

FINANCIAL ASPECTS OF THE LOCATION THEORY: A POST – KEYNESIAN APPROACH

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1. INTRODUCTION

A remarkable aspect in the literature of regional economics is the little attention given to money and its role in regional development. A quick look at the work of the classical contributors to the location theory shows that financial variables do not play a role in this discussion (e.g. Thünen 1826, Weber 1969, Lösch 1954). In most cases, the discussion of the determinants of the localization of the firm takes into consideration only real variables, such as costs of transport, income, market area etc. The strong reliance on the neoclassical theory, which assumes the neutrality of money, can be seen as an explanation for the absence of money's considerations in locational theory.

The Post-Keynesian theory considers money an integral part of the economic process. This framework, which aims at understanding the influence of money on regions, has an implication for the locational decision of the firm.

This work's main purpose is to make a critical review of the literature concerning the Location Theories in accordance with a post-Keynesian perspective. We aim at identifying if this view consents to the incorporation of the idea of non neutrality of money in the process of location of industries in space. Therefore, we believe that the location theory can be improved and become a better instrument to understand why growth rates differ among regions if money, in all its dimensions, is incorporated into the analysis.

The paper is divided into 6 sections, including the introduction and the final considerations. In section 2 some of the main ideas concerning the post-Keynesian thought are briefly exposed. Subsequently, the classic contributions to the location theory of economic activities from a post-Keynesian point of view given by Thünen (1826), Alfred Weber (1969) and

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August Lösch (1954) are introduced. In order to better understand the spatial distribution of the activity of services (including the financial system), the works of Walter Christaller (1966) and Jane Jacobs (1975) are presented in section 4. Section 5 concerns the most recent contributions to the location theory. Finally, in section 6 the final considerations are exposed.

2. UNCERTAINTY AND MONEY: THE ESSENCE OF THE POST-KEYNESIAN THEORY

The post-Keynesian school was developed mainly after the 70's as a reaction to the criticism to Keynesianism made by the monetarists (led by Friedman) and new classics (Lucas, Sargent and others). This school aimed at showing, in a coherent and consistent way, that the markets are not self-balanced, being, thus, faulty. Therefore, an economy which is left to the market forces is unable to reach or even remain in a position of full use of factors (OREIRO e DE PAULA, 2005; LIBÂNIO, 2000).

To the neoclassical economists, there is a clear dichotomy between the real and the monetary sides of economy. According to their conception, money is only a means of exchange, a mere instrument to facilitate transactions. Thus, balance is guaranteed in the real economy before any reference is made to the monetary sphere. Money is, consequently, neutralized. It doesn't have absolute value, for it doesn't produce anything by itself nor is it consumed by itself. Its utility is only indirect, which defines the dichotomy mentioned above (MOLLO, 2003).

Contrary to this view, the post-Keynesian economists consider money as a fundamental element in the economic process. It is not possible, thus, to distinguish clearly the monetary from the real side of economy. Following Keynes's thought, their idea is based on a monetary economy of production, which is a concept defined to describe a particular view of the functioning rules of a modern capitalist system. One of its main characteristics is the importance given to the decision-making process in an environment of uncertainty (FEIJO, 1999). The key feature is that the post-Keynesians work with the hypothesis of expectation development under non-probabilistic uncertainty³. This denotes the prior impossibility to determine the relevant group of influences which will act between the decision to implement a specific plan and the achievement of results. According to Feijó (1999), once the project

³ Here we understand that uncertain phenomenon is the one whose probability cannot be measured – see Davidson (1982-83; 1995), Dow (1995) and Crocco (1999, 2003a).

begins to be implemented, it cannot be reversed without cost. The decisions to produce and invest become, thus, undoubtedly speculative.

The functioning of the economic system depends, therefore, on the agents' expectation of the future and on the effects of this view on money retention (MOLLO, 2003). It is important to stress that, under uncertainty, retaining money as an asset might be a rational deed. According to Keynes's theory, money is not only demanded for convenience, but it might be demanded by itself, since it is the most liquid of the assets. When the perspectives or expectations of the future are pessimistic, the wish for liquidity rises and money becomes the most attractive asset. This implies that the factors of production might become idle (FEIJO, 1999). According to Dow & Rodriguez-Fuentes (2003), this is reflected in the agents' growing liquidity preference– which indicates the amount of money they wish to retain. Due to a higher or smaller degree of confidence in the economy, changes in this domain open the possibility for endogenous alterations in the income, once they lead to fluctuations in the effective demand. Thus, money is not neutral in economy.

From the post-Keynesians point of view, money is not exogenous and enters into the economic system through credit supplied by the banking system in response to demand. Thus, instead of determining the general price level, credit allows the validation of investment, thereby making money an integral and non-neutral part of the economic process.

Regarding the relation between credit supply and savings, the post-Keynesians see no reason to consider that credit should be backed by savings⁴, which would finance the investment. In an economy with a developed credit system, savings do not necessarily precede investment. Besides, even if there are savings in the sense of no-consumption, nothing guarantees that there will be a rise in the supply of credit. What matters is the liquidity preference manifested by the public (which buys financial assets) or by the banks (loaning money in satisfactory conditions) (MOLLO, 2003).

That is, the Post-Keynesian analysis approaches both the supply side and the demand side in the regional credit market. From the viewpoint of the banking system, a high liquidity preference will negatively affect its disposition to lend money in the region, as it shows pessimistic expectations of its economic performance. On the demand side for credit, the

⁴ For a better understanding of this dynamic, see KEYNES (1971a, 1971b, 1971c).

liquidity preference of the public will affect its respective portfolio decisions. (CROCCO et al, 2003 e CROCCO, 2003a).

Therefore, banks play a fundamental and complex role in the economic system, being much more than mere mediators between investors and savers. As active agents, they might force the use of resources to the purchase of capital goods, which will contribute to the economic development.

Finally, it is important to note that as far as the post-Keynesians are concerned, the interest rate is a monetary phenomenon⁵, as it derives from the liquidity preference, from the demand for money as store of value. This demand comes from the necessity that the agents tackle the uncertainty that traverses economy. It contains, therefore, a high level of subjectivity. As it interferes with investment, the interest rate ends up working as a link between the monetary and the real fields.

2.1. Post-Keynesian approach to regional economy

Scheila Dow was a pioneer in introducing the post-Keynesian approach in the regional domain of spatial analysis. According to the author, although Keynes has emphasised the importance of money in the national realm, its relevance has not been transferred to the regional context, in which there is little reference to the role of money.

Based on a post-Keynesian approach and using elements from the cumulative causation and dependence theories, Dow (1982, 1987) presents some models where the financial system together with the economy's real side may foster unequal regional development patterns. In her analysis, Dow concentrates her attention on Myrdal's (1957) ideas of cumulative causation, which were previously adopted by Keynesians like Kaldor (1970). According to the cumulative causation theory, Dow states that the financial sector is one of those sectors in the centre that will profit from the dynamic economies of scale. The centre would be a prosperous region with active markets and a sophisticated financial system. The fact that financial institutions tend to have their headquarters located in the centre implies a distancing from the demands for investment in the peripheral region and a restraint to credit granting. Moreover, the centre is defined as the local with a productive structure historically dominated

⁵ The neoclassicals, on the other hand, conceive the interest rate as a real phenomenon. From their point of view, this variable is responsible for the adjustment between the money's supply and demand.

by industry and commerce and where the financial centre is located. The periphery, in turn, would stagnate with feeble markets characterized by having its activities concentrated in the primary sector and low-technology manufacturing with an economic dynamics based on exports to the centre, and a lesser degree of financial sophistication⁶. Its sales revenues are sensible to the centre's economic performance and thus, highly volatile. The centre has spread effects on the periphery not only in its demands for products but also in the diffusion of technology, qualified labour, and services through its branches, promoting in this way the centre/periphery dependence⁷.

Such characteristics imply that liquidity preference will be greater in the periphery by its residents whether banks, entrepreneurs, or the public. The reasons for this would be the high risk of capital loss for the banks, related to the default risk of loans; a change in the marginal efficiency of investment for the firms which is affected by the smaller availability of loans and higher bank interest rates; and the uncertainty about the public's earnings, which is associated with the economy's volatility.

The result is that national banks may lend less money to the periphery, due to its economic structure and the remote control over their branches. Specific periphery bank, in turn, would rather maintain a higher reserve level and restrain local loans. They are in a relatively disadvantaged position and, in this way, encourage concentration of banking in the centre. Furthermore, the greater liquidity preference of the peripheral public would be translated into a higher proportion of demand deposits than of time deposits, which would force banks to curtail their loans terms in order to adjust them to the smaller portion of time deposits.

Amado (1997) analysed the regional financial dynamics in Brazil, also from a post-Keynesian approach of uncertainty, time and money and based on Dow's pioneer work. She concluded that the profound structural differences observed among the various regions in the country lead to a monetary dynamic which tends to amplify the inequalities rather than reduce them, as has been predicted by the orthodox models. Given the structural characteristics of the peripheral regions and their relations with central economies, Amado

⁶ The model takes into account the fact that even within a nation the financial innovations can only be extended from the financial center to remote regions after a time lag and that additional transactions and information costs enhance such a difference.

⁷ Dow (1982) works with a region-based banking system. However, her arguments of money supply differences are still valid for a national banking system where capital flows may be increased and the destination of money allocation greatly depends on the centres, where capital flows to and in which deposit levels are higher.

observed that the agents' private behaviour ends up generating vicious circles, which do not only refer to the real variables. Indeed, they have financial effects and are partly derived from the relation between the agents themselves and money.

In the same way, Crocco *et al* (2003) tested the impact of bank access and the public's liquidity preference on the economic development in the state of Minas Gerais, Brazil. They concluded that, in fact, the regions of the state with smaller access to banks and consequently with a greater public's liquidity preference suffer credit restriction, having, therefore, their development hindered. These regions are exactly the poorest in terms of goods and services.

Although the roots of the differences in regional income might be found in structural factors, monetary variables may be responsible for the maintenance and intensification of these differences, when an approach in which neither the money nor the banks are neutral as far as regional development is concerned (DOW e RODRIGUEZ-FUENTES, 1997).

Based on the Post-Keynesian theories, in the next item we will make a re-reading of the location theories, detaching them from the neoclassical paradigm of equilibrium and searching a better comprehension of spatial dimension. The hypothesis we intend to develop here is that given the non-neutrality of money, it influences the locational decision of industries.

2. CLASSIC LOCATION THEORIES

2.1. Von Thünen

In his central work, *Der isolierte Staat in Beziehung auf Landwirtschaft und Nationalökonomie* (1826), J. H. von Thünen developed the Agricultural Location Theory establishing hierarchisation criteria surrounding a consumer market. His theory aims at answering what should be produced in a determined place.

Based on the presumption of perfect competition, the author takes into consideration uniform soil fertility as well as quality and availability of transportation in all directions. Other hypotheses offered by the model are: the location of agricultural activities is around an isolated urban centre, independent from the rest of the economic system; the agricultural producers keep only a basic commercial relationship with the urban centre. The model does

not regard the firms' locational or technical interdependence, neither does it consider the factors that lead to concentration of activities in space.

An area is distinguished from another through its bigger or smaller distance to the consumer centre and to the "location rent gradient", that is, the price the economic units are willing to pay for the area, which varies according to its distance to the market: the further it is from it, the smaller the location rent will be. Thünen creates, thus, the concept of "localised space" – a privileged area where production is more profitable – and admits that such a space influences the locational decision of activities (LEMOS, 1988; SIMÕES, 2003).

According to the model, when the income gradients, (function of income in relation to distance) are intersected and the total income is maximised, there are conditions for the formation of the so-called "von Thünen rings", strips of land which form the "belts" of various cultures around the market. Lemos (1988) points out that the relative position of the "rings" of each good will depend on the unitary cost of transportation – the higher it is the smaller the transportability of goods and, therefore, the production should be located closer to the consumer centre. In addition, it will depend on the physical income by unit of area – the bigger it is the better the use of space, which makes it more likely that activities physically more intensive are located close to the market.

Thus, von Thünen establishes a simple hierarchisation of the various activities in "rings", showing the emergence of locational advantage standards in the use of agricultural land. The theory may be considered as a general theory of microlocation regarding a consumer centre.

Lemos (1988) indicated a critical flaw in von Thünen's model. As he closed it in an isolated urban centre, the German author ended up building a disagglomerative model, which is inconsistent with the idea of urban agglomeration itself and insufficient to explain the spatial dynamic. The more intensive agricultural cultures, and/or the ones with smaller transportability pay a higher income in the best located areas, banishing the less intensive cultures and/or the ones with better transportability to the further areas.

It is important to note that if we shift Thünen's theory to the context of cities, we reach the concept of urban land income, which derives from the notion of location rent. Thus, although the model is eminently agglomerative, it provides the first manifestation of an area's

potentiality for agglomeration. The existence of a growing urban land income is a clear indicator of a region's dynamism, reflecting the place's real attraction capacity. This line of thought is not developed by the author, however.

Due to the hypothesis assumed⁸, Thünen's model does not acknowledge the introduction of money as a determinant locational factor, which is the central consideration in this work. As it will be shown later, the money's influence on the decision-making process of firms is related to the notion of centrality, which is a concept developed in item 3.

2.2. Alfred Weber

In his book *Theory of the location of industries*, from 1969 (originally published in 1909), Alfred Weber's main concern was to study the location of industries. The author attempted to build a pure theory by determining the forces which guide the locational decision of firms and by formulating the laws that rule the action of such forces.

His theory is initiated based on the following propositions: a) consumers are concentrated in specific points; b) the price of goods is homogenous in space and the technical coefficients of production are constant; c) the places where there is availability of labour are considered given and their offer is infinitely elastic; d) the sources of labour are unequally distributed in space, divided between ubiquities (obtained at any point and not having locational impulse, therefore) and localized materials⁹ (available only in some well-defined localities, thus influencing the choice of place); and e) the transportation rate for raw-material and for the final goods are identical and constant.

According to the author, the three factors which influence the locational decision of the industries are: cost of transportation; cost of labour and the agglomerative and deglomerative forces. The productive units act freely as they define the place where they will be installed, trying to minimize the total cost in alternative places, without risks and uncertainties.

⁸ Von Thünen considered the soil's fertility and quality as well as transportation availability in all directions to be uniform in a given area. Besides, he assumed that agricultural activities are situated around an isolated urban centre, independent from the rest of the economic system, and that agricultural producers keep a basic commercial relationship with the urban centre. The author does not discuss the factors that lead to the concentration of activities in space.

⁹ Localized materials can be either "pure materials" – which imparts its total weight to the product – or "gross materials" – which suffer a loss of weight in the process of manufacture.

The disregard of money in the decision-making process is evident here. In accordance with the post-Keynesian thought, it only makes sense to think of liquidity preference because of the existence of uncertainty. And, it is through this liquidity preference that money has its influence in the economy.

In Weber's opinion, the industry always tends to be located in the point where the cost of transportation is the lowest. This would be the first locational orientation. In extreme cases, the industries are oriented either to the market or to the localised material in view of the transportation cost. The industries, whose *material index* (proportion of weight of localized materials used in the industry in relation to the weight of the final product) is higher than one or whose *locational weight* (total weight to be moved: product's weight plus the weight of localized materials) is high are attracted toward a material site location, indicating that the weight of localized material necessary for production exceeds the final product weight. On the other hand, the ones with material index smaller than one or with low locational weight are attracted toward the place of consumption. In this case, the ubiquitous raw-materials used constitute a significant amount of the weight of the final goods, which results in a final product with smaller weight. By observing these relations, Weber shows that the mobility of the industry depends on the weight to be transported throughout the whole production process (WEBER, 1969, FERREIRA, 1975 e 1989; RICHARDSON, 1975; HOLLAND, 1976; LEME, 1982; LEMOS, 1988; DICKEN e LLOYD, 1990, NOWAK e ROMANOWSKA, 1995).

According to Weber (1969), the labour cost is considered the second locational factor. This idea comes from the assumption that industries will only be attracted to places where labour costs are more favourable to the producer, in cases where the saving with labour exceeds the additional transportation cost for the industry, since it will no longer be in the point of minimal transportation cost.

The third factor includes both the agglomerative and deglomerative forces, which act in the sense of concentrating or dispersing industries in a given region. As said by Weber, the agglomerative forces – including the locational elements which were not taken into consideration separately – would be a second force to draw industrial production away from its point of lowest transportation cost. As an example of deglomerative force, Weber cites the

land values, which rises proportionally to the increase in the concentration of industries in a certain place. (WEBER, 1969).

Among the various criticisms made to the Weberian model of industrial location, two are particularly relevant to this work¹⁰.

The first one refers to the fact that Weber does not qualify the agglomerative forces adequately, besides considering them as secondary in the decision-making process of the firms. In addition, the German author disregards the monetary and financial variables in this list of factors. They have explicitly been excluded for the following reasons: a) Weber clearly follows the neoclassical tradition as he develops his theory – therefore, money is seen as neutral; b) in order to reach the goal of developing a pure theory, he considered the production process took place in an economically uniform region. Thus, even admitting the existence of different interest rates in distinct locations¹¹, this fact would never explain the regional location choice¹². The author is based on the common belief to the neoclassical economists that the regions' distinct economic dynamics do not affect the interest rate, since it does not influence the individuals' liquidity preference nor is it influenced by it. According to Weber, the interest rate varies according to the type of the firm and its administration. However, it does not vary among the regions in one country in the pure economic system.

Nevertheless, regarding the post-Keynesian theory, it is reasonable to assume that different locations present distinct interest rates. It is believed that the interest rate reflects, to a great extent, the agents' liquidity preference, which is determined by the level of uncertainty that differs among the regions¹³. Therefore, the less developed a location is, and the more uncertain its economic environment, the bigger the agents' liquidity preference, the smaller the banks' predisposition to loan money and the higher the interest rates. Obviously, such a fact has important consequences in the region's subsequent development, as well as in its potential to attract/repulse firms.

¹⁰ For a brief exposition of the main criticisms to the model, see Figueiredo (1998).

¹¹ See WEBER, 1969:30.

¹² In a general way, we can understand that the author disregards money as an important locational factor.

¹³ Some empirical work enhanced the fact that different regions within the same country have different liquidity preference. For the Brazilian case, see Cavalcante, Crocco, Jayme Jr. (2006) e Crocco *et al* (2006), and for a more general situation, see Dow (1993).

It is important to mention that as he speaks about the advantages of agglomeration, Weber indicates that the concentration of firms in the same location leads them to benefit from the advantages enjoyed by the great corporations, one of which would be the possibility to obtain cheaper credit. The agglomeration reduces the uncertainty related to both remote regions and smaller firms, due to a bigger flow of available information, more transparency and more proximity among the firms.

Such assumptions are consistent with the thesis defended by the post-Keynesians that money is not neutral and it influences the agents' decisions. In this sense, money plays, even if indirectly, an important role in attracting industries.

Apart from claiming in this extract that agglomeration of companies in the same region makes it possible to obtain cheaper credit, the author is not really concerned with this issue. From his point of view, credit availability is not seen as an important locational factor. Thus, it is possible to infer that in his formulation he conceives, even if implicitly, one of the following hypotheses: a) the companies are supported with their own resources, not needing to resort to any type of financial institution; b) capital is reasonably available to all the economic agents, in all the places, that is, the financial system and credit in particular are generally treated as a relatively ubiquitous/homogenous input in space.

Finally, the second criticism to the Weberian model presented by Lemos (1988) demonstrates that the author's single concern is to know statically where the industry will be located, when he should be equally focused on the process of construction and growth of markets. For instance, in Lemos's opinion it is important to "know to which extent the option of locating near the source of raw-material dynamically creates diverse agglomerative factors, including consumer centres (which are assumed as given, from Weber's point of view)" (LEMOs, 1988:188).

The agglomerative economies are established as fundamental to the understanding of spatial problems. And Weber, besides only slightly mentioning them in his theory, only discusses the agglomeration that emerges due to the interference of agglomerative factors, disregarding the one that comes as a consequence of other orientation factors, such as transportation or labour.

Isard (1956) defends that given the cost to relocate a firm, it is important to also consider the advantages to agglomerate in already existing production points. Hoover (1971) adds that the locational choice represents a long-term commitment, given the costs associated to any change. This commitment is done under uncertainty regarding the benefits involved in the location and especially the possible changes in the relative advantages. Associated to the monetary costs of relocation, such uncertainties introduce a strong element of inertia, called industrial or geographical inertia by Dicken and Lloyd (1990). Once established in a place, the physical capital is transformed in a powerful locational force, which leads the development of the economic space. This factor tends to reinforce the centrality of a specific place. Although the notion of centrality has not been introduced yet (it will be done in item 3), it is important to note its relevance as a locational factor attraction to the industries.

2.3. August Lösch

August Lösch (1954¹⁴) developed a theory of organization of regions, focusing on the economic aspect. He initially conceives a specific region, deprived of all and any spatial inequality. Thus, his model's basic hypotheses consider that: a) the raw-material and inputs necessary to production are ubiquitous; b) there are uniform conditions of transportation; c) there is a uniform distribution of population in space; d) the tastes and preferences of consumers are uniform; e) technological knowledge is uniform; f) each product has a specific demand curve – which varies according to the demographic density and the cost of transportation to the production centre brought upon the consumer.

The author emphasises the locational interdependence and stresses the influence made by the market conditions on the locational choice of any company.

He assumes the market is under a regime of imperfect competition. In this sense, his ideas represent a progress in relation to the works of von Thünen and Weber, who presume there is perfect competition. The monopolistic competition emerges through the introduction of spatial dimension in his analysis and accessibility is the factor of differentiation of products. Based on this structure, Lösch (1954) shows how different market areas and a hierarchised urban system are formed, deriving from a homogenous space.

¹⁴ Originally published in 1939.

According to Lösch, as the global demand for the industries' products increases, it should achieve economies of scale. This factor triggers the process of locational inequality, since the company starts to broaden its market area. After some time, balance is reached, when the gains of scale do not compensate for the increase in the transportation expenses. This will discourage consume in this market, opening the possibility for analogous production located in another point in space (LÖSCH, 1954 e 1964; FERREIRA, 1975; RICHARDSON, 1975; HOLLAND, 1976; LEME, 1982; LEMOS, 1988; SIMÕES, 2003).

Lösch introduced three important concepts in the analysis of the spatial issues: the curve of demand in space – where transportation cost plays a decisive role; economies of scale – central analytical element for structuring the economic space; market area – analytical fusion of the two first concepts (LEMOS, 1988).

According to the theory, the various firms are initially distributed throughout the homogenous plain, forming, thus, many circular market areas which tend to intersect each other, leading to the emergence of empty spaces not served by any firm (FERREIRA, 1989). This would be, according to Parr (2002a), an intermediate situation, since at this point there is still potential profit for the producers. However, as new firms come into the market induced by the excessive profits of the already existing companies, there is an invasion on the limits of the market areas of each producer, filling these empty spaces, eliminating, thus, the surplus profit. The circles will be transformed in hexagons and balance is reached, where all the consumers will be served in the best possible way (PARR, 2002a).

Although the concept of market area has been originally developed from a static perspective, Pereira (2002) claims that it is, conversely, dynamic. This fact derives from the constant transformations suffered by the transportation costs and economies of scale – as a result of the changes on productive forces and on the competition which might raise competitiveness in one or more companies.

Lösch's model might be used further in the theoretical construction of the system of cities. In his work, the author shows that even in the presence of totally homogenous space the population ends up spreading out in a heterogeneous way (LEME, 1982).

Lemos (1988) argues that the bigger the urban growth is the bigger its diversification and capacity to incorporate smaller urban centres which will constitute its market area. This thought will be better developed in the next item, when we introduce Walter Christaller's Central Place Theory and Jane Jacobs's Theory of Urban Growth. These will be appropriate for the understanding of the concept of localised space. Besides, they offer the chance to consider money as an important influence in a region's economic dynamic.

3. CENTRAL PLACE THEORY AND URBAN ECONOMIC GROWTH THEORY

When the traditional location theories were developed, the importance of services was relatively reduced. Hence, more attention is needed to be given to the study of spatial distribution of this type of activity. Christaller (1966) was an author who worked with location of activities directed to the market, among which services are included.

In the volume entitled "*Central Places in South German*¹⁵", Christaller developed the basis for the understanding of a system of complementary and interdependent cities, as he suggested laws that would rule their formation and would allow a hierarchical ordering in terms of size and quantity. Centrality is the decisive concept in his presumption, which the author defines as the relative importance of a place regarding the region that surrounds it (CHRISTÄLLER, 1966).

According to Christaller (1966), the central goods and services are necessarily produced and offered in few places. The more specialised these goods and services are, the more concentrated in few centres they will be, or, in other words, based on the characterization adopted by the author, the bigger will be the hierarchical order of these centres. On the other hand, the offer of basic services and goods will be scattered and found in many points in space.

A central place simply emerges because some functions of the city are executed through activities that must be centrally located.

The existence of central places, according to Christaller's theory, is primarily related to factors such as: a) demographic density, considering that the bigger it is the bigger the

¹⁵ Originally published in 1933.

demand for central goods and services will be; b) income distribution: the better it is, the bigger the growth of central places; c) per capita income, also positively related to the force and frequency of central places; d) proportion of the urban to the rural population, since the urban workers give more value to the consumption of central goods than the rural ones do; e) the population's level of education and culture, which raise the demand for more specialized and sophisticated goods; f) transport system: the better the conditions and the smaller the expenses with transportation, the bigger the central places' propensity to grow.

In order to understand the formation of a hierarchy of urban centres it is vital to consider the question of the necessary minimum scale to produce any goods, called by Christaller "critical limit" or "limit of demand" The bigger the specialization of some goods or services, the bigger the minimum scale that justifies, in economic terms, its offer in a certain location, which will determine a central place.

Concurrently, there is also the notion of "scope of goods", which is directly related to the size of a central place and is associated with the maximum distance the consumer is willing to cover to obtain a certain kind of product or service offered in that centre. The scope is determined by characteristics such as size and importance of the location; spatial distribution of the population; amount the consumer is willing to spend on the goods; subjective economic distance; type, quantity and price of the goods offered in the place. The economic distance is determined by the cost of the freight, insurance and storage, time and loss of weight in transit. As to the transportation of passengers, it is determined by the cost of transportation, the time required and the discomfort of the journey. (CHRISTÄLLER, 1966).

Jane Jacobs, in her book *La economía de las ciudades*¹⁶, from 1975, reinforces and improves Christaller's idea of centrality, as she emphasises the importance of the diversification of activities for the urban growth, through the emergence of externalities. Aiming at understanding why some cities grow while others are stagnated, she ended up developing a theory of urban economic growth.

In her studies, the author defends the idea that the city grows through diversification and gradual differentiation of its economy, coming from the initial exportation work and its

¹⁶ This book was translated from *The Economy of Cities* published in 1969.

providers. This is the idea of the city's epigenesis, analogy made by the author based on the existing debates about history evolution.

Jacobs (1975) develops the notion of two synchronised systems of reciprocity. The first is related to the generation of exportations and the second to the substitution of importations. In the absence of one of them, the whole system fails and the city becomes stagnated.

According to the first system, when a city's exportation raises the local economy also grows. The progress of the local economy is possible because the growing exportation work provides more importations to the city.

The process of development of the urban economy continues if the cities, as they grow, substitute the importations through their internal production, liberating resources to import other things. Thus, the second system of reciprocity begins, more complete than the first one: a city begins to produce its importations, being able to substitute many of them. By doing this, it is capable of generating more exportation, and so forth. The whole process generates the expansion of the city's total economic activity, being considered the main cause of its economic growth.

It is important to note that the more local companies there are in a city, the more opportunities for different kinds of exportation will emerge. Likewise, the more diversified the local economy is, the bigger the number of potentially exportable products. This economic growth could be associated with the formation of a central place, capable of offering varied goods to the detriment of other cities, which, in contrast, become less important and less central.

Thus, Jacobs emphasizes the thesis that the development of cities cannot be explained simply by their location or other specific factors. Their existence and the origin of their growth are found within themselves, in the processes and in the systems of growth that take place within them.

3.1 Centrality and Money

Regarding the exposed theories and having the post-Keynesian approach as background, it is suitable to evaluate the role of the financial system (money) and the liquidity preference in

the construction of a region's centrality and, consequently, in the local activity. Crocco, Calvante and Castro (2006) have studied this relationship and concluded that a certain area's centrality works as an important incentive to the banks' locational decision. Since the financial system is not passive, this fact tends to improve the development of a particular place. The authors defend that banks with smaller liquidity preference tend to offer more credit, facilitating the growth of the region where they are immersed.

Taking this thought further, the authors claim that a bigger centrality should encourage the diversification of secondary and tertiary sectors, since it implies a bigger offer of central goods and services. Thus, the alternatives of investment to banks are expanded, once the diversification of their portfolios is made possible. Consequently, a reduction in the liquidity preference is observed in these institutions. On the other hand, the businessmen in this situation also reduce their liquidity preference. Therefore, a bigger diversification, provided by more centrality, generates externalities which may be incorporated by the firms, reducing uncertainty in the place. This contributes to the attraction of both non-financial and financial. It is important to remember that it is a cumulative process. The authors conclude their work claiming that this is a central difference between a central place and its surroundings or a peripheral region and that it contributes to reinforce the regional disparity. The bigger the centrality of a region the bigger the liquidity preference in its surrounding – which, for not offering the central goods and services, becomes less attractive to the financial and non-financial institutions. Such a fact hinders the diversification of the secondary and tertiary sectors in the cited region, perpetuating the regional income difference.

The spatial inequality of development is inherent to the logic of reproduction of capitalism itself and reflects the law of capital movement in space. According to Crocco, Cavalcante and Castro (2006), it is imperative to recognise that the financial system plays a role in this process. It interferes with the distribution/concentration of the other types of services, as well as with the productive diversification of a region. In this sense, the financial system cannot be considered as a mere consequence of the evolution of a region's economic activity.

4. CONTRIBUTIONS TO THE LOCATION THEORY

From the beginning of the XIX century to the period of World War II there was a predominance of the German scholars in the development of the Location Theory – particularly of authors such as von Thünen, Weber and Lösch (BLAUG, 1979).

In the post-war period there were other theorists, among whom we can cite Walter Isard (1956 and 1960), considered the “father” of regional science. This author synthesised the axe of the fundamental theories in his work *Location and space economy: a general theory relating to industrial location, market areas, land use, trade, and urban structure*, from 1956, in an effort to make the German tradition available to economists from other areas – this is the way *Regional Science* emerged.

Isard’s work ended up drawing attention to some fragilities of the neoclassical economy. The importance of the concepts of indivisibility and increasing returns became gradually more evident to explain the spatial phenomena, especially the agglomeration economies (ROLIM, 1998).

From the 80’s onwards, some of the ideas presented in the traditional models of industrial location were recovered by economists, who turned to geography. Many names were associated to the movement, called New Economic Geography, among which we can cite Paul Krugman, Masahisa Fujita and Anthony Venables (MARTIN, 1999b).

Krugman aimed at developing a model that intended to answer the questions “why” and “when” does the industry become concentrated in some regions, leaving the others relatively without development? In order to do it, he turned again to the question of increasing returns and agglomeration, based on elements of Myrdal’s theory of cumulative causation (1957).

His model is based on the interaction of three factors: increasing returns of scale, transportation costs and demand. Due to the existence of economies of scale in the production, the producers are encouraged to concentrate on a limited number of places, giving preference to the ones where there is more demand or offer of inputs. However, demand will usually be bigger in places where there are more industries. Therefore, there is a circular relation between production and demand, implying that regions that are industrialised first as a result of a historical accident will attract industries from other regions

with less favourable initial conditions (MARTIN & SUNLEY, 1996; KRUGMAN, 1991a and 1991b).

We can say that his work represents a progress in relation to Lösch's, since the latter does not use dynamic increasing returns of scale in his model.

As said by Martin (1999b), the New Economic Geography can be criticised for relying too much on mathematical models, having a rather limited empirical application. According to him, this is due to the fact that the approach is based on the idea of highly abstract, simplified and idealist economic environments. He defends that the works articulate well the role of increasing returns and externalities in spatial agglomeration, but they neglect important forces which influence the geographic distribution of the industry and the economic activity such as cultural, social and institutional factors. Since the world is not ergodic (conception adopted by the post-Keynesians), history should be seen within its entire particular temporal context.

We can add to the elements pointed out by Martin negligence regarding monetary factors. The concept of money in the New Economic Geography follows the neoclassical theory, that is, it is considered neutral in the long-term.

4.1. Missing element in the Traditional Location Theory

Recent studies regarding the location theories have attempted to incorporate additional variation and complexity into the traditional theory (DICKEN e LLOYD, 1990; McCANN, 1999; MARTIN, 1999b; PARR, 2002b; WOOD e PARR, 2005). These investigations are not affiliated with any specific movement (for instance to the Regional Science or the New Economic Geography), and they have not incited the development of a new subject either. Nevertheless, they opened the possibility to think of money as an influential factor to the firms' location, even if indirectly.

Dicken and Llöyd's work (1990), for instance, emphasises the absence, in the conventional theory, of a fundamental element to the firms' locational choice: the capital. The authors defend that for some productive activities the cost of capital may be a crucial element in the

decision-making process, besides the cost of transportation and labour – already broadly discussed in the literature. Thus, even if this factor is not intrinsically spatial by nature, such as land or distance, it is not less critical as far as location is concerned.

According to Dicken and Lloyd (1990), capital is not available in all the locations and does not flow perfectly among sectors or in space. Its mobility differs in relation to the type of capital involved.

The physical capital, in the form of equipment or plant, for instance, once established, it is reasonably immobile as a factor. As it has already been discussed, the authors call this phenomenon industrial or geographical inertia – which is the tendency the industry has to remain operating in a determined place even if the reasons that led it to be installed there no longer exist, due to the sunk costs. Thus, it becomes an important geographic variable in the problem of location.

In contrast, according to the authors, monetary capital is considerably more mobile, although it does not flow freely among the regions or the sectors. Consequently, it is not always available. For instance, in the case of small firms and investors who wish to invest in unusual activities, the existence of financial institutions in the location might be vital to the acquisition of credit, which would not be necessarily available in other situations. In this sense, it is valid to stress the importance of the physical presence of the financial institutions in a determined place as far as loaning is concerned.

Dicken and Lloyd (1990) state that

There may therefore be a strong ‘distance decay’ effect in the mobility of capital for the small business, with financiers willing to put up funds only so long as they can ‘keep a close eye on them’. The presence of specialist lending institutions may well provide a source of capital to these industries, which is to all intents and purposes fixed in its effective location. (DICKEN and LLOYD, 1990:165)

Therefore, the authors conclude that capital, as well as labour, is localised (or regionalized) in its supply and is not mobile. This means that its price or, in other words, the interest rate does vary spatially. However, it is important to say that they do not discuss the locational determinants of financial institutions.

August Lösch, (1954) came to this conclusion as he analysed the behaviour of the interest rate applied by American banks between 1915 and 1975. He observed that they grew as the distance to credit markets in New York increased. He also noticed that uncertainty, risk and transactional costs tended to be higher as the distance between loaners and credit holders increased. The situation derived from the fact that creditors were not able to have a perfect knowledge from distance (MARTIN, 1999a and DICKEN and LLOYD, 1990).

It is possible to infer that Lösch does not consider capital to be ubiquitous in space, despite regarding the necessary raw-material and inputs to production equally available in all locations.

Following the post-Keynesian thought, we can say, thus, that the distribution of the financial system in space interferes with the quantity of money available in a region, being a crucial determinant of the regional dynamic. In this way, the firms should somehow, directly or indirectly, consider the monetary variables in their decision-making process.

In this sense we can say that money (the financial system) has a double locational impact. Directly, due to the fact that the presence of financial institutions in a certain place makes it possible to finance certain undertakings – especially the smaller ones and the ones related to new activities. Indirectly, since it contributes to the development of centrality.

Empirical evidences¹⁷ suggest that the presence of financial institutions in a certain area tends to raise the offer of credit in the region. Such a fact contributes to a local development of activities, improving the economic environment. A cumulative process *a la Myrdal* starts, where a smaller liquidity preference incites the development of centrality, which reduces even more the liquidity preference, reinforcing centrality, and so on.

It is clear, however, that this path will not necessarily be tracked by all the places that count on financial institutions. Firstly, we need to emphasise that the simple presence of a financial institution in a region does not guarantee full availability of credit in the place. Other factors contribute to the bank's willingness to loan, such as the level of uncertainty present in the region, its level of development etc.

¹⁷ See, for example, Alessandrini e Zazzaro (1999).

In addition, for a region to qualify as a central place or to rise in the centrality hierarchy, the development provided by the alleged reduction in the agents' (banks and companies) liquidity preference must culminate in productive diversification. According to Jacobs's thought, which was exposed previously in item 3, the cities grow through their economy's diversification and differentiation and this is what grants the constitution of a central place.

5. FINAL CONSIDERATIONS

The seminal works on the Locational Theory of Industries generally disregard the financial system as a determinant factor in their locational decision. As they follow the neoclassical tradition, they conceive money as neutral in the long term. However, empirical observation supports the belief that, in a capitalist society, money is capable of affecting permanently the economy's accumulative dynamic. Thus, even if the real variables may be considered the main determinants in the location of companies, the monetary variables may (and should) interfere in this process.

The post-Keynesian approach facilitates the understanding of both local and regional financial dynamics. According to this though, the existing structural differences among the various regions in a country lead to a vicious circle (regarding the real and monetary variables) which tends to amplify/perpetuate inequalities. In short, one can say that in the most developed or central places, uncertainty is smaller. Consequently, due to the economic agents' smaller liquidity preference, credit availability is bigger, which encourages investment even more. The contrary happens in less developed or peripheral areas.

In this work, the analyses of the classic location theories, from a post-Keynesian point of view, allowed the development of a discussion able to reveal how the financial system interferes in the firms' location. With this purpose, it was fundamental to consider Christaller and Jacobs's contributions, which evidenced the role that money and the liquidity preference play in the construction of centrality, and consequently in the local attractiveness.

Considering that the financial system plays an important role in the regional dynamic, it is logical to assume that the industries, directly or indirectly, will take the monetary variables into consideration in their decision-making process. On the other hand, the financial system also interferes in the distribution/concentration of the other services as well as in a region's

productive diversification. In other words, it may be a causative factor and not only a consequence of the area's evolution.

The role of the financial system in a region's attractiveness and development lies on the verification that capital does not profit from perfect mobility among geographic spaces or different sectors. It is also related to its contribution to the reinforcement of a place's centrality. We can say, therefore, that money interferes, even if indirectly, in the location of industries.

6. BIBLIOGRAPHY

ALESSANDRINI, Pietro e ZAZZARO, Alberto. A possibilist approach to local financial systems and regional development: the Italian experience. In: MARTIN, Ron (ed.). **Money and the space economy**. Londres: Willey, 1999.

AMADO, Adriana. A questão regional e o sistema financeiro no Brasil: uma interpretação pós-keynesiana. **Estudos econômicos**, v.27, n.3, p.417-40, 1997.

BLAUG, Mark. German hegemony of Location theory: a puzzle in the history of economic thought. In: **History of Political Economy**, 11 (1), April, 21-9, 1979.

CAVALCANTE, Anderson; CROCCO, Marco; JAYME JR, Frederico. Preferência pela liquidez, sistema bancário e disponibilidade de crédito regional. In: CROCCO, Marco e JAYME JR., Frederico (Org.). **Moeda e território: uma interpretação da dinâmica regional brasileira**. Belo Horizonte: Autêntica Editora, 2006. p.295-315.

CHRISTALLER, Walter. **Central Places in Southern Germany**. New Jersey: Prentice-Hall, 1966.

CROCCO, Marco Aurélio. **Uncertainty, technical change and effective demand**. Ph.D. Thesis, University of London, 1999.

_____. Innovation and social probable knowledge. **Cambridge Journal of Economics**, v. 27, n.2, 2003, p.177-90.

_____ *et al.* **Desenvolvimento econômico, preferência pela liquidez e acesso bancário: um estudo de caso**. Belo Horizonte: UFMG/CEDEPLAR, maio de 2003. (Texto para discussão nº 192)

_____ *et al.* Polarização regional e sistema financeiro. In: CROCCO, Marco e JAYME JR., Frederico (Org.). **Moeda e território: uma interpretação da dinâmica regional brasileira**. Belo Horizonte: Autêntica Editora, 2006, p.231-69.

- _____ ; CAVALCANTE, Anderson; e CASTRO, Cláudio. The behaviour of liquidity preference of banks and public and regional development: the case of Brazil. **Journal of Post Keynesian Economics**, v.28, n.2, 2006, p.217-40.
- DAVIDSON, Paul. Rational Expectations: A fallacious foundation for studying crucial decision-making processes. **Journal of Post Keynesian Economics**, v.5, n.2, Winter 1982–83, p.182-96.
- _____. Uncertainty in economics. In: DOW, S. and HILLARD, J. (eds.). **Keynes, knowledge and uncertainty**. Aldershot, UK: Edward Elgar, 1995, p.107-16.
- DICKEN, Peter e LLOYD, Peter. **Location in space: theoretical perspectives in Economic Geography**. 3rd. Ed., New York: Harper Collins, 1990.
- DOW, Scheila. The regional composition of the money multiplier process. **Scottish Journal of Political Economy**. v.19, n.1, 1982.
- _____. The treatment of money in regional economics. In: DOW, S. (ed.). **Money and the economic process**. Aldershot: Elgar, 1987.
- _____. **Money and the economic process**. Cambridge: Edward Elgar, 1993.
- _____. Uncertainty about uncertainty. In: DOW, S. and HILLARD, J. (eds.). **Keynes, knowledge and uncertainty**. Aldershot, UK: Edward Elgar, 1995, p.117-36.
- _____ & RODRIGUES-FUENTES, C.. Regional finance: a survey. **Regional Studies**, v.31, n.9, p.903-20, 1997.
- _____ & RODRÍGUEZ-FUENTES, C. EMU and the regional impact of monetary policy. **Regional Studies**. V.37, n.9, December/2003, p. 969-80.
- FEIJO, Carmem Aparecida. Decisoes empresariais em uma economia monetaria de producao. In: LIMA, G.T., SICSU, J. E PAULA, L.F. (Org.), **Macroeconomia Moderna: Keynes e a economia contemporanea**. Rio de Janeiro: Campus, 1999, p. 109-32.
- FERREIRA, Carlos Maurício C. **A evolução das teorias clássicas da economia espacial: suas contribuições para a análise de concentração das atividades**. Belo Horizonte: UFMG/Cedeplar, 1975. 318p. (Tese professor titular de economia)
- _____. As teorias da localização e organização espacial da economia. In: HADDAD, P. R. et al. **Economia Regional**. Fortaleza: BNB, 1989. p.67-206.
- FIGUEIREDO, Ana Tereza Lanna. **Padrão locacional e especializações regionais da indústria mineira**. Belo Horizonte: UFMG/CEDEPLAR, 1998, 144p. (Dissertação de Mestrado).
- HOLLAND, Stuart. **Capitul versus regions**. New York: St. Martin, 1976. caps. 1 e 7.

- HOOVER, Edgar M.. **An introduction to regional economics**. New York: Alfred A. Knopf, 1971.
- ISARD, Walter. **Location and space economy: a general theory relating to industrial location, market areas, land use, trade, and urban structure**. Cambridge: MIT Press, 1956.
- _____. **Methods of regional analysis: an introduction to Regional Science**, Cambridge: MIT Press, 1960.
- JACOBS, Jane. **La economía de las ciudades**. Barcelona: Península, 1975.
- KALDOR, N. The case for regional policies. **Scottish Journal of Political Economy**. v.17(3), p.337-348, 1970.
- KEYNES, J. M. The ex-ante theory of the rate of interest. In: **The general theory and after**. Part II: defence and development. Cambridge, Macmillan, 1971a. (The Collected Writings of John Maynard Keynes, XIV).
- _____. Alternative theories of the rate of interest. In: **The general theory and after**. Part II: defence and development. Cambridge, Macmillan, 1971b. (The Collected Writings of John Maynard Keynes, XIV).
- _____. Mr. Keynes' finance. In: **The general theory and after**. Part II: defence and development. Cambridge, Macmillan, 1971c. (The Collected Writings of John Maynard Keynes, XIV).
- KRUGMAN, Paul. **Geography and trade**. Leuven: Leuven University, 1991a.
- KRUGMAN, Paul. Increasing returns and economic geography. **Journal of Political Economic**, v.99, n°3, p.483-499, jun.1991b.
- LEME, Ruy Aguiar da Silva. **A contribuição à teoria da localização industrial**. São Paulo: IPE/USP, 1982.
- LEMOS, Maurício Borges. **Espaço e capital: um estudo sobre a dinâmica centro x periferia**. Campinas: UNICAMP, 1988, 2v. (Tese de Doutorado em Economia).
- LIBÂNIO, Gilberto de Assis (2000). Resenha de: "Macroeconomia moderna: Keynes e a economia contemporânea". **Nova Economia**, Belo Horizonte, v.10, n.2, p.173-179, dezembro/2000.
- LÖSCH, August. **The economics of location**, Yale University Press, New Haven, 1954. (Originalmente publicado em 1939).
- LÖSCH, August. The nature of economic regions. In: FRIEDMAN, J., ALONSO, W. (Orgs.). **Regional development and planning: a reader**. Cambridge: MIT, 1964.

- MARTIN, Ron. & SUNLEY, Peter. Paul Krugman's geographical economics and its implications for regional development theory: a critical assessment. **Economic Geography**, v.72, n.3, p.259-92, jul.1996.
- _____. The new economic geography of money. In: MARTIN, Ron (ed.). **Money and the space economy**. Londres: Willey, 1999a.
- _____. The new 'geographical turn' in economics: some critical reflections. **Cambridge Journal of Economics**, 23, p.65-91, 1999b.
- McCANN, Philip. A note on the meaning of neo-classical location theory and its usefulness as a basis for applied research. **Papers in Regional Science**, 78, p.323-331, 1999.
- MOLLO, Maria de Lourdes Rollemberg. Moeda, taxa de juro e preferencia pela liquidez em Marx e Keynes. In: LIMA, G.T. e SICSU, J. (Org.), **Macroeconomia do emprego e da renda: Keynes e o Keynesianismo**, Sao Paulo: Manole, 2003, p.451-98.
- MYRDAL, Gunnar. **Economic theory and underdevelopment regions**. London: Gerald Duckworth, 1957.
- NOVAK, Jan e ROMANOWSKA, Hanna. Locational patterns of the food-processing industry in Poland. In: GREENHUT, Melvin L. and NORMAN, George. **The Economics of Location** – volume I: Location. Elgar Reference Collection: International Library of Critical Writings in Economic, vol.42, Aldershot, UK: Elgar, 1995, p.131-44 (previously published: 1985).
- OREIRO, José Luís e de PAULA, Luiz Fernando (2005). **Pós-keynesianos e intervencionismo estatal: uma resposta a Mendonça de Barros**. Disponível em: <http://www.desempregozero.org.br/artigos.php>.
- PARR, John. The location of economic activity: central place theory and the wider urban system. In: McCANN, Philip (ed.). **Industrial Location Economics**, Cheltenham: Edward Elgar, pp.32-82, 2002a.
- _____. Missing elements in the analysis of agglomeration economies. **International Regional Science Review**, 25, 2:151-68, April 2002b.
- PEREIRA, Fabiano. **Cidades médias brasileiras: uma tipologia a partir de suas (des)economias de aglomeração**. Belo Horizonte: UFMG/CEDEPLAR, 2002, 117p. (Dissertação de Mestrado).
- _____. **Economia regional: teoria da localização, estrutura urbana e crescimento regional**. Rio de Janeiro: Zahar, 1975.
- ROLIM, Cássio. **Reestruturação produtiva, mundialização e novas territorialidades: um novo programa para os cursos de economia regional e urbana**. Trabalho apresentado

no Congresso da APDR – Associação Portuguesa de Desenvolvimento Regional, Coimbra, 1998.

SIMÕES, Rodrigo Ferreira. **Localização industrial e relações intersetoriais**: uma análise de *fuzzy cluster* para Minas Gerais, Campinas: Instituto de Economia/UNICAMP, 2003, 198p. (Tese de Doutorado).

WEBER, Alfred. **Theory of the location of industries**, Chicago: Chicago University Press, 1969. (Originalmente publicado em 1909).

WOOD, Gavin e PARR, John. Transaction costs, agglomeration economies and industrial location. **Growth and Change**, 36, No. 1, Winter 2005, p.1-15.