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Why locate manufacturing in a high-cost country? A case study of 35 production location decisions

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ABSTRACT

In this paper, we examine in detail 35 final assembly location decisions to gain understanding of the manufacturing location decision from strategy and economic policy perspectives. We are particularly interested in the decision to locate final assembly specifically in a high-cost (high GDP per capita) environment. In contrast with the earlier literature, we focus not just on manufacturing activities themselves, but also the key linkages between production, market, supply chain, and product development. These linkages are examined using three key concepts from theories of organization design: formalization, specificity, and coupling. Using these concepts, an analysis of the micro-structure of each case reveals important commonalities that inform our understanding of location decisions. We conclude by discussing the policy implications of our findings.

1. Introduction

What explains the decision to locate manufacturing in a specific geographic region or country? The literature on location decisions is as massive as it is diverse, but two recent phenomena warrant a re-examination of the topic. One is the notion of *reshoring* (Ellram et al., 2013; Gray et al., 2016): some Western manufacturers are "bringing manufacturing back home," but our understanding of why exactly this occurs is limited. Another is the claim by Brynjolfsson and Saunders (2009), who noted that we knew *more* about the drivers of economic value in the 1980s than we do today. Location decisions must be understood not just through the lens of economic attractiveness of one region or country over another, but also as a decision where many organizational and technological interdependencies become relevant: decisions about where to locate manufacturing link to other decisions, such as location of research and development activities (Rafii, 1995; Spring et al., 2016).

In this paper, we examine the interdependencies of production with other value chain[1] activities and actors, such as product development, suppliers, and markets. The question "What kind of production takes place in a high-cost environment?" is of special interest. In our analysis, *high cost* is operationally equivalent to high Gross Domestic Product (GDP) per capita. A high GDP per capita tends to correlate positively with the price levels of strategically relevant input factors such as wages. Indeed, the distinction between high and low cost has always been implicitly a distinction between high and low wages.[2] The United States, Finland,

[1] In our terminology, *value chain* consists of all the activities related to the ideation, development, manufacture and sale of industrial products (Porter, 1985). *Supply chain*, in turn, encompasses those activities of the value chain that are directly related to the manufacture of the product and its components; R&D is thus *not* considered to be part of the supply chain. In this paper, supply chain management means primarily management of the supplier relationships between the final assembler and the first-tier supplier base.

[2] One might rightly question the value of the continuing use of this distinction. In what sense do low-cost countries like China offer cheap labor? According to World Bank statistics, China's GDP per capita doubled (from $3414 to $6807) in the five-year period of 2008–2013. This has been associated with roughly commensurate changes in wages as well: U.S. National Bureau of Statistics reported a 71 percent increase in wages in China's manufacturing sector in the same five-year period. In the same five-year period, both the GDP per capita as well as manufacturing wages remained stable, even declined, in many Western economies.

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Switzerland, and Singapore are examples of high-cost environments. Our sample cases are firms headquartered in a high-cost country (Finland). Most of these firms have, or have had in the past, production both in high- and low-cost countries. Analysis of their location decisions can thus shed important light on the determinants of these decisions.

A second aim of our inquiry is to examine the policy implications of location decisions: When and why should policy makers be interested in production location decisions? Understanding value creation is central to understanding the role of production both within a firm and within a national economy. Employment is obviously relevant, but if the goal is to understand and to foster *economic growth*, one must understand how economic actors add value to the economy in which they operate. Understanding an economy (and economic policy) requires that we understand where value —gross output less intermediate consumption—is added.

Our results suggest that contemporary location decisions link intimately to three dimensions of interdependence with suppliers, market, and development activities: formalization, coupling, and specificity. We propose these as important new categories both for firm strategy and economic policy, because they link only weakly to the more salient strategy and policy dimensions such as industry, firm size, and value added. In sum, our results show that in order to understand why firms locate their activities in high-cost countries, we must understand the interdependencies in the value chain.

2. Elaborating our understanding of location decisions

An extensive literature on the geography of economic activities spans several decades and multiple disciplines (Buckley and Casson, 1998; Chen et al., 2014; Dunning, 1988; Ferdows, 1989; Johanson and Vahlne, 1977; Mueller and Morgan, 1962; Rugman and Verbeke, 2001; Schmenner, 1982b). In this literature, we identify three distinct approaches that approach the question from different perspectives.

What we refer to as *the locational perspective* seeks to identify the locational factors that attract (or dissuade) manufacturing investment. Access to various "immobile factor endowments" (Dunning, 1988: 4) such as developed infrastructure (Brush et al., 1999) and advantageous labor costs (Mueller and Morgan, 1962) are identified in this stream of literature as pertinent in location decisions. Research based on the locational perspective applies the following principle:

Principle 1:

Decisions about the geography of economic activity are guided by locational factors, such as proximity to markets, access to knowledge, and the relative cost of production inputs.

The second approach, pioneered by Schmenner (1982a) and Ferdows (1989), could be labeled *the organizational perspective* because of its aim to understand how corporations or business units with multiple manufacturing plants are structured with respect to the roles assigned to individual plants. The essential question is how manufacturing is geographically organized within the firm. Accordingly, this approach emphasizes that "the reasons for establishing a factory abroad determine the way the company should plan, design, construct, and commission that factory. What is the strategic role of the factory—that is the starting question" (Ferdows, 1989: 5). A parallel stream in the international strategy literature examines the internal differentiation of subsidiaries in multinational companies, focusing specifically on organization design and structure (e.g., Ghoshal and Nohria, 1989). As to the importance of the perspective, some authors argue that "*internal* corporate considerations are more important than external, environmental factors in influencing the pattern of corporate R&D location […] proximity to headquarters units and manufacturing plants appears to dominate the R&D location decision." (Howells, 1990: 139). Research based on the organizational perspective applies the following principle:

Principle 2:

Decisions about the geography of economic activity are guided by organizational factors, such as plant roles in the firm's network and inter-functional interdependencies.

The third approach could be labeled *the temporal perspective*, because of its focus on time. The fundamental idea is succinctly captured by Stalk (1988: 45): "While time is a basic business performance variable, management seldom monitors its consumption explicitly—almost never with the same precision accorded sales and costs. Yet time is a more critical competitive yardstick than traditional financial measurements." Research using this approach takes time as the central variable and examines issues such as time-based competition, lead times, demand patterns, and industry dynamics. The temporal perspective provides an implicit antithesis to the locational perspective, because it highlights the idea that production costs (a locational factor) may not be as pertinent as logistical costs. Indeed, focus on production costs misses much of the costs that link to time. As the classic *Sport Obermeyer* (Hammond and Raman, 1994) and *Zara* (Ferdows et al., 2004) cases aptly illustrate, production location decisions can have a fundamental impact on lead times and competitive success. The temporal perspective is important particularly in situations in which lead times matter (de Treville et al., 2014). We can thus formulate the third principle, based on the temporal perspective:

Principle 3:

Decisions about the geography of economic activity are guided by temporal considerations.

2.1. What is missing?

The three perspectives described above are academic paradigms in that they focus on how *scholars* think of location decisions. But how do *managers* think? In this paper, we take a more data-driven approach that takes the paradigms into consideration, but at the same time asks critical questions: Do managers really analyze and rank locational factors? Which factors are considered? How many at a time? Many empirical research articles assume that managers consider locational factors fully rationally, and are able to examine their importance either one at a time or by pitting several of them against one another. Brush et al. (1999: 130), for instance, asked managers to explicate the extent to which a given factor (e.g., tax considerations) influenced the location decision. While asking questions such as "How important are tax considerations in making the location decision?" serves a useful purpose, forcing informants to address issues sequentially may be misleading if the goal is to understand the decision. Much of the research on location decisions does not really address *decisions*, but rather general factors guiding them.

A second concern pertains to the level of analysis. How much insight on location decisions can be gained at a general, abstract level that ignores the micro-level context? An individual firm may make hundreds of different location decisions for hundreds of

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