



The structure of location choice for new U.S. manufacturing investments in Asia-Pacific^{☆,☆☆}

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ABSTRACT

Despite an extensive literature on the determinants of the foreign location choices by multinational firms, researchers have only recently begun to systematically examine how these firms form their location consideration sets. When considering new foreign locations, do firms evaluate the attributes of the alternatives at the national level, the sub-national regional level, at some other level of geographical aggregation, or using some combination of these? This paper employs discrete choice models to examine how U.S. multinational firms form their consideration sets over locations in the Asia-Pacific area and to identify some of the relevant location attributes. The results are consistent with a sequential, or hierarchical, decision-making process in which firms first select a host country based on one set of attributes and then select a region within that country is selected based on another set of attributes. Most of the location attributes that are found to be significant are related to productivity-enhancing features, such as worker skills, industrial agglomeration, and extensive transportation infrastructure, rather than features related to factor prices, such as low-wage labor.

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1. Introduction

Multinational firms seeking locations for new investments abroad are faced with a choice over at least 150 alternative host countries. Many studies of the location of foreign direct investment assume that the representative firm making these choices is a rational decision maker that considers all relevant attributes of all of these alternatives. This strong assumption is not easily reconciled with case study literature and with research in human decision making. In a number of case studies of U.S. firms investing abroad, Aharoni (1966) (p. 82) notes that “the decision to look abroad is made in most cases in terms of a specific project in a specific country” rather than an all-encompassing evaluation of a menu of alternatives. When firms do evaluate more than one alternative, it is doubtful that the number of choices considered even begins to approach the number of all possible host countries

in the world. Research on human cognition and on marketing suggests that people are adept at analyzing groups of four or fewer items. Gigerenzer (2007) (p. 155) notes that, when the typical person encounters a group of people, he or she is able to instinctively count up to four people. The author also cites the Ancient Roman custom of giving ordinary names to the first four children but giving a numerical name (e.g. Quintus, Sixtus, etc.) to each subsequent child. In the marketing literature, Wright (1975) found that individuals are very effective at deliberating over a few alternatives but that the effectiveness of their decisions declines rapidly as the number of alternatives increases.

This study examines U.S. multinationals' choices of new manufacturing sites in four major host countries in the Asia-Pacific area (Australia, China, Japan, and South Korea), and the sub-national regions within those countries. It is concerned with both how multinationals evaluate potential sites and the location attributes considered. The first question deals with the ability or willingness of multinationals to deal with a large number of location alternatives. Do firms engage in a computationally-demanding simultaneous choice over all sub-national regions in the Asia-Pacific area, or do they settle for a less-demanding sequential choice process consisting of a choice of country followed by a choice of region within that country. The second question deals with the location attributes that U.S. multinationals consider. The location attributes that will be considered include market size, labor characteristics, industrial agglomeration, and whether or not the investor had a prior investment in the host country.

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2. Background and hypotheses

The topic of location choices of multinational firms is of perennial interest to scholars of international business and international economics. It has taken on new importance in recent years, partly in response to major shifts in the location of global production. The share of global production accounted for by 23 member countries of the Organisation for Economic Co-Operation and Development fell ten percentage points, from 59 percent in 1968 to 49 percent in 2005 (Hillebrand, 2008). Much of this shift away from the traditional centers of high-value, high-skilled, production toward less-developed economies can be traced to rapid growth in big emerging markets, such as China, India, Mexico, and Eastern Europe. The strong economic performance in these places has tended to be supported by ambitious market-oriented policy changes, such as the liberalization of trade and direct investment regimes, the privatization of formerly State-owned industries, and the strengthening of property rights. For multinationals, these changes have removed important barriers to those countries' reserves of underemployed semi-skilled and highly-skilled workers, and developing consumer markets.

In his survey of the literature on location choices by multinationals, Dunning (1998), argues that multinationals have been re-evaluating their global production strategies to ensure that they are taking full advantage of these changes in the global economy. He offers a four-part typology for multinational strategies in choosing foreign locations: (1) natural resource seeking, (2) market seeking, (3) efficiency seeking, and (4) strategic asset seeking. He identifies ways in which firms pursuing each of these strategies can benefit from the recent changes in host country policies. The "natural resource seeking strategy" is based on differences in countries' endowments of capital and natural resources (Mills, 1848); the "market seeking" strategy deals with the avoidance of tariffs and transportation costs as a catalyst for direct investment (Hymer, 1960); the "efficiency seeking" strategy deals with the geographical fragmentation of the production process in order to realize the benefits of differences in countries' endowments of skilled and unskilled labor (Helpman, 1984); and the "strategic asset seeking strategy" deals with business alliances, such as those to pool financial resources or to mitigate risk (Danzon, Epstein, & Nicholson, 2004). In many cases, investors pursuing different strategies will tend to focus on different location attributes when choosing locations for new foreign ventures. For example, firms pursuing a market-seeking strategy are most likely to look for a relatively high-skill labor force (e.g., Ireland) in order to duplicate the production processes employed in the home country. Conversely, firms pursuing an efficiency-seeking strategy are most likely to look for a relatively low-wage, modestly-skilled labor force (e.g., India) that will complement their high-wage, high-skill labor force in other parts of the world, in order to create global production chains. Moreover, the four strategies are not mutually exclusive so that, unless one strategy is dominant in a particular location, it can be risky to make sweeping predictions about the attractiveness of that location to multinationals.

Dunning also identifies the growing influence of economic geography, with particular emphasis on the regional agglomeration of economic activity, in the literature on location choices by multinationals. Porter's 1990 analysis of the geographical agglomeration of industries may be the most complete articulation of benefits that firms derive from operating within proximity of their customers, rivals, and suppliers. Proximity to discerning customers and capable rivals compels firms to innovate and become more productive. The suppliers to these firms must follow suit in order to survive. As firms pursue agglomeration benefits, economic activity becomes highly concentrated in relatively narrow economic areas (Florida, 2005). A study found that 38 percent of the gross domestic

product of the OECD countries was concentrated in only 10 percent of the regions of those countries (OECD, 2007). This pattern suggests that the traditional tendency to model the locations considered by multinational firms at the national level may overlook firms' sensitivities to these regional differences within countries. For example, although the national average level of education of the Chinese labor force is much lower than that of the Australian labor force, these measures are similar for the most highly-educated regions of the two countries. For multinational firms investing in the most educated regions of these two countries, the national averages are not relevant.

The focus of Dunning's review is on *why* multinationals will tend to choose one location over another, which is one of the concerns of this study; however, he does not deal with the question of *how* multinationals make those choices, which is the main question addressed in this study. Aharoni and Brock (2008) suggest that more research should be devoted to how multinationals make location choices, with particular emphasis on the role of heuristics (or shortcuts) employed. Some early case studies (Aharoni, 1966; Piper, 1971) identified multinationals' tendencies to consider far fewer location alternatives than could conceivably fit their needs. Corporate site selectors might be inclined to limit the number of alternatives they consider because of natural limitations on human cognitive ability, or because of the additional constraints, such as organizational inertia, which can exist at the group level. Yet, as noted by Aharoni and Brock, most studies of multinational location choice use a model that assumes a classically rational decision maker who considers all relevant attributes of all possible alternatives.

One way to account for multinational firms' reluctance or incapacity to consider a large number of location alternatives is to model their decision-making process as a sequence of choices consisting of an initial choice of country followed by a choice of regions within that country (Mataloni, 2007; Mayer & Mucchielli, 1999; Mucchielli & Puech, 2004). These authors find a sequential choice model to be a more plausible description of how multinationals evaluate candidate locations than a model in which decision makers deliberate simultaneously over all relevant attributes of all possible alternatives. This framework accords with both the case-study literature on location choice by multinationals (Bingham & Eisenhardt, 2005; Haigh, 1990; Jayet & Wins, 1993) and with the psychology and marketing literature on sequential choice.¹

A key distinction between the sequential choice model and one that meets the classical definition of rational choice is that it represents a hierarchical choice process in which location alternatives are screened, and/or eliminated, in stages. The rational choice model is one in which all attributes of alternatives are considered at once. That is, in the sequential choice model, alternatives that score poorly on attributes considered in the first stage of the decision cannot compensate for that deficiency by scoring well on attributes considered in the second stage of the decision; they will have already been eliminated from consideration. For expositional purposes, the sequential choice model will, at times, be described as a "behavioral" model and the simultaneous choice model will be described as a "rational" model. These terms, as they are used here, are meant only to describe the intellectual tradition from which these models originate; they are not meant to imply that either decision process is more or less purposive than the other. Information is costly and can be difficult to interpret in large quantities, suggesting that the best feasible

¹ Blackburn (1974, pp. 249–250) notes that one large U.S. multinational firm developed a routine for evaluating new foreign business locations in which a country would first be selected and then regions within that country would be evaluated.

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