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Housing and Living Environment as Location Decision Factors for Manufacturing Enterprises

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Abstract: There are many factors which affect the location of manufacturing enterprises. Nowadays, soft factors such as "quality of life" (housing and living environment), "image" of places or "private" reasons are important determinants. A high-quality living environment is an increasingly important location decision factor first of all for companies who need to attract young and talented educated specialists. Location priorities are believed to change according to the function of the site. Headquarter needs international airport, central city location, hotels, restaurants. Research and development unit needs universities, science parks. Manufacture and distribution need good transportation system. If housing and living environment are satisfactory only in some regions, investment-intensive new high-technology, high value-added jobs created only there. And only top specialists and skilled workers in these regions will benefit from these, not "ordinary people" in other regions. Such structural changes may even more increase economic, social, regional etc. stratification.

Key words: delocalization; housing; industry; relocation
JEL codes: F21, F22, L60

1. Introduction

The economic landscape has undergone many significant changes in the last few decades, the most extensive of which is globalization. In its wake certain kinds of economic activity have become more and more easily dispersed across space, and distance matters less in transfer of goods and people.

The type of business that dominates today's global economic system operates on the basis of finding the cheapest production (in particular labour) cost. During the past 20-25 years delocalization of labour-intensive industries—international relocation, the shifting of work to low-cost (low-wage) countries—has been a usual (dominating) development in world manufacturing. The turbulent transformation of economy and society looks to continue.

While previously cost and profit were the main determinants in the traditional location theory, nowadays, soft factors such as "quality of life" (housing and living environment), "image" of places or "private" reasons are important determinants. A high-quality living environment is an increasingly important location decision factor first of all for companies who need to attract young and talented educated workers.

The paper seeks to cover the housing and living environment as location decision factors for manufacturing

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enterprises. The main goal of this paper is to summarize the objectives and experiences of knowledge applied by different agents.

2. Modern Industry Location Theories

Space is not homogeneous. Different economic activities take place in different locations. According to McCann (2002, p. 3), spatial economic costs can be divided into two types: (1) those that are incurred at a point in space; (2) those that are incurred in the overcoming of space itself. For example, local labour prices and land costs fall into the former category, whereas transportation costs and telecommunication costs fall into the latter. Both individual changes and changes in relationship between these place-specific costs and transportation costs have impacts on the optimum location of the firm.

Location factors are the whole of factors, which affect an enterprise in the choice of a location. There are many factors which affect the location of industry. These include raw materials, land, labour (supply, wages and benefits, skills, education/trainability, unionization/right-to-work, etc.), markets (type of demand, size of market, stability of market, income or economic strength, etc.), transport/communications, energy, capital, government policy, etc.

The problem of locating industry was very important already at the end of the 19th century when the industrial revolution was well established, and development of rail transport, energy, communications and urban growth provided more options for distributing firms and components of the manufacturing process. With the publication of “Über den Standort der Industrie” (Theory of the Location of Industries) in 1909, Alfred Weber put forth the first developed general theory of industrial location. His model took into account several spatial factors for finding the optimal location and minimal cost for manufacturing plants. Industry location theories have been lately thoroughly studied by Dunn, Poleske, and Xiadong (2004), earlier Parr (2002), Krugman (1995), Storper and Walker (1989) and by many other economists.

Theories respecting the location of firms (Parr, 2002, pp. 32-82) summarize the framework known as central place theory, built by early location theorists like Weber, Christaller, and Lösch. The central place theory carries the assumption that population and resources are uniformly distributed over a homogenous plane, firms have free entry into the market, and perfect competition exists. In this model, production factors (labour and capital) and transportation costs represent the keys to understanding firm location: firms locate in such a way as to maximize profits. Yet, even with the added complexities of hexagonally-shaped markets to capture the entire market space and a “nested” hierarchy of variably-sized central places, the central place theory “cannot be regarded as a general theory of the urban system” (Parr, 2002, p. 79).

Krugman (1995) offers four explanations of firm location. First, the notion of social physics is helpful in constructing economic relationships that are analogous to observed laws of physics. For example, firms will locate at points of high market potential, where the computation of market potential is some measure of market access divided by distance (the gravity model). Secondly, cumulative causation suggests a circular relationship whereby a region attracts firms whose presence attracts other firms, who attract still other firms, and so on. This is similar to the alternative location theory of clustering. Third, positive local externalities “promote concentration of production”, and analysis of these externalities can provide insights into optimum city size. Finally, the land rents theory of von Thünen assumes a gradient of land values as one moves away from an urban centre. This model explains “centrifugal” forces quite well, but it has little explanatory power with respect to the existence of

economic centres (Krugman, 1995, pp. 38-55).

In the second half of the 20th century, alternative theories of location emerged. The principal features of these attempts to explain firm location are emphasis on the importance of spatial diffusion and consideration of political and social interactions. In addition, as Storper and Walker (1989, p. 70) argue, "the basic patterns of industry location and regional growth can be processed endogenous to capitalist industrialization, rather than exogenous placements of resources and consumers". In other words, firms can "create economic space". This contrasts with the neoclassical theories, in which firm location occurs more or less as a response to economic conditions in a region.

Firms may relocate and decentralize in order to separate from the "dwindling profits" of an over-interested core and to "extend into new growth peripheries" (Storper & Walker, 1989, p. 88). Firms are also motivated by the prospect of cheaper labour pools and rents. Such movements may be linked with the product cycle, which can lead to broad decentralization.

According to McCann (2002), Hayter (1997), and Machlup (1967), a division into three types of location theory may be made: a neoclassical, an institutional and a behavioural approach.

The neoclassical approach (McCann, 2002, pp. 112-114), which is derived from the standard classical economic theory, focuses on cost-minimizing and profit-maximizing theories. There may be significant relocation costs. Relocation costs may be the direct costs of moving, as well as the search and information costs of finding new markets, labour, suppliers and deliverers, and so on. A move to another geographical market is to a certain extent similar to a start-up, with large investments and uncertain revenues. There may be also a substantial amount of capital inertia. For instance, many existing buildings and other equipment at the old location may already be written off, and still be operational at low costs.

In the modern globalised economy we have to look not only at the behaviour of the firm, but also at the social and cultural context in which this behaviour is embedded. Institutional approaches (McCann, 2002, pp. 117-118) have dominated the field so far. Firms have to negotiate with deliverers and suppliers, local, regional or national governments, labour unions and other institutions, about prices, wages, taxes, subsidies, infrastructure and other key factors in production process of the firm. Locational behaviour is the result of all these negotiations. The implication of this view is that the geography of enterprise is more suited to large corporations, which have more negotiating power, and are able to exert a substantial influence upon their environment, whereas small firms usually have to accept the restrictions and constraints imposed upon by their environment. Regional systems are important contexts for firms' growth. There are two types of institutions that are important for (re)location behaviour of small and medium-sized enterprises: governments and real-estate market. Governmental facilitating factors are, for instance, infrastructure, zoning, subsidies and tax reductions.

The behavioural approach (McCann, 2002, pp. 114-116) is based on more realistic notations of limited information and bounded rationality. Here, optimizing behaviour is replaced by "satisfying" behaviour. Apart from the decision-making process, which is made explicit, there are four key elements in behavioural location theory: (1) the role of limited information; (2) the ability to use information; (3) perception and mental maps; and (4) uncertainty. More distant locations are less well known and therefore it is likely that nearer locations are chosen more frequently. Distant locations are more difficult to imagine than nearer places. There is a strong distance decay in mental maps, which is of course partly related to the amount of information, but also to the perceived attractiveness of the place. Firms face uncertainty, not only because they have a knowledge gap or they are unable to digest the available information, but also because investment decisions are based on anticipated future

situations, which are by definition uncertain. Anticipating the future for other locations that are not familiar adds to the uncertainty.

Traditionally, the spatial distribution of activities is explained using a model of the product's life cycle (Federal Planning Bureau, 2000). According to this model, activities are transferred to countries with lower wage costs at that stage of the product's life cycle where standardization occurs. The cycle begins with the product's design, followed by its entry into the market, expansion, export and, finally, foreign investments which may lead to relocation. Production abroad is market-oriented at first, but production costs (including wage costs) play an ever increasing role as the production process undergoes standardization.

Firm relocation differs from firm location because it explicitly takes account of the fact that one location is substituted for another. The firm has history, and this history is likely to have an influence on the locational outcome of the process. This locational outcome is therefore conditional (McCann, 2002, p. 111).

Another way to look at this is to separate the relocalization process into two sequential steps (McCann, 2002, p. 111): (1) the decision to move; (2) conditional upon a move, to relocate to another location. A similar distinction is between push and pull factors of migration. Push factors are things that are unfavourable about the area that one lives in, and pull factors are things that attract one to another area.

The predisposition of manufacturing industry towards delocalization is a result of operation of three factor groups—the so called push-factors, pull-factors and keep-factors of delocalization (Ženka & Cadil, 2009; van Dijk & Pellenberg, 1999). Push-factors are motives leading firms to leave their locality (Ženka & Cadil, 2009; Pen, 1999). They represent a set of regional comparative disadvantages forcing firms to delocalize. Pull-factors are comparative advantages of potential target regions for delocalization. Considering operation of push- and pull-factors, it is possible to categorize the delocalization, by the prevailing motives of companies' displacement as cost oriented (most often driven by labour cost reduction), market oriented (capturing new markets), and resource oriented (qualified labour force, suppliers, mineral resources, etc.). Keep-factors favour firm continuance in the current location (financial and organizational intensity of possible delocalization; relations with suppliers, etc.).

Factors that influence the location behavior of firms can be categorized as (Risselada & Schutjens, 2012; Brouwer et al., 2004; Dijk & Pellanbarg, 2000):

- Firm internal factors are associated with the firm characteristics (business strategy, size, growth rate) and entrepreneurial characteristics (age, education, lifestyle preferences).
- Firm external factors are the characteristics of the specific site and local surroundings of the firm. These can be firm or property specific (real estate characteristics, parking facilities at the firm's premises). Firm external factors can be related to the wider economic or social environment (distance to markets and quantity and quality of the local labour force) or even the structural and institutional characteristics of the region a firm is located in (amendments, government policy, property prizes, general economic conditions or changing labour and consumer market conditions).

Push factors are perceived as negative and invoke firm relocation in order to avoid negative neighbourhood effects on firms or their entrepreneurs ("pushing firms out of the existing location"). Pull and keep factors are in general perceived as positive characteristics of the business premises or environment, as they stimulate respectively the attraction and retention of firms.

Rational profit-maximizing economic behaviour is conditioned by an individual's context of both social networks and embodied, objectified and institutionalized cultural disposition (Risselada & Schutjens, 2012;

Bourdieu, 1984; Granovetter, 1985; Smit, 2011). For entrepreneurs making firm location decisions, the conditioning role of social contexts and cultural and institutional dispositions means that the effect of pure rational profit maximization on the decision's outcome is mitigated by other factors, such as personal or social networks (Risselada & Schutjens, 2012; Dahl & Sorenson, 2009; Schjutjens & Völker, 2010; Stam, 2003), the image, identity of place and attachment to neighbourhood (Risselada & Schutjens, 2012; Drake, 2003), bounded information and other private concerns (Risselada & Schutjens, 2012; Evans, 2004; Greenhalgh, 2008). Firm location is based on a far more complex and encompassing reasoning than only of minimizing costs and profiting.

3. Housing, Environment and Infrastructure as Location Decision Factors

While previously cost and profit were the main determinants in the traditional location theory, nowadays, soft factors such as "quality of life" (housing and living environment), "image" of places or "private" reasons are important determinants. The climate, low crime, educational system, cost of living, quality and cost of housing, quality of air and water, recreation facilities, etc. (all modern living and work environment) are very important for potential high-technology investors and skilled labour. Knowledge workers prefer places with a diverse range of outdoor recreational activities.

Location preferences of the creative class, whether residential or working, display a distinct tendency toward spatial concentration (Stryjakiewicz, 2010). Clusters of the creative class can be found in some specific types of area called creative regions. In those regions creative people stimulate one another's ventures, while the outside environment, with its openness, diversity, multiculturalism, tolerance and talent promotion, enhances their work by creating conditions for avant-garde, unconventional patterns of behaviour and daring visions of development and planning conceptions. These areas are highly advanced technologically, feature a high quality of life, and attract talent. Creative persons display a much higher mobility than average and migrate primarily to places with such characteristics as a tolerant urban climate and openness towards new ideas and newcomers (Stryjakiewicz, 2010; Florida, 2002, 2003, 2005b). Diversity serves as a source of inspiration in the innovation process (Stryjakiewicz, 2010; Andersen & Lorenzen, 2005). The creative class attaches great values to urban facilities and cultural services. All this provides a conductive environment for regional growth. Places with a good "people's climate" retain and attract creative people who, in turn, induce new economic activities. The creative industries refer to a range of economic activities which are concerned with the generation or exploitation of knowledge and information. They may variously be referred to as cultural industries (Hesmondhalgh, 2002, p. 14) or the creative economy (Howkins, 2001).

Highly skilled workers/specialists, as a rule, have a well-kept and demanding family for the living conditions. They are willing to live and work only in a region where there is a good infrastructure. Or move to such place from a place that does not satisfy them. A high-quality living environment is an increasingly important location decision factor first of all for companies which need to attract young and talented educated workers.

Most important behavioural factors are (Fernandes, Ferreira, & Marques, 2010): (1) Founder decides to live in that locality; (2) Employees wish to live in that locality, (3) Good (high-quality affordable) housing conditions (prices, size, etc.); (4) Recreational and leisure opportunities; (5) Climate in the region; (6) Cost of the land; (7) Quality of air and water; and (8) Good educational system and all infrastructure.

Location priorities are also believed to change according to the function of the site (Cohen, 2000):

- Headquarters' location priorities include: (1) accessible international air service; (2) high-end hotels,

restaurants, entertainment, cultural events, major league sport team/stadium with skyboxes to facilitate heavy inter-company face-to-face interaction; (3) professional support services; (4) good choice of office space or availability of land to built-to-suit; (5) diverse professional employee base; (6) attractive housing for executives, affordable housing for managers; (7) support staff within reasonable commute; (8) strong educational system for employee's children; (9) continuing adult education; and (10) central city locations likely. Cost sensitivity is less important than availability of key requirements.

- Research and development requires: (1) proximity to concentration of universities and science parks; (2) clusters of highly educated workers, or alternatively, lifestyle amenities that are attractive to this pool of talent. Some R&D firms want control over their physical environment, to buffer company from nosy neighbours and to prevent the sharing of secrets by employees. Cost sensitivity is less important than the availability of talent and other requirements. However, R&D may be more sensitive to cost than headquarters.
- Back office requires: (1) state-of-the-art telecommunications capacity; (2) affordable housing costs; (3) high-quality labour force with technical skills; (4) good schools for employee recruitment and their children; and (5) on-going available adult education and training. A back office is sensitive to cost of real estate, telecommunications, housing, and taxes. Location preferred: outside main centres.
- Manufacture and distribution firm needs to be near major interstates, they need strong utility systems (electric, water, wastewater, gas, etc.). These firms also want a well-educated workforce and strong specialized training programs. Manufacturing and distributing firms are sensitive to housing costs, taxes, and utility rates.

Location requirements differ depending on the company's product maturity. A cost structure that works well at the early stages of product development will not necessarily support its competitiveness as the product matures (Cohen, 2000). At the R&D phase company may be less sensitive to real estate costs but quite sensitive to the availability of sophisticated labour markets and talent. Later business will become more cost sensitive and low-cost regions at the periphery or even offshore locations may provide more cost advantages.

If living environment is satisfactory only in some regions, investment-intensive new high-technology, high value-added jobs are created only there. And only top specialists and skilled workers in these regions will benefit from these, not "ordinary people" in other regions. Such structural changes may even increase economic, social, regional etc. stratification.

4. Conclusion

While previously cost and profit were the main determinants in the traditional location theory, nowadays, soft factors such as "quality of life" (housing, environment and infrastructure), "image" of places or "private" reasons are important determinants. A high-quality living environment is an increasingly important location decision factor first of all for companies who need to attract young and talented educated workers.

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