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Economic Benefits and Drawbacks

Of Cities and their Growth Implications

by

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Economic Benefits and Drawbacks of Cities and their Growth Implications

ABSTRACT

Recent trends in the growth of cities particularly in developing countries (and especially in India and China) are identified. Beneficial and negative sharing mechanisms influencing the growth of cities are examined. Economic benefits of agglomeration arise not so much from the type of economic goods available in a city location (such as common property or local public goods) but from the enhanced operation of processes of economic exchange. Two theoretical implications of the growth of cities are considered, namely: (1) city growth results in growing inequality of income and wealth within the city and (2) a city will expand beyond its optimal size. Nevertheless, the growth of cities is linked with increased levels of per capita income nationally. Worldwide growth of cities is connected with increasing globalization and with rising income inequality.

Keywords: agglomeration economies, China, city-sizes, common property, economic growth, globalization, income distribution, India, open-access resources, quasi-public goods, spillovers.

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1. Introduction

Increased spatial clustering of economic activity, rising dominance of urbanization and the development of large cities are positively correlated with modern economic growth. Baldwin and Martin (2004 p. 2673)observe that "spatial agglomeration of economic activities on the one hand and economic growth on the other hand are processes difficult to separate. Indeed, the emergence and dominance of spatial concentration of economic activity is one of the factors that Kuznets associated with modern economic growth". In most economies (especially developing ones), levels of per capita income are higher in cities and urban areas than in rural ones.

There is considerable evidence also that the rate of reduction in the incidence of poverty is positively associated with the rate of economic growth in developing countries (Pernia and Quibria 1999). Therefore, Aristotelian logic implies that the growth of cities and of urbanization is positively correlated with a reduction in the incidence of poverty.

Duranton and Puga (2004, p. 2065) attribute the clustering of people in cities and towns to agglomeration economies or 'localised aggregate increasing returns' and regard "cities as the outcome of a trade-off between agglomeration economies and localised increasing returns and the costs of urban congestion'. While much progress has been made in identifying factors that help to foster the growth of cities and urban centres, there is still scope for further study of the microeconomic mechanisms involved. (Duranton and Puga, 2004, p. 2109) and for adding to the list of mechanisms.

After providing background data on the development of cities and trends in urbanization globally and particularly in developing countries (especially in India and China) examines theoretically economic consequences of the growth of cities, the policy implications of

these and interconnections between the growth of cities, economic development and globalization. The initial emphasis in this article is on identifying sharing and spillover mechanisms that foster the growth of cities and urban centres. The economic benefits and disadvantages for businesses, consumers and employees are considered. Then there is an examination of the extent to which the outcomes and commodities produced in cities by these mechanisms can be related to a standard economic classification of commodities. Subsequently, a simple theoretical discussion of the development of cities is presented. The possible impact of the growth of a city on income distribution within the city is considered, a static model of city growth is outlined and its implications for economic growth generally are considered. In concluding, some observations are made about economic globalization, growth and the development of cities and vice versa.

2. Some Data about the Development of Cities and Urbanisation, especially in India and China.

It is well known that increasing urbanization and the growth of cities is closely associated with economic development, as judged by most current interpretations of the term. This is partly a consequence of changes in the structure of economies that occur with economic development, such as the rising relative importance of manufacturing and especially tertiary industries as contributors to economic production. The process is also facilitated by technological changes in transport which make it easier for urban populations to be supported by commodities produced in places quite distant from urban centres.

The *2007 Revision of World Urbanization Prospects* (United Nations 2008) confirms the continuing and rapid process of urbanization globally. This process has largely run its course in more developed areas but is occurring at a rapid rate in less developed areas. The United Nations (2008, p. 1) predicts in the period between 2007 and 2050, world population will rise from 6.7 billion to 9.2 billion. At the same time, the world's urban population is predicted to increase from 3.3 billion to 6.4 billion. This means that the percentage of the world's population living in urban areas will rise from approximately a half to just over two-thirds. According to the predictions of the United Nations (2008, p. 1)

"most of the population growth expected in urban areas will be concentrated in cities and towns of less developed regions." Asia will experience the greatest increase in urban population of any geographical region. Its urban population is projected to rise by 1.8 billion.

It is sobering to learn that China and India are expected to account for around one-third of the increment in the world's growing urban population in the next four decades. The United Nations (2008, p. 8) states that "increases in the world urban population are concentrated in a few countries, with China and India projected to account together for about a third of the increase in urban population in the coming decades" Initially, the growth in China's urban population is expected to exceed India's but in the period 2025-2050, the growth in India's urban population is predicted to outstrip China's. Globally, "in 2050, China will still have the world's largest population (1 billion) [closely] followed by India (0.9 billion)" (United Nations, 2008, p. 8). However, the India subcontinent (by a wide margin) has the largest urban population in the world.

According to the predictions of the United Nations (2008) the number of large cities, will increase considerably in the coming decades. An increasing proportion of the world's population will level in megacities (the population of which is 10 million or more) and in cities with 5-10 million inhabitants. In 2007, there were 19 megacities but by 2025, the number is expected to rise to 25. In 2007, 11 of these megacities were in Asia and this is predicted to rise to 16 in 2025. This means that over half of the world's megacities are in Asia.

In 2007, India had three megacities: Mumbai (19 million), Delhi (15.9 million) and Kolkata (14.8 million). Chennai will be added to this group by 2025. In Bangladesh, Dhaka is already a megacity and in Pakistan, Karachi is. It is anticipated that Lahore will join this group by 2025. In China, the megacities in 2007 were Shanghai (15 million) and Beijing (11.1 million). It is expected that Shenzhen will be added to China's list by 2025. Therefore, India (and particularly the Indian subcontinent) has more megacities than China.

Table 1 provides information on the population of India's ten major cities based on their population in 2005 and that expected in 2010. The last column of this table shows the percentage change in their population levels between 1990 and that anticipated in 2010. It can be seen that all have grown continuously but at different rates. In the 20 year period, all (except Kolkata and Chennai) recorded a greater percentage increase than the increase in India's urban population. According to the United Nations' Population databases, India's urban population was 640.437 million in 1990 and is expected to be 853.34 million in 2010. This is an increase of 48.15%. It can be seen from Table 1 that most of India's largest cities had population increases significantly in excess of this percentage. The fastest rates of growth were recorded by Surat, Delhi, Pune and Bangalore with Ahmadabad not far behind.

Table 1: **The population of India's ten major cities and the percentage change in their populations between 1990 and 2010**

Other cities	1990	1995	2000	2005	2010	% change 1990-2010
Mumbai	12.308	14.111	16.086	18.202	20.072	63.08
Delhi	8.206	10.092	12.441	15.053	17.015	107.35
Kolkata	10.89	11.924	13.058	14.282	15.577	43.04
Chennai	5.338	5.836	6.353	6.918	7.559	41.61
Bangalore	4.036	4.744	5.567	6.465	7.229	79.11
Hyderabad	4.193	4.825	5.445	6.117	6.761	61.24
Ahmadabad	3.255	3.79	4.427	5.122	5.726	75.91
Pune	2.43	2.978	3.655	4.411	5.01	106.17
Surat	1.468	1.984	2.699	3.558	4.174	184.33

Source: Based on the statistics of the Population Division of the United Nations (2009) *World Urbanization Prospects: The 2007 Revision Population Base.*

From the above, it is clear that economic aspects of the growth cities will increase in importance in coming decades, particularly in developing countries and especially in Asian countries such as India. Thus many of the issues raised in this paper are of growing relevance to developing countries and to nations such as India and China. With this background in mind, let us turn to the economic analysis of the growth of cities and their implications for economic welfare and national development.

3. Economically Beneficial and Negative Sharing Mechanisms and Spillovers in Cities.

Cities generate many collective and other economic benefits for economic agents present within them because of the sharing of limited space (clustering) and also give rise to some negative economic effects. Not all of the spillover and environmental effects of a city-location are immediately obvious and it is, therefore, worthwhile specifying these. Positive economic spillovers and environmental impacts may dominate and grow in importance until a city becomes very large and then negative impacts may dominate. This pattern, however, may be affected by the composition of economic activity in a city. This may alter as the city grows. Furthermore, measures, such as improvements in infrastructure, may delay the onset of significant external diseconomies.

The economic benefit of a city location will be considered for three groups of economic agents: businesses, employees and consumers. Then the possible external disadvantages of a city location will be discussed.

2.1 Economic advantages for businesses of a city location

Many manufacturing and service businesses experience significant economies from expanding their scale of production. By locating in a city rather than a rural area, these businesses may obtain a larger demand for their product than if they locate in a rural area. There can be a significant home market effect (Head and Mayer 2004, pp. 2633-2644) in some cases from a city location. If the commodity produced by the business can be transported and traded, a city location can make the business competitive in the city as well as in its exports to the countryside.

This is illustrated in Figure 1. There, curve ABC represents the firm's average cost of production relationship which is assumed to be the same in a city as in a rural location. This assumption is subsequently relaxed. Suppose that the firm engages in full-cost pricing. If the business locates in a rural area the demand curve for its product is D_1D_1 and if it locates

in the city it is D_2D_2. In the first instance, the firm's equilibrium corresponds to point B and in the second case it corresponds to point C. If it costs less than EF to transport the product to the countryside, a city location has an overall economic advantage for the firm. However, in many cases the firm's cost curve is lower if it is based in the city rather than in the countryside. Consider some of the reasons for this.
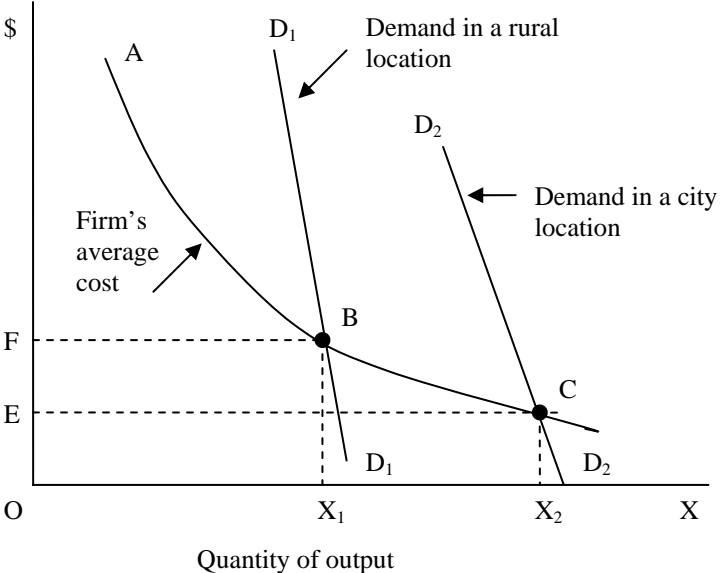

Figure 1: **An illustration of how a local market effect combined with internal economies of scale can favour the location of a firm within a city.**

Cities are often located at the nodes of established transport systems. When a business has to combine inputs from several geographical regions, this can provide a transport cost advantage for a firm that locates at such a node. Also such a location can provide a cost advantage in transporting finished products to other cities. Generally, transport systems are well established between major cities. Consequently, a city location can often assist a firm in gaining profitable sales in other cities. Transport costs to other cities may be lower than from rural areas and communication easier and more frequent than from a country location.

There are some commodities that have to be consumed on site and for which economies of scale are important. These include many forms of live entertainment such as major sporting

and cultural events. Their overhead costs are usually high and more spectacular events can only be profitably staged if there are larger audiences. Large audiences are more easily obtained in large cities than in smaller cities or towns. Similar types of considerations apply to museums, art galleries as well as cultural buildings and precincts even though the enjoyment of these may not be subject to economic exclusion. The per unit cost of their provisions in relation to those enjoying them tends to be lower in large cities.

The cost per unit of providing utilities in cities is usually lower than in areas where users are dispersed. The cost per user is lower because the cost of supplying infrastructure networks tends to be lower the higher is the density of users in a geographical area. Maintenance costs of the networks may also be lower than when users are more dispersed and in some cases (such as the supply of electricity), there can be less transmission loss. Lower utility costs may attract some businesses to cities.

Cities foster greater specialization in production than in rural areas (Rosenthal and Strange 2004). This can also help to reduce business costs. For example, if a firm is located in a city rather than in a rural area, it may find it profitable to buy in, rather than make, many of its components. This reduces costs. Specialized producers (such as service providers) may obtain greater economies of scale in an urban location. Furthermore, buyers may be less subject to hold-up in the fulfillment of contracts (Duranton and Puga 2004, p. 2096) because there is more competition between suppliers in cities. This is because there is usually a larger number of potential suppliers in cities than in rural areas.

Similarly, firms located in cities have a larger pool of labour on which to draw. This can reduce their market transaction costs involved in hiring labour and can facilitate the hiring of more qualified and specialized labour if required. Specialists able to repair complicated equipment are also likely to be readily available, and it may be easier to obtain replacement parts for equipment either locally because of the diversity of supplies available in the city or via import to the city because the city is advantageously placed in relation to transport networks. Consequently, there may be less downtime when equipment repairs are needed

and the cost of repairs may be lower. Similar economic advantages may be obtained from a city location when specialized business advice is required to improve their management.

When a firm is located in a city area, it may have greater access to knowledge than in a rural area. It may become more quickly aware of innovations and promising research and development opportunities due to proximity and networking. Furthermore, once an innovation 'takes-off' this may be quickly perceived and imitated.

There may also be a reduction in asymmetry of information between buyers and sellers due to their proximity in a city. This can have a positive impact on business trading. It is well known that asymmetry of information in market exchange can result in some markets collapsing and that this can cause a Paretian loss of economic welfare. (Akerlof 1970, Varian 1996, Ch. 35)In some cases, a business must locate in a central locality, such as a city, to survive in competition with competitors located there. This is likely to be so for the type of situation depicted in Figure 1. A central location is also favoured given the Hotelling model of the location of businesses and some variations of it (Hotelling 1929, Ottaviano and Thisse 2004, pp. 2573-2575).

Another possible advantage of a city-location for many businesses is the need to carry fewer stocks of commodities. This is not only because with a larger volume of sales, fewer stocks need to be held relative to sales, but stock replenishment may be more rapid in a city because many distributors are likely to be located there.

Frequent transport connections to other cities and regions also means that businesses in cities need to hold smaller stocks both of imported inputs or products used in their business as well as of their product for sale outside the city. Not only is the frequency of external transport links important but since the volume of external trade generated by a city may be large, this can lead to competition of a large number of carriers which can be advantageous to businesses located in a city. This can be expected to result in lower prices for transport.

Several economies of scale can also be achieved in transport as the volume of commodities to be transported increase.

Furthermore, a firm located in a city may suffer fewer sunk costs if it is forced to exit business. Its assets are likely to have a wider range of economic uses in a city than in the countryside. This can also be an advantage of a city location.

2.2   The economic benefits to employees of a city location

Particularly if an employee has specialized skills, a larger market is likely to exist for these skills in a city than in a rural area, depending on the skills involved. There may also be greater competition for such labour in a city and therefore, monopsonistic exploitation is less likely than in rural areas.

In a city, an employee is likely to find it less costly to change employers than in many rural areas. This is because the employee is less likely to have to change his/her place of dwelling if a change of employers occurs. Furthermore, there may be greater job security. Should an employer exit the industry, an employee is likely to find it easier to find alternative employment in the city than in a country location.

A city may also provide greater future employment and income possibilities for the offspring of a family. In addition superior educational opportunities are usually available in cities and employment opportunities are greater than in rural areas.

2.3   Benefits to consumers of a city location

Cities normally provide consumers with a greater variety of consumption goods than rural locations, and prices of commodities are usually kept low by greater market competition in city areas. Those with specialized consumption demands are more likely to be catered for in cities than in rural areas.

Specialized commodities such as specialized medical services are likely to be available in cities but not in the countryside, and a larger amount of local public goods are likely to be available free in cities.

2.4   Economic drawbacks of a city location

As cities grow, economic drawbacks develop. For example, congestion and crowding are liable to increase. Traffic congestion can affect the economic advantages of some businesses of having a city location. It causes the costs of businesses receiving and distributing commodities to rise. It adds to the costs imposed on city residents. Although there may be excellent facilities to transport commodities into and out of the city (such as ports), the cost of accessing them from within the city may escalate as the city grows.

The quality of life in a city may also deteriorate eventually as it grows due to increasing air and noise pollution, loss of open spaces and natural amenities. The incidence of crime may also increase.

While the cost per user of supplying utilities to cities tends to decrease as their size increases, water (and other utilities) may have to be transported form more distant locations or obtained from more expensive sources (such as by desalinization of sea water) and this may add to costs. Unusually, however, residents of cities have greater availability of supplies of water, sewage and garbage services than rural residents.

Rising rents for and prices of land in city areas are also associated with the growth of cities. Owners of city land therefore, appropriate some of the economic benefits of the growth of cities. This tends to dampen their growth. This aspect will be discussed below.

4. Economic Classification of Non-marketed Commodities Provided by a City Location

Non-marketed goods provided by cities are said to be include local public goods(Abdel-Rahmen and Anas 2004, p. 2301). However, identifying the types of non-marketed goods provided by cities has so far proven to be elusive. This could be because many of the shared benefits of city location are not really economic goods or commodities as such. For example, the access to a wider variety of commodities and suppliers in a city is beneficial and can be shared by all city residents. However, it cannot be classified as a commodity. Neither can the benefits of being able to reduce per unit overhead costs because of the larger market in the city than the countryside. Many valuable economic attributes of a city location cannot, according to normal usage, be classified as an economic commodity.

On the face of it, many of the features provided by cities seem to involve common property and this suggests that the theory of the use of common property resources could be relevant, especially theory involving open access (as outlined for example by(Gordon 1954). Efforts have been made to apply this theory to model the growth of cities. For example, Tisdell (1975) modeled city sites as if they are common property for their residents. A problem, however, is that traditional open-access economic theory is based on demand that involves consumptive rivalry in the use of the resource. Furthermore, in this theory the resource (fish, for example) becomes **private property** once taken by an economic agent from the wild or from an open-access environment. This feature does not appear to have an exact parallel in cities, even though there are many shared resources in cities to which there is open access such as roads, parks and shopping malls. Some of these are quasi-public goods (Dupuit 1969). In such cases, once crowding develops some rivalry does occur for the available space but the used space is not appropriated permanently by its users as in the standard economic theory of an open-access resource. Furthermore, use of the resource does not result in it being unavailable for future use, even though it may physically depreciate at a faster rate with greater use. Therefore, while there are some parallels with the standard theory of the use of an open-access resource, important differences exist also.

In addition, as mentioned above, many of the economically valued attributes of cities are not commodities at all and taking advantage of these attributes does not exclude others form doing likewise. In fact, in some cases, the mutual benefits generated in cities increase as more economic agents take advantage of them. There is a positive multiplication (synergetic) impact.

While some of the consequences associated with the standard economic theory of the use of open-access resources have similarities with the theory of the development of cities, there are important differences in the phenomena involved.

5. Theoretical Notes on the Development of Cities.

The growth of cities involves complex processes and there may be differences in their sources of growth. The purpose of these notes is to consider in a simplified way two aspects associated with the growth of cities. These are the impacts of this growth on

> (1) rents (prices) of city land and the residential surplus from being in a city and their consequences for income distribution within the city; and

> (2) shared opportunities and resources within cities and the optimal growth of cities.

5.1   Residential surpluses and land rents in cities

As cities grow, land rents and land values in cities rise. This affects the distribution of income in cities. Those who own city land have an economic gain and rising rents place an extra burden on the landless residents of cities and those migrating to cities. Some of the factors involved in the economic change involved can be gleaned from the simple model illustrated by Figure 2. In this model it is assumed that the supply of city land is fixed and equally valuable everywhere in the city. This means that differential rent is not taken into account but only absolute rent. In Figure 2, line RS, is the supply of land in the hypothetical

city. Initially, the demand for land in the city is assumed to be as shown by the demand relationship AD_1 but subsequently rises to BD_2 as the city grows. As a result, land rent rises from a level corresponding to G per hectare to one corresponding to F per hectare.
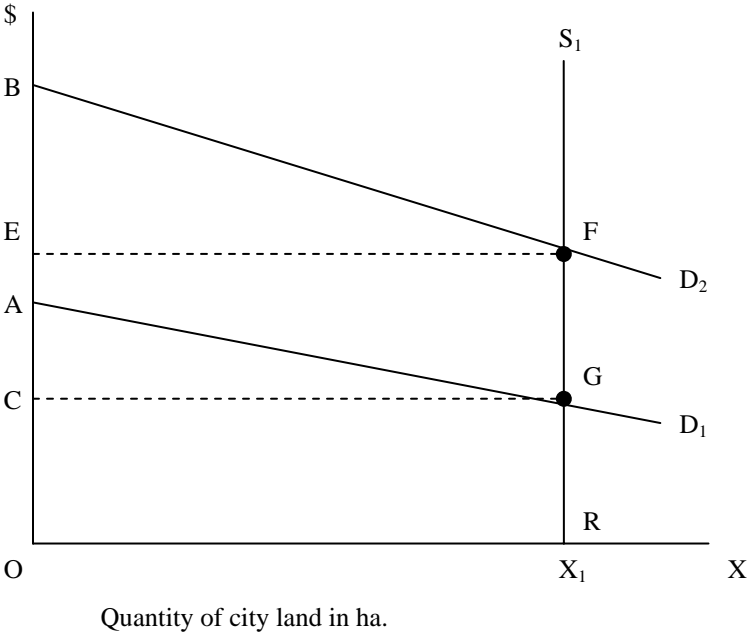

Figure 2: **An illustration of an increase in rent for city land and changes in the surplus of city residents from residing in the city as a city grows**.

In the case shown, the surplus from a city location (which is assumed to be essential for obtaining the benefits of the city's environment) rises as demand for city land increases, that is as the city grows. The surplus rises from an amount equal to the area of triangle ACG to an amount equivalent to the area of triangle BEF. When the demand to be located in the city rises from AD_1 to BD_2. Whether or not this surplus increases or falls depends on whether the demand curve for city land becomes steeper or flatter respectively. It depends on the extent of the differences in demand for such land. As cities grow, there may be a tendency for this inequality to grow because some specialties and activities may become increasingly profitable in relation to others by being located in the city. In the case illustrated, the rent of the city land rises from GR per hectare to FR per hectare when the demand for a city location rises from AD_1 to BD_2.

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As the city becomes very large, it is possible that negative forces (such as negative externalities) could result in the demand for a location in the city declining. This should be reflected in falling rents for city land and reduced land values. The surplus from a city location may also fall but this would require empirical investigation.

This model suggests that the growth of a city is likely to be associated with growing income inequality in the city. As the demand for city land grows, the owners of this land will have an increase in wealth. These (and owners) will probably be mainly a sub group of existing residents of the city. They may also enjoy some of the surplus from residence in the city. Landless existing residents of the city may have an increase in their residential surplus even if they pay extra rent (the case shown in Figure 2) but the distribution of their surplus may become more uneven. It is also possible that those city residents who were originally marginal city dwellers are forced out of the city by rising rents or could become slum-dwellers or street-dwelling people. Compared to equally qualified existing city residents who already own city land, immigrants to the city are at an economic disadvantage because they have to purchase or rent city land in order to reside in the city. Similarly, if they are in business and wish to have a business in the city, they have to rent or purchase city land. This can add to inequality within a city.

There is scope for much more research on the relationship between the inequality of income and of wealth in cities and the growth of cities. A positive aspect of the inequality of wealth in cities is that it may foster private financial support by the wealthy of the arts and cultural activities in cities. A negative aspect is that this growth may be associated with the development of slums and over crowded residential neighbourhoods which can be hotbeds of social dissatisfaction.

5.2   Shared opportunities and resources and the growth of cities

A simple endogenous urban growth theory will now be outlined. This reflects the theory developed by Black and Henderson (1999, 2003) and Henderson and Wang (2007). My

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model assumes that the per capita benefits from a city location rise continually with the growth of the city (which loosely implies increasing economies from growing agglomeration) but that eventually congestion costs (and possibly pollution costs) put a brake on the expansion of a city. It is, however, not essential to assume that economies of agglomeration continue to rise with the growth of the city in order to obtain the results below. Some of the relevant features of endogenous urban growth theories are succinctly summarized in Dimou and Schaffar (2008).

Two factors are commonly believed to limit the growth of cities namely the congestion and commuting costs generated by their expansion and in some cases, increased pollution. The consequences of congestion are easy to model in a simple easy.

In Figure 3, let line ABCD indicate the extra economic benefit that each person obtains from being in a particular city compared to the best alternative location. This is shown to be rising as the size of the city grows. The city's size is indicated by the size of its population. These increasing economic benefits occur because growing shared economic benefits (discussed above) are generated as the city grows. For this simple theory, the benefits are assumed to be equally shared by city residents and to involve non-exclusion and non-rivalry. However, once the city reaches a population of X_1 in the case illustrated, congestion problems start to emerge. The average cost to each city-person of such problems is shown by line ECG and EBF represents the marginal cost of congestion. In the absence of charging for the use of shared space and under static conditions, the city will grow to a size of X_3. At this size (level of city population), the benefit per person of being in the city compared to alternatives is just equal the per unit cost imposed on each person by the congestion in the city. The extra benefits available by being in the city are completely dissipated (lost) as a result of the congestion generated by its growth. The optimal size of the city would be X_2. This is the population level at which the marginal cost of living in the city is just equal to the extra benefit of living there. This case has parallel consequences with the economic theory of the use of open-access resources even though the latter theory does not involve the same type of commodity, as was pointed out above.

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Figure 3: **Illustration that in a static situation, a city over expands because the cost of congestion is not internalized**

In this model, the occurrence and cost of congestion are assumed to be positively related to the size of the city's population. Therefore, if congestion charges are not made (or are only imposed in a very limited way), it would be optimal to restrict the level of the city's population to X_2. For example, if a tax of BH could in principle be imposed on would-be new city residents once the size of the city reaches a population level of X_2. This would maintain the surplus of existing residents at BJ per head in the case illustrated in Figure 3. Note that the net-benefit per city resident of being located in the city is a unimodal function of the size of the city. This accords with earlier theories (Mirrlees 1972, Thompson 1972, Tisdell 1975, Wingo 1972)

Observe that although the growth of a city (given the above theory) eventually exhausts the economic surplus from living there; the growth of cities can nevertheless raise incomes nationally. The expansion of a city (or cities) can eventually raise the economic benefits from living elsewhere. For example, if migrant labour is not in unlimited elastic supply to cities, the expansion of cities can lead to a rise eventually in rural incomes. So even for the type of equilibrium of cities corresponding to point C in Figure 3, the growth of cities can

be associated with rising incomes nationally. All that is exhausted at the equilibrium point C in Figure 3 is the extra benefit of being in the city compared to residing elsewhere. If incomes increase elsewhere, then the city's expansion can be associated with an increase in income for its residents in its 'final' equilibrium.

For example, there has been a rapid growth in the size of cities in China. This brings extra benefits to their residents but also imposes congestion and pollution costs on them. Some Chinese cities may be over expanding. In the beginning of China's recent growth phase, the supply of its rural labour to its cities may have appeared virtually unlimited. However, with China's continuing economic growth, that rural labour supply to its cities is unlikely to remain in perfectly elastic supply. Real wages are already rising in China's urban areas (Pyo 2009). Rural incomes and economic benefits can be expected to increase with China's continuing growth. Therefore, even if the comparative economic surplus from living in cities China is eventually exhausted by their growth, incomes (economic benefits) per capita may be higher for all Chinese as a result of China's economic growth which has been facilitated by the growth of its cities. The growth of China's cities has been an important vehicle for the economic growth of the whole of China.

In practice, economic situations in cities are rarely static. For example, road and other improvements may be made in cities to reduce congestion. In Figure 3 for example, the curves indicating congestion costs may move to the right and become less steep. However, if this happens and everything else remains the same, immigration to the city will be encouraged. Eventually, the extra surpluses from city living will be completely dissipated. Once again this has parallels with the results from the theory of open-access resources (Gordon 1954, Tisdell 2005, Ch. 6).

Pollution externalities from the growth of cities can be considered by re-interpreting the above model. For example, in Figure 3, line ECG might represent the private marginal cost of pollution in the city associated with expansion of its population and line EBF might be its social marginal cost. If pollution is the only negative consideration, the city will expand

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until its population is X_3. At this point, however, the social marginal cost of the city's expansion exceeds the benefits per capita of its residents from its expansion. A reduction in the intensity of pollution in the city has similar consequences to measures to reduce congestion.

5.3   Comments on these theoretical notes

These notes do not provide a comprehensive theory of the economics of the growth of cities. That would be a very demanding task. They do, however, bring attention to some features that may influence the economic surpluses obtained from a city location compared to alternative locations and they identify the factors that may erode these surpluses. It is also emphasized that even if these extra surpluses are eroded, the growth cities can play an important role in raising national income per head or in increasing national economic benefit per head. This is because eventually the growth of cities can increase permanently the economic benefits of living in alternative locations.

6.   Concluding Comments

The growing importance of large cities in developing countries and particularly in India, the Indian subcontinent, and China has been noted. As cities grow, they generate positive shared economic benefits for their residents as well as shared drawbacks several of which have been identified in this article. In early development of a city, the former predominate and stimulate the accelerated growth of the city but eventually the negative shared forces slow the growth of the city and may eventually arrest its growth.

It is argued that the sharing of economic benefits and disbenefits of being located in a city can only be partially attributed to the nature of economic goods (and bads) supplied there. Many of these shared benefits are associated with the more efficient operation of economic mechanisms for resource use and allocation as a result of economic activity being located in the large and concentrated market of a city. These mechanisms include greater market

competition, greater economies of scale and more scope for economic specialization. The latter is partly related to collective economies of scale.

Most of the goods or resources available in cities do not have the **same** attributes as open-access resources (such as fish in the open seas), the economic theory of which is usually discussed in natural resource economics. The latter are private consumption goods whereas shared commodities in a city often involve quasi-public goods, such as shared roads. Nevertheless, there are some similarities in the consequences of the use of quasi-public goods and the exploitation of open-access natural resources. Both tend to be over-used eventually from an economic point of view if open-access is allowed. Even though the economic benefits of residents from being located in a city may continue to rise as it grows, the presence of quasi-public goods to which access is free or under priced (and negative environmental externalities) results in its over expansion. In a static equilibrium, the net benefit to economic agents locating in a city is just equal to the greatest available benefit from locating elsewhere.

The over expansion of cities does not mean that there are no national gains from the development of cities. It was argued that even though the economic surplus from being located in a city is likely to be eventually eroded as it grows, the growth of cities results in concentration of a nation's population in cities and a reduction in its population outside cities. This can be expected eventually to put increased upward pressure on incomes outside of cities. Consequently, the growth of cities is likely to be associated with a general rise in per capita incomes or economic benefits in a nation. China's recent development experience was suggested as a possible example.

It was also speculated that the development of cities generates greater inequality of income than would otherwise occur. There are at least two reasons for this. First, the wealth of city landowners and their rents from land are likely to increase in relation to landless city residents. Secondly, the surplus that individuals obtain from a city location are likely to become significantly differentiated. Those with specialized or rare talents and abilities are

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likely to be relatively advantaged in terms of their income by the expansion of cities if they have a city location. This includes those with more advanced education. Therefore, growing global inequality of income associated with widening income differences between the skilled and the non-skilled may be facilitated by the growth of cities. The phenomenon of increasing inequality of income in recent times based on differences in skill levels has been well documented for OECD countries (see Svizzero and Tisdell 2002, 2003) and relevant references therein) and indications are that the inequality has spread to developing countries (Ghosh 2004). Explanations proposed for this trend range from technological change that increases the demand for skilled workers relative to unskilled workers (Aghion and Williamson 1988) to the view that economic globalization via the Samuelson-Stolper effect has reduced the demand for unskilled labour in more developed countries relative to that for skilled labour (Wood 1998). Several factors may have contributed to the observed trend.

This observed trend (see alsoMishell, Bernstein and Schmitt 2001) is at odds with the reversed-U shaped trend in the distribution of income proposed by Kuznets (Kuznets 1955, Tisdell and Svizzero 2004). Kuznets predicted that personal income inequality would at first increase with economic growth and rising per capita incomes and then decline as this process continued. It is interesting to speculate on the possibility that this increasing income inequality is associated with the growth of cities.

Global economic growth has been associated with extra growth of existing cities (several have achieved mega city status) and the emergence of new cities. Several writers argue that cities are the main engines of growth in modern economies (Fujita and Thisse 2000, Huriot and Thisse 2000). Therefore, the role of cities in the process of economic globalization deserves to be given more attention because growing economic globalization is widely seen as a major contributor to current economic growth.

It is hypothesized that growing economic globalization (as, for example, discussed by(Tisdell and Sen 2004) has stimulated the growth of cities and vice versa. This is because most international (as well as national) trade is channeled through cities and central places.

Furthermore, growing globalization disproportionately expands the demand for the output of city-based industries, including that of its service industries. The growth of cities (as part of the process of growing economic globalization) may have created environments that are increasingly conducive to growing inequality of personal income and wealth. For example, in cities as compared to rural areas, one might expect the incomes of those who are more highly skilled, educated or specialized to be higher. They have greater ability to benefit from economies of agglomeration than the unskilled.

This paper has tried to clarify factors that result in increasing benefits to city residents and to businesses located in the city as a city grows. It outlined a simple theory of endogenous city growth and its implications for economic development. Factors that may result in increasing income or wealth inequality in a growing city were identified. Important links between the development of cities, growing globalization and increasing inequality of personal income were suggested. The impact of growing globalization on the development of cities (and vice versa) as well as on personal income inequality would be worthy of further investigation. However, the results of this investigation are likely to be sensitive to the way in which income inequality is specified.

7. References

Abdel-Rahmen, H. M. and Anas, A. (2004). Theories of systems of cities. Pp. 2293-2339 in J. V. Henderson and J.-F. Thisse, (eds), *Handbook of Regional and Urban Economics* Elsevier, Amsterdam.

Aghion, P. and Williamson, J. G. (1988). *Growth, Inequality and Globalization.* Cambridge University Press, Cambridge, UK.

Akerlof, G. (1970). The market for lemons: quality and the market mechanism. *The Quarterly Journal of Economics*:84:488-500.

Baldwin, R. E. and Martin, P. (2004). Agglomeration and regional growth. Pp. 2670-2788 in J. V. Henderson and J.-F. Thisse, (eds), *Handbook of Regional and Urban Economics*. Elsevier, Amsterdam.

Black, D. and Henderson, J. V. (1999). A theory of urban growth. *Journal of Political Economy*:107:252-284.

Black, D. and Henderson, J. V. (2003). Urban evolution in the USA. *Journal of Economic Geography*:3:343-372.

Dimou, M. and Schaffar. (2008). Evolution des hiérarchies urbaines et loi de Zipf. Le cas des Balkans. *Région et Développement*:25.

Dupuit, J. (1969). On the measurement of the utility of public works. Pp. 255-263 in K. J. Arrow and T. Scitovsky, (eds), *Readings in Welfare Economics*. Allen and Unwin, London.

Duranton, G. and Puga, D. (2004). Micro-foundation of urban agglomeration economies. Pp. 2063-2117 in J. V. Henderson and J.-F. Thisse, (eds), *Handbook of Regional and Urban Economics*. Elsevier, Amsterdam.

Fujita, M. and Thisse, J.-F. (2000). The formation of economic agglomerations: Old problems and new perspectives. Pp. 3-79 in J.-M. Huriot and J.-F. Thisse, (eds), *Economics of Cities: Theoretical Perspectives*. Cambridge University Press, Cambridge, UK.

Ghosh, B. N. (2004). Globalized capital development and income inequalities. Pp. 210-226 in C. Tisdell and R. K. Sen, (eds), *Economic Globalization*. Edward Elgar, Cheltenham, UK and Northampton, MA, USA.

Gordon, H. S. (1954). The economic theory of a common property resource: The fishery. *Journal of Political Economy*:62:124-142.

Head, K. and Mayer, T. (2004). The empirics of agglomeration and trades. Pp. 2609-2669 in J. V. Henderson and J.-F. Thisse, (eds), *Handbook of Regional and Urban Economics*. Elsevier, Amsterdam.

Henderson, V. and Wang, H. (2007). Aspects of the rural-urban transformation of countries. *Journal of Economic Geography*:5:23-42.

Hotelling, H. (1929). Stability in competition. *Economic Journal*:39:41-57.

Huriot, J.-M. and Thisse, J.-F. (2000). Introduction. Pp. ix-xv in J.-M. Huriot and J.-F. Thisse, (eds), *Economics of Cities: Theoretical Perspectives*. Cambridge University Press, Cambridge, UK.

Kuznets, S. (1955). Economic growth and income inequality. *American Economic Review*:45:1-28.

Mirrlees, J. A. (1972). The optimum town. *Swedish Journal of Economics*:74:114-135.

Mishell, L., Bernstein, J. and Schmitt, J. (2001). *The State of Working America 2000-2001.* Cornell University Press, Ithaca, New York.

Ottaviano, G. and Thisse, J.-F. (2004). Agglomeration and economic geography. Pp. 2563-2608 in J. V. Henderson and J.-F. Thisse, (eds), *Handbook of Regional and Urban Economics*. Elsevier, Amsterdam.

Pernia, E. M. and Quibria, M. G. (1999). Poverty in developing countries. Pp. 1865-1934 in P. C. Chesure and E. S. Mills, (eds), *Handbook of Regional and Urban Economics*. Elsevier, Amsterdam.

Pyo, M.-C. (2009). China aiming for 8% growth despite the financial crisis. *SERI Quarterly*:2:2:43-49.

Rosenthal, S. S. and Strange, W. C. (2004). Evidence on the nature and source of agglomeration economics. Pp. 2119-2171 in J. V. Henderson and J.-F. Thisse, (eds), *Handbook of Regional and Urban Economics*. Elsevier, Amsterdam.

Svizzero, S. and Tisdell, C. (2002). Reconciling globalization and technological change: growing income inequalities and remedial policies. *Intereconomics* 37:162-171.

Svizzero, S. and Tisdell, C. (2003). Income inequality between skilled individuals. *International Journal of Social Economics*:30:1118-1130.

Thompson, W. (1972). The national system of cities as an object of public policy. *Urban Studies*:9:99-116.

Tisdell, C. (1975). The theory of optimal city-sizes: Elementary speculations about analysis and policy. *Urban Studies*:12:61-70.

Tisdell, C. and Sen, R. K. (2004). An overview of economic globalization. Its momentum and its consequences examined. Pp. 3-23 in C. Tisdell and R. J. Sen, (eds), *Economic Globalisation*. Edward Elgar, Cheltenham, UK and Northampton, MA, USA.

Tisdell, C. and Svizzero, S. (2004). Globalization, social welfare, public policy and labor inequalities. *The Singapore Economic Review*:49:233-253.

Tisdell, C. (2005). *Economics of Environmental Conservation, 2nd Edn.* Edward Elgar, Cheltenham, UK and Northampton, MA, USA.

United Nations. (2008). *World Urbanization Projects. The 2007 Revision*, New York.

Varian, H. (1996). *Intermediate Microeconomics: A Modern Approach.* Norton, New York and London.

Wingo, L. (1972). Issues in national urban development strategy for the United States. *Urban Studies*:9:3-27.

Wood, A. (1998). Globalisation and the rise of in labour market inequalities. *The Economic Journal*:108:1463-1482.

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