhelmingly directed toward the local market rather than being part of an international production network. In China and India, for example, sales to local customers account for nearly three-quarters of total sales by affiliates of U.S. MNCs. Therefore, if MNCs are not primarily locating foreign operations in low-wage countries, there must be attributes of host countries other than wages that influence their location decisions. A related issue is whether location attributes are considered only at the national level or also at some other geographic level, such as the regional level.

These issues are addressed in the BEA paper "Do U.S. Multinationals Engage in Sequential Choice? Evidence from New Manufacturing Operations in Europe."[1] The study examines the determinants of the location of new manufacturing operations of MNCs in seven European countries over the period 1989–2003. It examines both how U.S. companies approach the choice process and which location attributes they consider.

The study's main conclusions are as follows:

- MNCs appear to engage in a sequential choice process in which they first select a country based on national attributes and then a region within that country based on regional attributes.
- Productivity-enhancing attributes (such as proximity to suppliers, the availability of highly skilled workers, and the presence of an extensive transportation infrastructure) are more important determinants of location than attributes related to production costs (such as the availability of low-wage labor).

Data

The data on new manufacturing investments by MNCs used for the study are from BEA's benchmark and annual surveys of U.S. direct investment abroad. These

1. This paper is available on the BEA Web site <www.bea.gov> under "Papers and Working Papers."

The author is an economist at BEA. The opinions expressed in this article represent his views; they are not necessarily those of BEA or the U.S. Department of Commerce.

Table 1. Location of Production by U.S. Multinational Companies

[Percent]

	Share of worldwide MNC total		Share of foreign MNC production	
	United States	Foreign countries	High-income countries	Other countries
1989	76.6	23.4	85.7	14.3
1994	76.5	23.5	84.3	15.7
1999	77.2	22.8	83.8	16.2
2004	72.6	27.4	81.2	18.8
2005	72.3	27.7	80.2	19.8

NOTE. The shares for all the years except 2005 are based on data from benchmark surveys, or censuses, of U.S. direct investment abroad.

surveys collect data on a variety of financial indicators (such as balance-sheet and income-statement items) and on other aspects of the operations of U.S. parent companies and their foreign affiliates (such as employment and international trade). The data can be used to assess the effects of MNCs on the U.S. economy and foreign economies. An advantage the BEA survey data have over private-source data that have been used in other location choice studies is that they are based on mandatory surveys and are widely considered to be the most comprehensive and accurate data available on the operations of MNCs.

The BEA surveys cover the foreign operations of each MNC in a particular country and in a particular industry (for example, company XYZ's beverage-manufacturing operations in Spain), but the data do not provide information on the locations of those operations within the country. Because a goal of the study was to examine how variation within countries of various attributes influences location decisions, it was necessary to identify the regional location of new manufacturing operations of MNCs. This was accomplished by linking the BEA data with a private data set, Bureau VanDijk's Amadeus database, which details the location of businesses within European countries. This linking exercise shows that new manufacturing operations established by MNCs in 1989–2003 are not evenly distributed among regions. Instead, they tend to be heavily concentrated in particular regions within foreign host countries (see the chart). The regional patterns of U.S. investments are similar to those of European manufacturing in general, suggesting that all companies—regardless of ownership—choose new industrial locations in roughly the same manner.

Information on both the national and regional locations of foreign affiliates allows the study to explore the processes by which MNCs make location decisions.

Borders matter

An important question is the extent to which national borders matter when MNCs make location decisions. It is possible that MNCs consider a region of one European country to be a substitute for a similar region of another European country. In other words, investors might consider national borders to be of little importance in light of factors such as the legal and economic unification of member countries of the European Union. However, there may be characteristics, either readily quantifiable (such as the distance to the nearest seaport) or less quantifiable (such as employee attitudes), that vary or are perceived to vary significantly across countries.

The study finds that both national and regional attributes matter and that a plausible description of the choice process involves companies first selecting a country and then selecting a region within that country.

Location determinants

Theory suggests that companies choosing locations for new manufacturing investments will consider location attributes that affect the expected profitability of the investments. In competitive industries, the profit-maximizing company will invest in a location until the additional revenue generated by the last unit of each productive factor, such as a worker or a machine, is equal to its factor payment, such as its wage or its rental cost. The factor payment considered in this study is the average hourly wage paid to workers.[2] In addition to wages, the study considers other determinants of the profitability of the investments—namely, measures of worker skill, market size, tax rates, industrial agglomeration, transportation infrastructure, and whether the investing firm has prior experience in the host country. A brief discussion follows of those determinants that were found to have a significant effect on location choice.

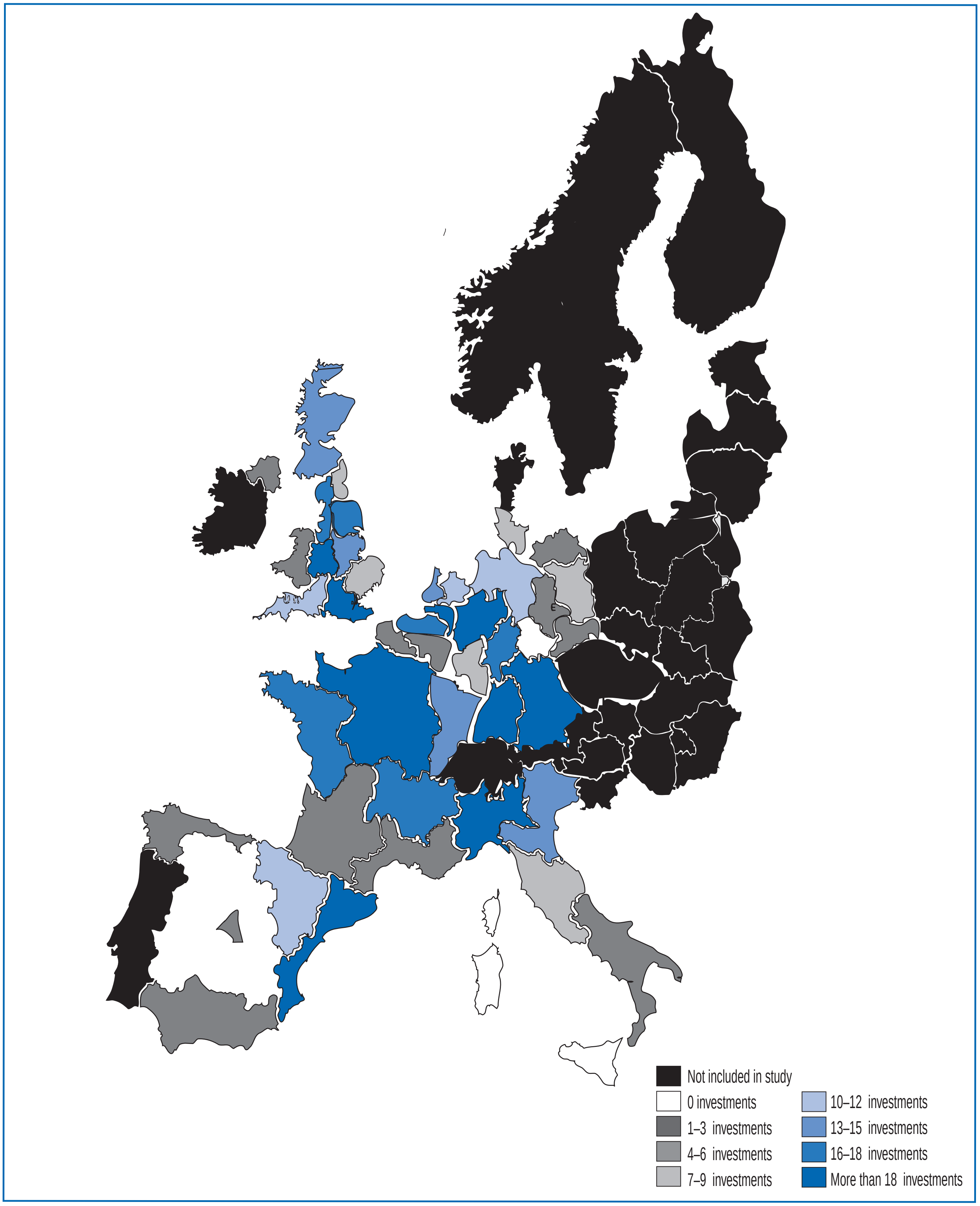
Wages

A surprising result of the study is that MNCs are attracted to *high-wage* locations, even after adjusting for location attributes generally thought to be associated with high-wage levels. All else equal, one would expect lower wage locations to attract more investment because the expected return on investment would be higher in those places. Labor, however, is not a homogeneous resource, and the wage premium that workers earn in one location over those in another location may be related to differences in the average level of worker skill in the two places, or it may be related to other attributes of the high-wage locations that enhance worker productivity (such as superior transportation infrastructure) or reduced costs (such as economies of scale resulting from the presence of an extensive local market for the firm's output). The study finds that even with a proxy measure of worker skills and controls for other attributes that could be associated with high-wage regions, high-wage regions attract *more* investment than low-wage regions.[3] One interpretation of this result is that the control variables do not fully capture the attributes that MNCs seek in high-wage locations and that the effects of these unspecified attributes are captured in the unexpected

2. The cost of capital is not considered, because capital tends to be much more geographically mobile than labor. So one might expect its price to be more equal across locations than that of a more immobile factor like labor.

3. The proxy for the average level of worker skill is the percentage of the workforce with at least a secondary education.

Chart 1. Number of New U.S. Manufacturing Investments in Seven Selected European Countries, 1989–2003



U.S. Bureau of Economic Analysis

positive effect of the wage variable. The wage-rate and worker-skill variables were found to be significant at the regional level, which is consistent with the limited geographic mobility of workers and the need for companies to hire from the local labor pool.[4]

Agglomeration

The study found that "industrial agglomeration" is an important determinant of new manufacturing investments, as have most other studies of industrial location. This term refers to the tendency for certain geographical locations to attract a disproportional share of firms, especially in certain industries. MNCs are attracted to European countries and to regions within those countries that have a relatively high proportion of firms in the investing U.S. company's industry (for example, Germany's North-Rhine Westphalia region has Europe's largest concentration of chemical manufacturing). At the national level, the attraction might be related to conditions in the host country (such as innovative competitors and demanding customers) that drive firms in that country and in that industry to excel.[5] At the regional level, the attractions might include proximity to suppliers, the availability of workers possessing industry-specific skills, and the ability to acquire best practices by imitating local competitors and suppliers.

Transportation

The study found that transportation infrastructure is an important determinant of new manufacturing investments at the regional level. Manufacturers rely heavily on transportation and other infrastructure (such as telecommunications) to interact with suppliers and customers. The importance of these interactions is evident in the BEA data on the operations of foreign affiliates of MNCs; in 2005, inputs from suppliers accounted for 72 percent of the value of goods and services sold or added to inventory by European manufacturing affiliates. The study found that regions with relatively well-developed road networks attract more investment. However, the measure of transportation infrastructure was not found to be significant at the national level.

Conclusion

To conclude, the results of this study inform the debate on the effects of MNCs on their home and host economies by examining how wages and other attributes of countries and the regions within them influence their location choices. Despite anecdotal evidence of companies using relatively low-wage European countries as "export platforms" to the rest of the European Union, this study finds that MNCs were actually most attracted to *high-wage* regions of Europe. Other attractive location attributes include industrial agglomeration and extensive transportation infrastructure. The study also sheds light on the decision processes of MNCs. Rather than simultaneously deliberating over all attributes of all possible regional locations within Europe, MNCs appear to engage in a sequential choice process in which a country is first selected based on one set of attributes and then a region within that country is selected based on another—largely separate—set of attributes. Future extensions of this study may include expanding the geographic coverage of the data to include more European countries, including countries in Eastern Europe.

4. In an alternative specification of the sequential choice model not reported in the paper, the evaluation of wage rates was modeled at the national level rather than at the regional level, but the variable was not found to have a significant effect.

5. Michael E. Porter, *The Competitive Advantage of Nations* (New York, NY: Free Press, 1990).