



# A model for international production relocation: Multinationals' operational flexibility and requirements at production plant level



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## ABSTRACT

This paper reviews location theory to formulate a model for international relocation of production. The results highlight the role of internal factors and the appropriateness of the behavioural approach of location theory for explaining international production relocation. From a theoretical standpoint, the operational flexibility of multinational enterprises for transferring resources internationally proposes a transition from an economic geography perspective to a managerial perspective. With empowered multinationals and in a context in which internal factors have a great influence on decision-making, plant level variables gain importance for improving understanding of international production mobility.

## 1. Introduction

The forces driving globalization, such as de-regulation of markets, and advances in information and communication technologies have led to strong processes of international relocation of production, with the corresponding economic and social impacts (Cavusgil, Knight, & Riesenberger, 2008; Farrell, 2005). The extent and consequences of this phenomenon in several industries have been analysed from both political and academic standpoints (Pennings & Sleuwaegen, 2000; Sleuwaegen & Pennings, 2006). It is also a topical phenomenon due to the amount of recent backshoring processes, defined as the return of production to its initial location (Arlbjørn & Mikkelsen, 2014; Kinkel, 2014; Stentoft, Olhager, Heikkilä, & Thoms, 2016).

In the academic literature, location theory (Hayter, 1997) is a recurrent background for the study of relocation. This theory, which was formulated and developed in economic geography and spatial economics, aims to explain the forces that push a firm from its current location to an alternative (optimal) one. Various models for relocation processes have been formulated based on the neoclassical, institutional and behavioural approaches of location theory (Brouwer, Mariotti, & Van Ommeren, 2004; Hayter, 1997), with location and external and internal factors as explanatory variables (Holl, 2004; Knob, 2011; Knob & Oerlemans, 2008; Van Dijk & Pellenburg, 2000).

Although these contributions have allowed us to find out more about the motivations for relocation, from a managerial and interna-

tional perspective they have two major shortcomings. First, they overlook the specificities of multinational enterprises (MNEs), particularly their operational flexibility which allows them to transfer resources and capacities internationally (Beugelsdijk & Mudambi, 2013; Dasu & Li, 1997; Kogut & Kulatilaka, 1994). Greater attention should therefore be paid to parent companies' internal strategies in the framework of international relocation. Second, relocation studies have given little relevance to factors at production plant level.

So, from the theoretical point of view, this study contributes to an open debate on the various trends in location theory for explaining international production relocation. Internal factors within MNEs have gained weight over external or location factors in decision-making. This is in line with the principles of the Resource Based View, which explain corporate differences mainly on the basis of internal factors. A second contribution lies in the use of the production plant as a new level of analysis. This could complement the parent company perspective allowing for the inclusion, among others, of plant-level requirements in relocation decisions. The combination of both contributions gives a predictive model for relocation based on operational flexibility in the parent company and plant-level factors.

The model is tested using a new and thorough database with information on firms in the automobile parts manufacturing sector, created specifically for this research. The choice of this sector is justified by its great worldwide impact in terms of production and employment and because it involves very heterogeneous products, processes, technologies and supply chain conditions, and includes many

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multinationals that are highly internationalised in terms of both production plants and consumer markets.

The paper is organized as follows. The different approaches of location theory for explaining relocation are reviewed in Section 2. Section 3 reviews the relevant literature and states the corresponding hypotheses. The sample of production plants analysed is described, and the variables used in the empirical exercise are defined in Section 4. Section 5 analyses the data, and presents and discusses the empirical results. Finally, Section 6 presents the main conclusions and suggests several recommendations for both company managers and policy makers.

## 2. Theoretical background

Location theory has a significant concern with the identification of optimal locations and the understanding of the main forces that motivate spatial relocations (Hayter, 1997). Three different approaches of location theory analyse relocation: neoclassical, institutional and behavioural (Brouwer et al., 2004). Each one uses different factors to explain relocation, ranging from location factors related to the physical place where the firm carries out its activity, to external factors associated with the environment in each country or region and internal factors within each individual firm.

The neoclassical approach explains relocation as a process in which firms aim to maximize profits; the explanatory models based on this approach consider 'location' factors as the main motivation for relocation (Fujita, Krugman, & Venables, 1999). Such location factors include the specific characteristics of the physical place or the surrounding area where the plant is located. The literature on this topic emphasizes local agglomeration economies such as the availability of service providers and a large industrial basis (Cuervo-Cazurra, de Holan, & Sanz, 2014; Holl, 2004; Lee, 2006) or the presence of workers in the same industry (Hong, 2014), the existence of infrastructure facilities such as inter-regional motorways (Holl, 2004), or a favourable local environment (Cuervo-Cazurra et al., 2014).

The institutional approach focuses on the 'external' factors, that is, the social determinants and specific values of a given region (Amin, 1999). Specifically, the external factors covered in the literature are low production costs, especially labour costs (Antras & Helpman, 2004; Cordella & Grilo, 2001), and the size of the potential market (Holl, 2004; Sleuwaegen & Pennings, 2006). Studies linking relocation to external factors have a significant explanatory capacity as they focus on the comparative advantages of different countries and regions, mainly in terms of production costs.

Finally, the behavioural approach considers the location of production plants as a part of the decision-making process, in which 'internal' factors may lead to a sub-optimal rather than an optimal location from the neoclassical point of view (Hayter, 1997). This approach aims to understand managers' behaviour when facing relocation decisions and the factors involved in such decision processes, namely relocation costs (McCann, 2001), the economic capacity of the firm for financing relocation (Caves, 1996; Pennings & Sleuwaegen, 2000) or managerial strategies (Chan, Gau, & Wang, 1995; Maskell, 2001; Van Vilsteren & Wever, 1999). The behavioural approach is very close to the Resource Based View, which considers internal resources and capabilities to be the main predictors of a firm's behaviour and performance (Barney, 1991; Becerra, 2008). Indeed, these may become the main drivers of decision making (through strategic decisions) but also the main barriers to relocation, as they may be linked to a given location due to specific previous investments (Dyer, 1996).

## 3. Towards a model for international production relocation: hypotheses

### 3.1. The parent company's operational flexibility

The literature has shown that MNEs have a prominent role in international relocation processes (Barba, Falzoni, & Turrini, 2001; Belderbos & Zou, 2006; Buckley & Mucchielli, 1997; Konings & Murphy, 2006). Particularly, MNEs' operational capabilities have been identified as a key driver for achieving higher levels of performance (Tan, Kannan, & Narasimhan, 2007); managers thus allocate resources and capabilities to the areas that can contribute most to improving the company's outcomes. Operational flexibility therefore becomes a strategic tool, as it allows MNEs to coordinate and transfer resources internationally (Dasu & Li, 1997; Huchzermeier & Cohen, 1996; Kogut & Kulatilaka, 1994). Such flexibility explains MNEs' production configurations more efficiently than specific location advantages (Buckley & Casson, 1998; Fisch & Zschoche, 2012; Lo & Lin, 2015), because it allows for international transfers and better adaptation to environmental conditions (Chung, Lee, Beamish, & Isobe, 2010; Kogut & Chang, 1996). Production restructuring strategies such as specialisation, concentration or rationalisation allow MNEs to improve their operational flexibility and therefore to optimise their production configuration. They also force firms to change their organisational and spatial structure, and may lead to total or partial relocation of some of their activities within their production network.

According to the behavioural approach, some internal characteristics of MNEs, such as the configuration of their international production network, their size or presence in a large number of countries may increase their operational flexibility for transferring activities internationally (Allen & Pantzalis, 1996; Tong & Reuer, 2007). The more alternative plants an MNE has in other countries, the easier it will be for it to transfer activities and the more likely it will be to relocate production among its own plants. Therefore, the internal resources and capabilities a MNE possesses determine its operational flexibility and its capacity to transfer resources internationally. In this context, external and location factors become relevant to the extent that they can be internalized in the firm's production strategies. For example, a competitive advantage between countries in terms of labour costs may be a key factor in relocation decisions if the firm bases its production strategy on labour-intensive activities (Lampón, Lago-Peñas, et al., 2015). Thus, the first hypothesis is:

**H1.** The operational flexibility of MNEs in terms of network size and corporate restructuring strategies is a significant factor in international production relocation.

### 3.2. The relevance of requirements at production plant level

In order to explain why, within the production network of a given MNE, some plants are relocated and others are not, factors at the production plant level should be analysed. Although location theory has stressed the importance of these requirements (Hayter, 1997; Pellenberg, Van Wissen, & Van Dijk, 2002), studies on relocation have traditionally disregarded analyses at plant level. Nevertheless, according to the behavioural approach of location theory it seems advisable to combine traditional factors with MNEs' internal issues and decision-making processes. This should allow identification of plant-level requirements, the so-called keep factors (Pellenberg et al., 2002), which may be financial or organisational nature and favour or limit production relocation (Van Dijk & Pellenberg, 2000; Zenka, 2009). They do not, however, exclusively explain relocation propensity.

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