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An Incursion in the Economic Theory of Location

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Abstract: This work has as aim an incursion in the area of the spatial economy, a new branch of the economy, from the point of view of the approach. This was insufficiently explored at international level, and so, less few studied in our country economical literature. This field is strongly linked to the spatial theory, which represents itself an important element in the economic theory, that is necessary to be researched and evaluated. The interest of the research theme is shaded by the interdisciplinary character that implies knowledge in the fields of: economy, geography, econometrics, mathematics, sociology, and is based on a fundamental type of research, focusing the prevalent qualitative study of the area of interest literature, regarding the concept of space and spatial theory.

Keywords: space; spatial economy; regional economy

1. Introduction

In the present economic theory there are often existing the tendency of a net separation between microeconomics and macroeconomics. The aspects liked to the individual consumers' behavior, or that of the firms' and together with their interaction on the market were often isolated treated by the behavior of the groups of economical agents reunited in homogeneous categories and by the functioning of the economy as a whole. Nevertheless, there are an important range of problems situated between these two extremes that ask for an integrated vision of the two poles: the problems of the regions, inclusively of the locality, in other words, the analysis of a spatial scale of the economy. Thus, there it took shape the investigation sphere for the regional economy, as a fundamental discipline inside the regional science.

2. Presentation

The history of the regional science began at the beginning of the XX century with exponents of the German school of the spatial economy - von Thunen, Weber, Christaller, Losch. Especially in the post-war ages, some important regionalists were added, they belonging to the American, Holland, French, German, Russian, and others schools. The contour as a science in the 1950's years, and its ascension inside the international contemporary scientific community is partly due to the "International Society for the Systems Sciences", founded in 1954, with the declared aim to promote the exchange of ideas, and also points of view linked to the broad area of this branch.

The creating of the regional science as a distinct domain was based on the conscription of some concepts and methods, from a spatial perspective. These are belonging to the economy, geography,

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econometrics, mathematics, sociology, political science, and others, thus giving a strong interdisciplinary character, consciously assumed. At the same time it happens a continue broadening of the investigation for the regional science. There appeared and developed inside it, a series of disciplines that design the complex profile of this science: it is about the regional planning, regional forecasting, urban economy, urban planning, rural economy, planning the usage of the fields, infrastructure economy, spatial sustainable development, etc.

As it is known, the spatial economy has as object the presenting from an economical perspective some topics as: the location of some economic objectives, spatial equilibrium the regional economic rising, the spatial mobility of the production factors, efficiency of the spatial structures, spatial substituting of the factors, using the economical-mathematical methods and techniques for analysis and decisions in order to conscript the spatial aspects in the traditional economic theories, founding the regional strategies and policies, etc.

The way of analyzing and interpreting these problems comes from the theories, methods and techniques initially issued for the understanding of the behavior of the national economies. Such a procedure could be considered acceptable, as the economy of the regions resemble in many ways with the national economies. For example it is possible, as the economies of the regions to be treated as the national economies in the terms of the analysis of the results for the economic activity, for the incomes, for the employment, etc.

It is also due to mention that the spatial economy follows both the interregional ratios, and those interregional ones, existing between the local economies. And thus it results the necessity of making a distinction between the regional economy, focused on the region as a clear cut entity, taking into consideration the above mentioned ratios, and the economy of the localities, so as it results even from its definition. It is regarding to the problem of the social-economic development of the localities by the prism of the elements which are composing the locality as a system, and of its specific functions.

Looking from a conceptual point of view, some specialists associate, the notion of "fitting of the territory", to the regional politics, on a plan of the action. In some countries, this term also gets an economic content, meanwhile in other countries there are corresponding terms as: "spatial organizing", "physical planning", "organizing territory", which are terms with an exclusive spatial connotation. It is for this reason as in the international official texts referring to the regional policy, for avoiding the equivoque it is used the general term of "regional development". This is appreciated that it broadly represents the regional coordinates. It is often assumed that the fundamental problem of each economy consists in the answers to the following questions: what to produce? How much to produce? Whom to produce to? Certainly that together with the dynamic of the economy, there are other questions that could be asked, but these are strictly referring to the problem of the location: where to produce? Studying the components of the economical aggregates at a regional scale, the regional economy proposes to find the answers to the questions like that: which factors are determining the results of the economic activities and the grade of the employment of a region? Why the level of living is higher in some regions, than in others? Why some regions scores bigger rising rhythms of economic growth than other regions? Which are the factors that determines the inter-regions migrations? Why are abiding, higher rates of unemployment in some regions, comparing to the others? It is a probability of trying to answer to such of these questions, a number of the theoreticians of the location economy, some of them being presented further.

The first theoretician - that is unanimously accepted as the "father of the localization theory" is Heinrich von Thunen, whose work -"The isolated state", appeared in 1826 year. Von Thunen's model

proposes to find an optimum location for the agricultural cultures, depending on the distance between the place of production and the markets for displaying the products. This model is based on the following considerations: the land of culture is an uniform plan, a *"homogeneous field, without any characteristics, with an equal fertility, without any roads, or navigable rivers, and limited to the use of the carriages as means of transportation, having a single town as a center producing all the industrialized goods and which is supplied with all agricultural products by the farmers from the field part; it is isolated by the external world, being surrounded from all the parts by a impenetrable savage area"*. (Von Thunen, 1910)

As the transportation facilities are similar to those of all directions, it results the inexistence of the transportation costs in the production process, these ones existing only in the distribution process. Founding his analysis, von Thunen starts from the findings made on his field from Tellow, closer to Rostock city, and focusing on the manner the exchange economy influences the agricultural cultures. Accordingly to his model, around the town there are established concentric zones on which they are placed different agricultural cultures, from which they are obtained different annuities from. Thus, von Thunen considers that the town is a point, and each agricultural product has an unique price on the urban market. Taking into account the component of the transportation expenses, then the price of the products will be different from a field to another. There will be placed those cultures which could cover a bigger annuity, in the proximity of the town, and similarly in the most out-of-the-way zone there will be placed those culture with a reduced annuity. The delimitation factor of the zones is represented by the transportation expenses, which are supposed to be a linear function of distance. Von Thunen complicates the scheme of the location of the agricultural cultures, by an approach to the real world, that is: more towns, the existence of the transportation ways, taxation, the fertility of the soil, etc.

Pursuant to these extensions, there is producing a modifying of the concentric structure of the cultures, the circles are extending or are restraining, depending on the influence of these elements. Under many aspects, von Thunen's contribution, seen by the real world, it could be criticized because of the inexistence of a real state, isolated like that one imagined by him, by not including in the analysis the industrial locating, which he concentrated only in the town, etc. With all these gaps, von Thunen's contribution could not be neglected, as he gave a new direction to the analysis of space.

Von Thunen's theory was assumed and enriched by Wilhelm Launhardt, that was considered the author of the first handbook, in the area of mathematical economics. Unlike von Thunen, which focused his attention towards the annuity in association with the valuable characteristics of the alternative crops, the location being an important variable, but which do not are themselves the center of his analysis, Launhardt firstly focused on the theme of optimal locations of the industrial enterprises. In this intercession, Launhardt follows the "problem of the three points", that is he presents the optimum locating of a plant that produces a single good, with constant costs, which it displays on a given market, and two locations where they are extracting raw material; the extracting and displaying points are considered fixed. The results consists in the minimizing the total transportation expenses on the unit of product. The initial presumes are then generalized to the four or more fixed points, as outlets on multiple markets, and sources of raw materials. Launhardt's contribution is considerable on the field of the locating, and could be synthetized as follows: it is the first representation in the area of locating, afferent to the more reduce cost of the industrial plant, relative to a fixed market; the first explicit presentation of the different economical forces which influence the locating with the smallest price; discovering some solving methods of the problem in three points; the first solution of the simple, but classical problem of the method of transportation in

the ways economics. What could be reproached to Launhardt is the fact that all his solutions are based on the linear functions of transportation, and also that he did not totally approach the aspect of locating the plant in the situation in which both the consumers, and the suppliers of raw materials are dispersed in space, and not concentrated in a single point.

Alfred Weber is another illustrious theoretician of this area, being concerned by the spatial aspects from the perspective of the industrial locating. Weber takes over a series of presumes from von Thunen's model, but therewith he brings a series of improvements, thus determining a greater on-coming to the real world. Thus, Weber, as von Thunen imagines an uniform field, with uniform transportation rates per mile-tone in the entire zone, but as a difference to his forerunner, he supposes that there are some known points of consume, and also some known sources of energy and raw materials. The labor is considered unlimited, with a constant salary in some given places. The transportation costs are appreciated as a linear function of weight and distance. The transportation costs are appreciated as a linear function of weight and distance. The industrial objectives succeed a single product, corresponding to a technology with constant yields of scale. The raw materials used in the processing are classified due to the place where they are found, in the following categories: omnipresent ones - those raw materials which could be found in any place; located ones - are those which are in specific locations, from the point of view of the consumer in the process of production; pure ones - are those which are supposed that the whole weight enters in the finite product; and brute ones - those materials which are wholly or partly losing their weight in the production process.

In his demarche Weber is using two technical coefficients, that is: the material indicator that represents the ratio between the weight of the located materials and the weight of the finite product, and the other one is the locational weight, ie the total weight, that has to be transported between the given locational points, expressed on tone of finite product, and which has the value 1, plus the material indicator. If the process of production determines a gain in weight, then the material indicator is smaller than the unit, meanwhile the locational weight is bigger than the unit, so that the industrial location is directed to the points of consume. If the production process determines to gain weight, then the material indicator is smaller than the unit, meanwhile the locational weight is bigger than the unit, so that the industrial location is focused to the points of consumption. Mutually, if the productive process leads to the loss of weight, then the material indicator will be bigger than two, thus resulting that the plant is located to the resources (Blaug, 1985). Weber considered that labour is a spatial variable with a major influence, and in his opinion its placement differs depending on the level of the market and of its efficiency. He sustained that the variations of the cost due to the labour especially refer to some urban habitations. In his intercession, labour is appreciated as being transistor in a spatial plan and immobile. This aspect determined him to analyze the advantageous locations for the labour factor, he comparatively analyzing the economies that were achieved in different locations, to that obtained at the point in which the price of transportation is the lowest, this point being determined on the basis of that foregoing, already presented. But in his research, Weber ignored a series of factors, which are specific to the location, such as: the rate of interest, taxes, ability of the entrepreneurs which is particular to certain locations, and also the general factors, like as clime and topography. It is obviously that Weber has taken into account an economy characterized by a perfect competition and a behavior exclusively base on maximizing the profit, as a result of minimizing the transportation costs. His contribution in this area is not lacking some lacunae, among which they could be reminded: ignoring the demand, the lack of dispersing the producers and the consumers on the entire economic space, the excessively technique approaching for the problem of productive location, and sometimes to the injury of that economic and not only this one (Constantin, 1988, pp. 66-67). Despite all these considerations, Weber's contribution is notable both by his intercession in the problem of the

industrial location, but also by opening a waste area of researching for his forerunners. Even Weber himself admits that his study is not enough for enough for explaining everything and he asserts that: "it is expected that this book to be a beginning, not an end" (Constantin, 1998, pp. 72-73). The history of economy determines us to assert that Weber's message was subsequently fulfilled, taking into account the numerous debates that he caused.

Starting from a lacuna in Weber's model, that is the ignoring of the competition, as he based on the assumption that each producer considers that the locations of competitors are fixed, or in other words that the respective producer benefits of a monopoly position on the market that he acts on, Harold Hotelling approaches a spatial competition. Hotelling analyzed a model of locating for two sellers of a homogeneous product, under the conditions in which the buyers of each product are uniform distributed on a limited linear market. He also supposed that each buyer will get a unit of product, so obeying also the transportation costs. Another assumption of the Hotelling's modes suppose that relocation of the production is instantly achieved and does not imply any cost (Constantin, 1998, pp. 72-73). There is a duopoly in Hotelling's model, and this model is based on the hypothesis as per that none of the two competitors infer the other's reactions to a change in his location.

Walter Christaller is another worthy theoretician of this field, that focused on determination of the size, number and distribution of the towns in a certain zone, starting from a series of elementary assumption linked to the consumers' behavior. In his work named "Central Places in Southern Germany" (Constantin, 1998, pp. 72-73), Christaller restructured the space on the basis of the marginal yield, and of the urban crowding which he developed in a concept assumed from Launhardt, that is of the nestled hexagons, a geometrical form, that he considers to be characteristic for the market.

The German economist - August Losch, another outstanding figure on the area of the spatial economy generated a whole school around his theory, taking into account both the contributions that he brought to this branch, and the inciting due to other theoreticians. In Losch's analysis there are taken into account the following assumptions: the locating of a producer has to be as advantageous possible, so that to maximize the profit; the locations have to be as numerous as to entirely cover the space; in all the activities achieved by any entrepreneur the anonymous profits have to disappear; the surfaces for supplying, production and displaying the goods have to be as small as possible; the consumers living at the limits of the economical zones have to be indifferent to which neighbor locations they belong to (Constantin, 2000). The existence of a great number of producers in a certain economical zone determines the mitigation of the cost for transportation. The rising of the number of producers also determines the annihilation of the supernormal profit, and thus the firms obtaining only normal profits. Losh reach the conclusion that the optimum area of action for a producer ensures a minim cost of transportation, and will have a hexagonal display, this geometrical form contributing to a complete covering of the space. As for the size of these hexagons - which for a certain žone is under the form of a comb is determined both of the conditions of the demand, and also of those of production; this supposes that the hexagons have different sizes. The superposition of these hexagons networks, having a common center and a maximum number of intersections with other center of production has the aim of making minim the total costs of transportation; thus generates a certain hierarchy of the centers for production. Thus, Losch succeeds to fulfill certain "hierarchies of the industrial centers", which he names "central places" (Losch, 1978). Losch determined by his intercession that the theoreticians of this area to recognize the necessity of taking into account both the cost, and also the demand for independent factors in locating the firms, even from the middle of the '50th years of the twenty century.

We appreciate that the best trial of clarifying these independent factors was achieved by Melvin Greenhut in his work "Plant location in theory and practices" (Greenhut, 1956). Based on a pragmatic research, he also developed the theoretical aspects. Greenhut identifies three classes of factors for locating, that is factors of the demands, the cost of factors and the factors of personal interest which are dividing in a series of subdivisions at their turn. This segmentation of the factors which influences the location in Greenhut's conception has taking into account a better getting closer to the real world; this is differing him from his forerunners, as Weber, that intensify the role of services for transportation in the locating of the economic activities. The getting closer has in view the extension of the number of factors, as well as the different share of these ones, in the decision of maximizing the profit. In this line, Greenhut together with G. Norman (1987) study the possibility for a producer to achieve profitable activities under some conditions which are modifying in space, even if in the situation of some locating with high costs. Based on this demarche, Greenhut gets the conclusion that the locations at high costs tend to be occupied by the small firms and therewith, that the industrial structures are characterized by a small number of big firms, and by a great number of small firms. The distance and the costs for transportation offer a grade of protection, even if to those producers which score high production costs. (Constantin, 2000, p. 79).

A moment of reference in the progress of this area is the applying of the input-output analysis in the regional context, that is a contribution achieved by the laureate of Nobel prize for economy - Wassily Leontief. We refer to the work "Multi-regional Input-Output Analysis", that has as co-author Alain Strout, and was published in 1963 (Leontief & Strout1963, pp. 57-223). In this multiregional area, the Leontief's instrumental is used not only from the point of view of the interdependences between branches, but also of more regions which are correlated. The specific theoretical problems in a multiregional context has in view the fact that the identical goods can be produced and consumed in different regions. Leontief achieves a group of producers from a certain surface in an unique regional found of supplying, and the benefiters situated in a given zone are associated by him in a regional common found of the demand. The inter-regional movements achieved by the transportation activity can be seen as a displacement from the regional found of supplying to that regional found of the demand (Leontief, 1970). By his contribution, Wassily Leontief could be considered an blazer the path for the input-output analysis in the regional area, as he generated a current through his disciples - as Richardson, Hewings, Jansen, Lewis, Mc. Nicoli and others - explored and brought improvements.

Nicholas Georgescu-Roegen, the scientist of Romanian origin, describes the territory of the village and its optimum dimension in an economic-social manner, making appeal to appeal also to historical incursions at the same time. So, in the village, the houses are compactly set, in a place which represents the hearth of the village, where the peasants located their houses, based on an basic instinct of proximity. But this instinct is manifested also inside a nomad horde, which are not particularized neither by a clear individualization of the village group, nor by its cohesion. Georgescu-Roegen appeals to specific physics and biology approaches, and thus he proposes himself to establish a series of factors which have determined the community of the village to cohabit in a certain dimension, and thus inducing the idea that the first inhabitants of the village built their house grouped, one near the other, thus due to the primary instinct of surviving; but this dimension has not to exceed some limits that could imperil its cohesion. The eminent economist assigned an important role to transportation in the decision of the location, thus ascertains that: "as to the end of the last century (of course he referred to the 19th century) the transportation was not an easy thing to do, so the different resources ought to be conveniently located around the place that was fitted to the arrangement of the hearth of the village. All these conditions very much limit the possibilities of choosing the means which permit the ruling of the economic activity determines a human concentration in a single economic and social

entity, so as it could be ensured a good satisfaction of the vital needs of the inhabitants. (Georgescu-Roegen, 1997, p. 245)

The matter of the location come back into present in the economical literature of the last years. The developments gained in the modeling of the market structure and of the transportation costs, combined to the advanced exploiting of the computers lead to the development of the mechanisms which control the overcrowding. Thus, the economical geography enters in another sphere named the New Economical Geography, that are based on a series of prior contributions, such as: the modeling of the monopolistic competition of Dixit-Stiglitz type (1977, pp. 297-308), that certainly opened new perspectives in the economic research; the modeling of the transportation costs of "iceberg" type, belonging to Samuelson's (1952, pp. 278-304); the researches referring to the imperfect markets and to the origins of international trade, resuming only to the mentioning of Helpman's and Krugman's contributions. (1985)

Among the researchers now on interested in this area, we can remember Masahisa Fujita, Paul Krugman and Anthony Venables, that by the work "The Spatial Economy - Cities, Regions and International Trade" (Fujita, Krugman & Venables, 1999) present - in a curdled form, the main theoretical concepts and the sectors for applying the spatial bench marks. The amplitude of the researches - taking into account the hypothetical extensions and the empirical researches applied on different economical spaces, both determined the issue of a new journal in 2001, the "Journal of Economic Geography".

The nucleus of the research has as starting point the heterogeneous distribution of the economic activity. In the majority of the countries, the firms and the clients of a world level are grouped in big metropolitan zones. This tendency of the economic activity - that of being crowded - is not new, and it was already studied at the beginning of the 19th century by von Thunen, so as we have already presented.

Now coming to the contemporary economy, the eminent American economist, Paul Robin Krugman, professor of economy and international relations winns the Nobel Prize in economical sciences just for his contributions brought to the new economical geography and to the new commercial theory. Beginning with 1990 year, Paul Krugman's researches oriented to the economical geography, and especially to the location problems, his contribution being the cornerstone of the direction which the new economical geography has today. He ascertained that one of the tasks of the economy is that of understanding why the economic activities appear and develop in a place, rather than in another one.

Krugman proposes the idea accordingly to that a region could become more competitive than another, by a cumulative effect, starting from a starting almost arbitrary, due to the growth yields allowed by the spatial focusing of the activities.

The works of economical geography issued by the geographers in this period are very numerous, they being dedicated to the international markets, industrial localization, services activities, telecommunications, regional and national economies, their merit being that of surpassing the descriptive character. This is a remarkable qualitative hitch that are placing the economical geography among the indispensable sciences for noticing and analyzing the contemporary reality. Thus, the complexity of the approaching rises, the economical aspects begin to be followed in a broader context, the individuals' perception upon the economic processes and phenomenon become more sensitive, and the territory gives indispensable aspects for researching the space.

3. Conclusions

The location theory surprises two essential coordinates of the economic life: the distance and the territory. The role of the distance is pointed out by the influence of the transportation expenses, both on the prices of the market, and also on the favorable location of the production. The role of the territory determ18th century, classical sounded names were feeling around the spatial economy area, but the location theory has not enjoyed of abounding researches, or of touchable results; so, around the 1950's year, the economic analysis did not include a spatial dimension.

Reading von Thunen's and Krugman's spatial economical models, which could be considered as extreme models - from the point of view of the chronology - it is considered that they could offer only a structure of the economic theory from the perspective of space, their imperfections favoring the issuing of the extensions, of the exceptions, and of the peculiar cases.

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