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**REVIEW ARTICLE**

**BOWBAZAR-SINTHI GEMS AND JEWELLERY CORE-ANCILLARY LINKAGE MODEL**

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**ABSTRACT**

The present study attempts to focus on: why several informal localized industries are concentrated in specific geographical clusters and why not in others. In this sense, the study objects to detect the factors that determine location of informal industries in specific spaces, influences of these determinants to localized industry formation, and cost-effectiveness of setting up of production in such spatial clusters. To reveal these, the study is confined to two specific sites of West Bengal Gems and Jewellery industry, namely Bowbazar and Sinti. The sites have been selected on the basis of their importance to the map of the industry by following a ‘core-ancillary’ formal-informal pattern of linkage. The logical argumentation of the study is based on literature support specifically of the classical and new economic geography school, case studies conducted, and the primary survey results. The micro-level field surveys, sampling design and data analysis are based on the standard model approach to avoid spatial homogeneity.

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**INTRODUCTION**

This paper attempts to focus on: why several informal localized industries are agglomerated (Baldwin *et al.*, 2003) in specific spatial clusters<sup>1</sup> in particular geographical domains. It is common to observe that production units in several informal industries are concentrated (Brulhart, 1998) in specific geographical spaces. The consideration of the present study, therefore, concentrates on: what are the factors that determine location of informal industries in particular spaces and how they influence localized industry formation. (Brulhart, 1998) The consideration is strongly based upon the support of literature derived from classical and new economic geography school, verified on the basis of field surveys. To reveal this, the present study is confined to two important clusters of the Gems and Jewellery industry in West Bengal – Bowbazar, which is the ‘core’ in the industry and follows production and labour market linkages with its ancillary spatial location, i.e. Sinti. (Brulhart, 1998) To reveal this, the present study also explores the formal-informal pattern of linkage followed between Bowbazar and Sinti in the form of out-sourcing of production from Bowbazar to Sinti.

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**Methodology of Analysis**

The logical argumentation of the study is based on literature support, case studies and primary survey results. The survey process is exhaustive. The survey is based on qualitative purposive sampling with semi-structured questionnaire and indirect interview method. The micro-level field studies, sampling design and data analysis are based on the standard model approach. The implication is that the selection of any sampling region does not depend on data availability (or non-availability) and avoids spatial homogeneity. The study also assumes that the producing firms within a cluster of the industry are non-homogeneous by nature. However, the spatial distribution of production units of a single industry is cross-sectional, given and known. Sometimes an ethnographic study has been approached due to data non-availability and data non-responses in the sample survey area under the purview of the study.

**The Industry Profile**

Bowbazar market, on BipinBihariGanguly Street, is known for its jewellery shops throughout the Bengal. It is Kolkata’s jewellery “district”, with a wide range of collection of gold and silver ornaments, with beautifully designed and crafted stone settings. For most Bengalee families, a visit to Bowbazar is a must whenever there is a wedding in the family. There are different shops – however, Bowbazar has become renowned for

its jewellery hub ("Bowbazar Market", Kolkata information Retrieved, 16 August, 2007).

According to Bangiyo SwarnaSilpiSamity, the Owners' Association in West Bengal, Bowbazar and the nearby region (including Garanhata, Ankurhati, Latupara, Hatibagan, Barabazar, Maniktala) in Central Kolkata has appeared as the center or 'core' location of the industry in West Bengal. The sales outlets are mainly situated in B. B. Ganguly Street in Bowbazar, along with in Hatibagan and Shyambazar area. These run in the formal sector of the industry. However, formal-informal linkage is a significant feature of the location – linkage appeared with its hinterland area and other linked location, namely Domjur in the Howrah district.

Chennai, Hyderabad, Coimbatore etc., and even to other countries, especially to the middle-East Asian countries and Nepal.

About 10-12 thousands labourers are operating in the location. The skilled and semi-skilled labourers come from the districts of North 24 Paraganas, Howrah, Hooghly, West Midnapore, even from Nepal. Circular migration becomes a common feature here. The informal work-sites in Sinthi function as ancillary production units of the formal sector of Bowbazar and they produce according to the work orders provided by the formal sector. Retail selling does not take place largely. In this way, Sinthi in North Kolkata performs as an ancillary cluster to Bowbazar.



In the labour market, Bowbazar attracts skilled labourers of Domjur – hence Bowbazar acts as a 'core' to attract skilled artisans. In the product market, informal labour in Bowbazar is directly engaged in the production units of the backyard/shop-floor of the formal retailing units. Additionally the formal retail units engage informal labour through sub-contracting with spatially separated cluster from the formal retailing units of Bowbazar. In this way, Bowbazar cluster in Central Kolkata is linked with the production units of Domjur and both have appeared as important and traditional clusters in the entire Eastern India.

Sinthi in North Kolkata has appeared as a separate cluster in the last 35 years. The location is situated near Kolkata (about 30 minutes from Bowbazar) and is near Dum Dum railway junction (only 10 minutes by roadways) and Dum Dum and Nowaparametro railway. About 250 production units are operating in the main site of Sinthi, others are operating in the hinterland spread up to Nowapara. The production is mostly export-oriented. The producers purchase raw gold from Bowbazar and other raw materials from local market at Barabazar. Often producers sell their finished products directly to Kolkata or they export the products via Kolkata to large cities of other states in India like Delhi, Surat, Mumbai, Pune,

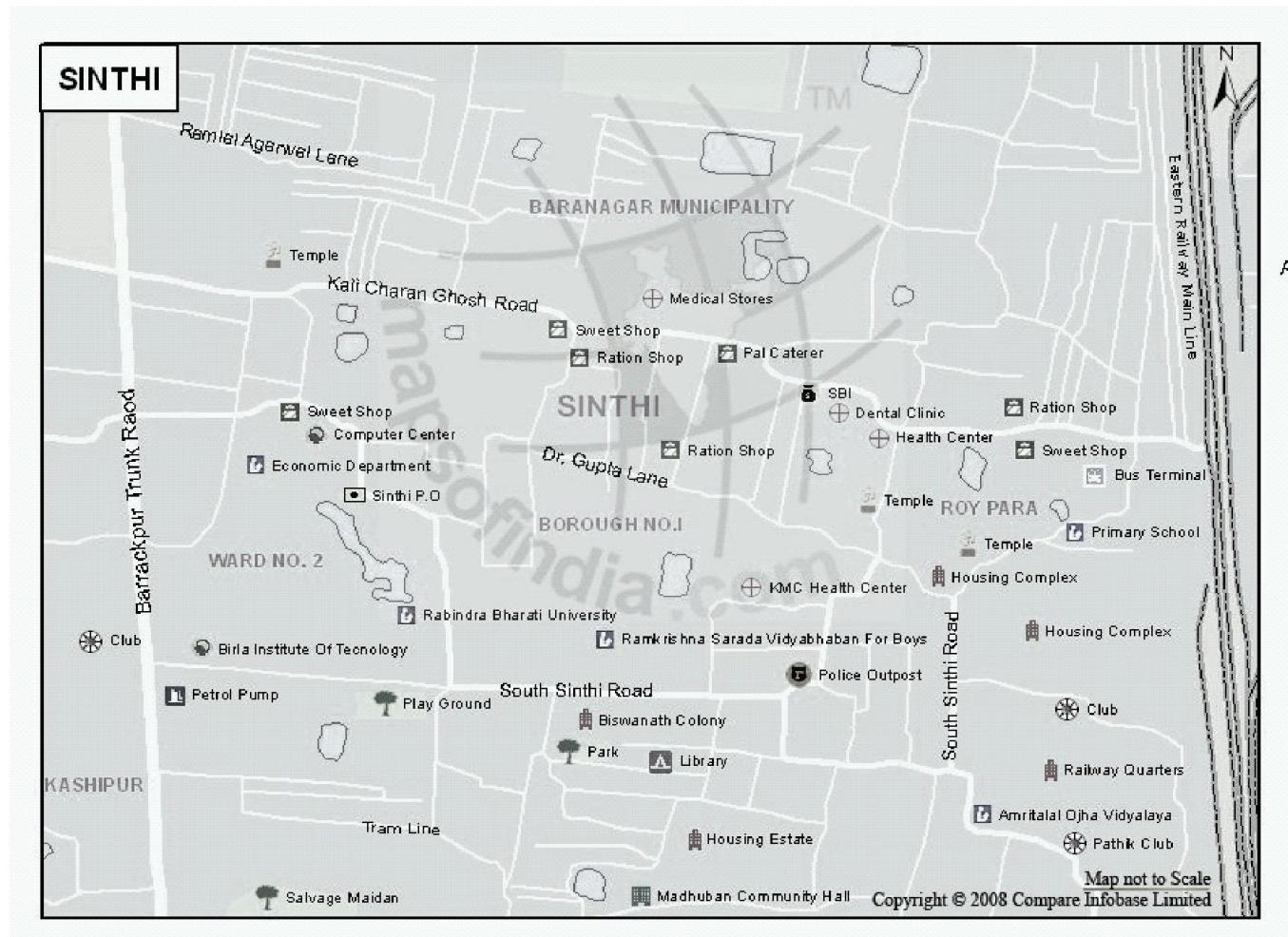
### The Classical Syntax

The theories on location economics refers that industries do not develop arbitrarily. There are significant economic factors that influence formation of a cluster of industries and businesses in particular spaces. In other sense, the theories explore the logic and science behind: why certain industries emerge and grow in specific geographical locations and why not in others. It may be referred that the enterprises in one location within a cluster with repeated transactions among themselves promote better coordination, trust, informal organizational linkage between enterprises, efficiency, effectiveness, flexibility, formal management linkages in partnerships and alliances, and many others. All these promote sustained spatial bonding among the production units and businesses within a specific geographical location.

However, it is not a very good explanation for successful localized industry formation. To examine the issue on the basis of literature support, we may start with Alfred Marshall (1890, 1892), one of the early contributors in the literature of location economics. (Brulhart, 1998) Alfred Marshall (1891) in his 'Principles of Economics' has referred the idea of "industrial district". To Marshall, an "industrial district" means an area (a

district) where concentration of firms has settled down in a particular industry or in a group of industries. In this sense, the idea of "industrial district" does not simply refer to a "localized industry" but the idea refers more than it. Usually a "localized industry" is an industry concentrated in certain geographical spaces. But an "industrial district" refers concentration of firms in an industry (or a group of industries) has settled down.

the clusters have expanded in the peripheral areas of Barabazar, Garanhata, Ankurhati, Latupara and many others in case of Bowbazar and the hinterland up to Nowapara in case of Sinthi. When the location became incapable to expand horizontally, it searched new locations in Shyambazar and Hatibagan area even in case of Bowbazar. In the last three decades, Bowbazar has made further horizontal expansion by formation of its new



To refer Marshall, one of the chief causes behind formation of these two localized industrial clusters in Bowbazar was the "patronage of a court" factor - the richer people of the adjacent area assembled there to make a demand for ornaments of especially high quality almost before 180-200 years, which attracted skilled workers from distance areas (North and South 24 Paraganas, East and West Midnapore, Hooghly, and the hinterland of Howrah district) to work in the cluster industry for higher wages and better work conditions. For these, firms attempted to settle down. In case of Sinthi, incapability of Bowbazar location to expand horizontally acted as a strong factor behind the formation of Sinthi location.

Once such localized industries are developed, trading functions of the spatial location are developed. Then it becomes stochastic that rent becomes higher in the central sites of the location. This makes the production units to 'congregate' in the outskirts and neighbourhood of the area with physical availability of raw materials at the local level. This has happened in Bowbazar and Domjur long years' back for which

ancillary cluster in Sinthi in North Kolkata and is operating strong trading relations with Sinthi. (Brulhart, 1998) To Marshall, this 'primitive localization' is transformed into 'industrial district' in the long run both in Bowbazar.

With specialized skills, high division of labour has appeared within the firms due to differentiated skill possession by different individuals with differentiated abilities and knowhow. This has led to product specialization (particularly of light-weight gold jewelleries in Bowbazar and heavy-weight jewelleries in Sinthi) and innovation in the area with labour-intensive techniques of production. This works well into the well-established social (capital) networks (Brulhart, 1998) with well-developed bonding and tie-ups at the local level. In this way, the localized industry has offered "a constant market for skill", particularly when the production of the "industrial district" is skill-based. The employers are assured with supply of skilled workers since there is always a supply of skill in the local market (even through spatial labour mobility).

When a number of firms are concentrated in a particular area within a localized industry, it is likely that several other subsidiary firms are built in the neighbourhood areas who supply necessary inputs and services. This has happened in Barabazar in case of Bowbazar and Baranagarin case of Sinthi. An industrial atmosphere is built in the entire area. The producing firms accept this business stimulus and made faster expansion and growth of the localized industry. The factor has been strong in Bowbazar. The industrial leadership has been captured by those firms who are able to initiate or follow these changes appearing in the market.

To refer Scitovsky (1954), the Marshallian “information spillover” has affected firm’s production function in both of the clusters. To this, an increase in industry output increases stock of knowledge through positive information spillovers for each firm - which leads to an increase in output at the firm level. The “pure” external economies appear due to Marshallian “local market for specialized inputs” and “labour market pooling”, which is consistent with imperfect competition with some market power of influential local producers, required for internal economies. (Brulhart, 1998) The small firms have used this to access the growth momentum (due to ‘localized spillover’ (Fujita, (1989)) of the location and have successfully made informal production.

To the revised Central Place Theory (Fujita, 1989) by Losch, any spatial economy would tend to be dominated by a central primal city, the hinterland of which would be characterized by smaller settlements and alternating areas of industrial concentration and dispersion. This concentration and dispersion has acted as a strong stimulus regarding the spread of the localized industry of Bowbazar and Sinthi from their central site to the hinterland by making the region almost an “industrial district” through smaller settlements and alterations over time. (Fujita *et al.*, 1999)

In the Big Push theory of Rosenstein-Rodan (1943), the solution to the insufficient size of the local market is referred to a co-ordinated (government-led) expansion of investment – hence big push enters into. This makes firms to reap the benefits of economies of scale, thereby promoting industrialization. Recently, a government-initiated jewellery hub is under planning near Nowapara. However, expansion of Sinthi from its main site to the hinterland has to be captured through privately-initiated industrial activity mainly. Much later, Becattini (1889, 1990) has referred that government and/or government-sponsored institutions are not able to create an industrial organization with collective efficiency – rather a minimum concentration of privately-initiated industrial activity may involve. This explains the present growth of Sinthi location.

## V. The New Economic Geography Synthesis

The factors behind the formation Bowbazar may be searched for to the arguments given by Krugman. Paul Krugman (1991), one important contributor among the new growth theorists, refers that the geographical structure of any (industrial) economy depends on three key parameters. These are: (1) Transportation costs (Fujita, 1989), (2) Economies of scale, and

(3) Factor mobility. To Krugman, a combination of these factors results in increasing returns at the production unit. Reduced transport costs provide incentives to locate plants close to large markets (it is worth to refer that Bowbazar enjoys high transport cost advantage among the two clusters since it is near to both Howrah and Sealdah railway station and Sinthi near Dum Dum railway station). Labour in-mobility becomes then easier and a regular phenomenon due to the presence of well-developed transport and communication in the large markets - labour mobility (Fujita *et al.*, 1999) appears from the “traditional” sector in the hinterland areas of the adjacent districts (North and South 24 Paraganas, Howrah, Hooghly, East and West Midnapore) considering labour-intensive traditional methods of production to the “modern” sector of the city which employs modern and improved technologies in case of Bowbazar and Sinthi.

A circular causation of all these appears there. It provides maximum individual interaction in the informal industrial periphery from the industrial ‘core’. It appears due to the functioning of the four factors: (1) Marshallian labour market pooling; (2) Pecuniary externalities; (3) Variety of non-traded inputs supplied at the local level; and (4) Information spillovers both in product and labour market processes. Here, the Marshall-Arrow-Romer (MAR) externality suggests that an increased concentration of a particular industry (or service) within a specific geographical region facilitates knowledge spillovers across firms, thereby promotes incentives to innovative activity and inter-firm spillovers. However, Jacobs externality and Porter externality suggest that local competition is suitable to extract knowledge externality.

In this way, the functioning of the “spread effects” accrued from the ‘core’ eventually impedes development of the periphery areas through multiplier effect on employment and output and a “relay” function appears through urban hierarchy at the peripherals. The effect is strong both in Bowbazar and Sinthi. This has created an incentive among the producers to establish firms within the localized industry and influences the spatial production structure through its expansion by maintaining a well-established production linkage between the two locations.

The Venables model (1996) starts working herewith - which is much consistent with the Bowbazar-Sinthi linkage. The model assumes that mobile workers spend their income at destination.<sup>2</sup> This causes a circular causation in locational decisions at destination. This immobility of income at destination has executed the Home Market Effect (HME) by which the geographically concentrated Gems and Jewellery industry of Bowbazar has generated an additional demand for the products, particularly in the peripheries of this large urban locations. This has attracted a large number of imperfectly competitive firms who out-source their work orders to the small and medium scale producers of the adjacent Sinthi location. This they do in order to make timely delivery of the produced goods to their customers. In this way, Sinthi maintains a strong product market linkage without any labour market linkages with Bowbazar since few years back. The effect is so strong that Sinthi works as a ‘ancillary’ to the ‘core’ of

Bowbazar by formation of strong exchange linkages in product and labour market processes and has appeared as a separate cluster in the map of Bengal Gems and Jewellery industry.

Fujita and Thisse (1996a, 2000b) give stress on increasing returns, externalities and spatial competition of almost oligopolistic in nature – which is almost the case of the big houses of Bowbazar. Here competition is restricted by distance – a firm is to compete only with its neighbouring firms. Spatial competition is therefore linked with strategic behavior by the firm – which is reflected in the changing pattern of advertisement of the big brands in Bowbazar. Fujita and Thisse consider non-homogeneity of spaces and internal economies of scale in production (no external economies) as two reasons for urban agglomeration. However, in case of Bowbazar, firms are both specialized and diversified.

To reiterate Anas, Arnott and Small (1998), agglomeration of production units in the location of Bowbazar has appeared due to the decline in average costs as more production occurs within this specified geographic area. In other words, it relies strongly upon increasing returns to scale - considering internal and external economies of scale. However, the concept of agglomeration in the literature of Henderson (1974a, 1977b, 1988c, 2000d), Tabuchi (1998) and Black and Henderson (1999) is solely due to positive external economies of scale and are industry-specific - there are positive spillovers for which a firm of a particular industry locates in a particular location where other firms of the same industry are located.<sup>3</sup> These may be due to information sharing, labour pooling and existence of specialized suppliers, as referred earlier. What is crucial is that this further agglomeration of production units has caused further expansion (hence growth) of the existing location industry in Bowbazar.

The implication is that industry-specific external economies of scale can rationalize city system. Black and Henderson (1999) give stress upon positive externality. However, in reality, cities are both specialized and diversified (Glaeser *et al.*, 1992). Each industry has its optimum size - sub-optimization of a city leads to welfare-improving profit-opportunity based mobility of entrepreneurs (Becker and Henderson, 2000). The argument provides a strong explanation of Bowbazar-Sinthi linkage.

## Conclusion

The theories on location economics refer that industries do not develop arbitrarily. The present study is an effort to explore factors influencing localized industry formation executing a formal-informal linkage appearing in the Bowbazar and Sinthi – the two important sites of the Gems and Jewellery industry in West Bengal. This exploration is based upon the classical syntax and new economic geography synthesis of Location Economics literature. To analyze why and how economic organization of these two particular localized industries are formed, the study is framed within the broader context of Regional Economics<sup>4</sup> to include spatial dispersion and coherence of this particular informal industrial activity in West Bengal. Further, uneven distribution of agglomerated production units across the spaces is also attempted in

references to the evidences of several micro-level field studies and survey results.

## Appendix:

1. The term ‘agglomeration’ of firms refers to decline in average costs in production as more production occurs within a specified geographic area (Anas, Arnott and Small 1998). In other words, it relies strongly on increasing returns to scale, considering internal and external economies of scale.
2. Cluster of enterprises is a geographical concentration of micro, small, medium and large enterprises producing same or similar type of goods and services.
3. As referred by Brulhart (1998), while concentration analyzes location across space of a few well-defined sectors, agglomeration analyzes location across space for a larger part of economic activity, and specialization deals with share of a particular location in specific industry in comparison to share of other locations in that industry.
4. Ref:Saha, Sukanta (2015), Spatial Concentration: Specificity and Informality, Journal Social Vision, Vol. 1 Issue 4 Jan-March.
5. Ref: Saha, Sukanta (2015), Formal-Informal Linkage and Tie up of Informal Labour: A Study Focused on Gold and Jewellery Industry, West Bengal, India, The International Journal Of Management, April Issue 2015.
6. Though the analysis of location started much before than Marshall with ‘monocentric city model’ of Von Thunen (1826) (Von Thunen’s “Der Isolierte Staat in Beziehung auf Landschaft und Nationalökonomie”).
7. Ref: Saha, Sukanta (2015), Argument for Informal Cluster Industry Formation: The Case of Sonthi Gold & Jewellery Industry, Journal DeshVikas, Vol. 2 Issue 1 April-June.
8. Social capital is social organizations (such as trust, norms, reciprocity, co-ordination, interactions belongingness and networks) between producers and workers that facilitate better co-ordinated actions.
9. To Scitovsky (1954), incorporation of imperfect competition initiates internal economies of scale that implies market power. Scitovsky distinguishes between “pure” (technological) and “pecuniary” external economies. The former affects firm’s production function (e.g. Marshallian “information spillover”).
10. In 1957, Gunnar Myrdal introduced the concept of circular or cumulative causation. In this, once a region (or country) takes lead in the process of economic development, positive external economies of scale in the region (or country) appears there – which ensures that the location will become an attractive place to invest and more attractive location for the labourers to work. The existence of strong localized spillovers leads to the establishment of a core in the region with large market and a periphery (Dicken and Lloyd, 1990).

11. The Christaller model of central place is, however, inductive rather than deductive in the sense that the model is primarily based on observations rather than exploration of any schema constructed from first principles. To Parr (2002), the Loschian approach is completely deductive and a microeconomic foundation has been approached to understand the urban system. It shows that industrial concentration and urbanization may arise independently of local peculiarity and particularity.

12. In the Big Push theory (Rosenstein-Rodan, 1943), the solution to the insufficient size of the local market is referred to a co-ordinated (government-led) expansion of investment - hence big push enters into. This enables firms to reap the benefits of economies of scale, thereby promoting industrialization of a backward region. Without such a big push, the backward periphery cannot catch up with the core.

Much later, Becattini (1989, 1990) has raised the issue that government and/or government-sponsored institutions are not able to create an industrial organization with collective efficiency - rather a minimum concentration of privately initiated industrial activity may involve.

13. The reference of Transport Cost Minimization may also be attributed to Alfred Weber in his famous Weber Triangle (1929) referred in "Über den Standort der Industrien". To Weber, the optimum location for the production of a commodity is based on fixed location of the market and two raw material sources – which geographically form a triangle. This minimizes cost by reducing transport cost of raw materials and cost of supplying the product to the market, thereby a least-(transport) cost is formed.

14. Ref: Mabogunje, 1970; Arizpe, 1981; Djajic, 1986; Borocz, 1987; Portes & Borocz, 1987; McKee & Tisdell, 1988; Fawcett, 1989; Massey, 1990; Kritz *et al.*, 1992; Martin, 1992; Gurak&Caces, 1992; Appleyard, 1992; Massey *et al.*, 1993; Bocker, 1994; Bohning, 1994; Martin & Taylor, 1996; Rotte *et al.*, 1997; Waldorf, 1998; Levitt, 1998; Massey, 1999; Taylor, 1999; Vertovec, 1999; Olesen, 2002; De Haas, 2003; van Dalen *et al.*, 2005.

15. Ref: Saha, Sukanta (2015), An Informal "Industrial District" Syntax: From Marshall to Krugman, *Splint International Journal of Professionals*, Vol. II, No.-5.

16. Ref:Saha, Sukanta (2014), 'An Inquiry into the Location of Industries', in Chatterjee, K. and A. Pal (ed.) 'Emerging Issues in Business and Economics in India', Rachayita, Kolkata.

17. Following Nijkamp (1986) and Mills (1986), the field of Regional Economics covers the analysis of spatial dispersion and coherence of economic activity.

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