

Economic Development and Growth of Cities :

A Retrospective Synthesis

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Abstract

This paper provides an overview of development strategies and historic growth patterns among major cities in industrialized countries. The paper's objective is to identify patterns which may be repeated in the further growth and development of emerging urban centers, such as the Incheon metropolitan complex in Northeast Asia. Selected empirical results and conclusions drawn from recent published work in regional/urban economics and development economics are synthesized. Topics addressed include: (i) contemporary development issues, strategies, and uncertainties; (ii) long-term growth patterns of cities in industrialized economies; (iii) impacts of agglomeration economies on growth and emergence of networks among major urban centers; and (iv) identification of significant interactions between regional and industrial development initiatives. A contemporary definition of economic development is applied in describing national, industry, and city-focused development strategies. The role of cities, urban-based agglomeration economies and intercity networks are described in terms of how they may influence economic growth and associated development impacts in larger urban centers. Linkages between national development strategies and those focused more narrowly on regions and urban-based infrastructure are described and evaluated. The paper concludes by listing open questions which appear to provide fruitful areas for further study.

1.0. Introduction

It is a distinct pleasure for an economist from Utah State University and the Rocky Mountains of Utah to have this opportunity to participate in discussions of the future of the Inchon complex and to observe the nexus of proactive industrial and regional policies in the Tri-Port Project. Emergence of the Korean development miracle, in the midst of unprecedented external shocks, is instructive to economists and planners who wish to understand and emulate the successful development initiatives which have been implemented by this country during the past four decades. Inchon Development Institutes generosity in providing this opportunity is appreciated.

In reviewing recent development literature, the most persistent questions being discussed by economists are:

- (i) how to select and implement development policies to sustain or enhance comparative advantage in production, which, at the same time, result in politically and socially acceptable levels of regional and individual income equity; and
- (ii) what actions, if any, should governments take in response to the further concentration of economic growth and population in primate cities and their sprawling urban fields in apparent disregard for associated problems of high resource costs, congestion, pollution, and disparity in access to income.

Objectives: Within the context of these two broad questions, this paper objectives are:

- (i) to provide overviews of development lessons and growth patterns among major cities in industrializing countries;
- (ii) to examine interrelation between industrial and regional development initiatives; and
- (iii) to offer a speculative forecast of the future of the Inchon complex and related research topics.

Selected empirical studies and conclusions drawn from recently published

work in regional/urban economics and development economics are reviewed. Topics addressed include:

- (i) economic development lessons and issues in retrospect;
- (ii) long-term growth patterns of cities in industrializing economies;
- (iii) identification of interactions between regional and industrial development initiatives; and
- (iv) research questions related to the future of the Incheon complex.

2.0 Development Lessons and Issues in Retrospect

Following more than five decades of postwar experience with widely variant development initiatives begun with the Marshall Plan in western Europe, a retrospective appraisal suggests that we have discovered many of the necessary conditions for initiating and nurturing growth. However, it also appears that many of the industry, region-, and country-specific sufficiency conditions are elusive and have not (cannot) been (be) fully identified. Thus, meaningful prediction of outcomes and/or precise management of growth patterns within accepted efficiency and equity norms remains problematic (Bruno 1994; Todaro 1996; and Henderson 1988). A short list of lessons gleaned from this retrospective view of postwar experiments in economic development is briefly elaborated below.

2.1 Democratic Governance and Market-Based Reforms

There appears to be a prevailing consensus that democratic forms of governance and the discipline of markets are paramount for signalling adjustments in product mix and efficient adjustments in resource use. The most dramatic evidence is presented with policy reforms begun in 1978 in the Peoples Republic of China and the emergence of democratic institutions and market economies in the countries of eastern Europe and the Republics of the former Soviet Union. Other flirtations with command structures, communism, and socialist experiments have proven to be

seriously deficient in providing individual incentives, which are sufficiently robust to sustain efficient resource allocation or to signal democratically acceptable consumer choices. Although market-based socialism retains appeal in some quarters, it becomes increasingly clear that incentives for efficient resource use stem from a system of clearly defined and exclusive property rights. Clarity in the institutional bases and laws governing property ownership, use, transfer, and disposition reduce transactions costs and mitigate many of the problems associated with pollution and exploitation of common property resources and the environment. Clearly defined and exclusive property rights have proven to be essential for accomplishing efficient resource reallocation, whether considering utilization of labor (a poor mans most plentiful asset), land and natural resources, tools and specialized forms of capital, or access to the market for innovation and entrepreneurship.

2.2 Universal Basic Education and Skills Development

Labor productivity and adaptability have proven to be important determinants of sustained economic growth and a magnet for private development capital. Because of the close linkage between labor productivity and associated investments in development of human capital, investments in universal basic education and skills development are seen as perquisite to sustainable income growth and maintenance of comparative advantage. Universal basic education, especially of women, has also proven to have a profound effect on fertility rates, second generation demand for education expenditure, infant mortality, family health and nutrition, and remunerative employment of females (Eaton et al. 1992; Lucas 1988; and Todaro 1996).

2.3 Macroeconomic Stability and Independence

Because an expectation of price stability is critical to private investment and saving/consumption decisions, a fundamentally conservative macroeconomic policy managed from an apolitical central banking institution is prerequisite to successful

industrial or regional development policy. There is little hope for an industry to compete effectively for privately held financial capital in the midst of price uncertainties, managed exchange rates, and an uncertain and unevenly administered regulatory environment. Stronger macroeconomic policies in East Asia during the past two decades has reduced the negative effects of recessions such as underutilization of production capacity and labor (Bruno 1994).

2.4 GDP as a Measure of Economic Development

Experience over the past 40 years suggests that a relatively high rate of economic growth, as measured in gross domestic product (GDP), is an unreliable indicator of economic development or social welfare. At minimum, changes in per capita and regional income distribution and consumers purchasing power should be reflected in a developmental evaluation of change in GDP. Relative comfort with market-based access to consumption goods depends heavily on its purchasing power and the distribution of income across individuals. Individual self-esteem and the incentives to work and save are linked to income source, job security, and effective tax rates on various forms of income. At the political level, it is recognized that corruption, political instability, and governance-related issues are endemic in countries where income distribution is highly skewed and access to income is not closely linked to resource productivity (Todaro 1996).

2.5 Economic Efficiency and National Economic Growth

General acceptance of an economic efficiency norm, which is consistent with maximizing national economic growth, requires that growth in output be sustainable and responsive to the real opportunity value of resources used. Market incentives and trade-determined market discipline brings improvements in efficiency and income distribution. Outward orientation provides greater resilience in the face of external shocks and extends access to scale economies in production (Bruno 1994).

2.6 Income Variability and Income Growth

Income variability has an important impact on the acceptability of various development options. At one extreme are options which generate high average incomes with high income variability, and at the opposite extreme are options which are less variable, but generate low average incomes. Of greatest developmental concern are countries which rely on primary sector exports. They can not avoid very large interseasonal and year-to-year variability in prices and income. Given frequent but largely unpredictable variability in the production and commercial supply in combination with demand inelasticity and small or negative income elasticity dictates that individuals, sectors, and countries, which rely on primary products as a source of income, must be prepared to deal with wide swings in prices and income derived from them. Typically the nearer a community is to subsistence, the more risk averse it becomes, even at the sacrifice of much higher average incomes (Todaro 1996).

2.7 Sustainability of Income Growth

The sustainability of environmentally depletive production systems is an elusive policy objective. Sustainability is rendered especially difficult where political boundaries do not encompass negative externalities stemming from public decisions and/or private property rights are not clearly defined. Disassociation of costs from production and consumption decisions result in overproduction of commodities which jointly produce negative externalities and underproducing those commodities whose production jointly produces positive externalities. The absence of property-based incentives and long-term baseline data on environmental quality and residuals loadings contribute to the uncertainty of dealing with regional and global environmental issues. There is serious concern with infringement on national sovereignty when multinational firms located in less-developed countries are regulated to environmental standards of developed countries under accords of the

World Trade Organization. At the same time, a supranational institutional base with authority to regulate/mitigate cross-boundary and global environmental problems is lacking (Todaro 1996).

2.8 Institutions Matter

Institutions matter, hence the success of development policies and programs may be very different depending on the institutional setting. Institutional areas, which are basic to successful development, are an independent central bank, a rational and uniformly enforced regulatory environment, and a competent and efficient civil service (Bruno 1994; and Todaro 1996).

3.0 Assessment of Long-Term Growth Patterns of Cities in Selected Industrializing Economies

In the 1971 meetings of the Regional Economics Association, as a neophyte regional economist, I was startled to be told by a luminary in the discipline that he judged the science of projecting optimal city size to be hovering between voodoo and witchcraft (Alonso 1971). This characterization, offered in jest at the time, now represents a kernel of wisdom which has gained stature with the accumulating weight of experience and further analysis. The topic and methods used for projection of city size remain remarkably fuzzy. In fact, a recent empirical study of the 80 major cities in two industrializing countries provides evidence over many decades that the optimal city size does not exist or is a dynamic phenomena which evolves to larger and larger sizes over time (Alonso 1994; Eaton et al. 1992; and Markusen 1994).

3.1 General Patterns in Long-Term City Growth

As empirical phenomenon, long-term growth patterns among cities may be

divergent, convergent, or parallel (Eaton et al. 1992). *Divergent growth* refers to a pattern in which rates of population increase of larger cities are greater than other cities and there is no optimal or maximum size. *Convergent growth* refers to a pattern in which rates of population increase in smaller cities exceed rates in larger cities, and, given sufficient time, all city sizes would converge at a maximum or optimal size. *Parallel growth* refers to a pattern in which all cities large and small grow at very similar rates with no hint of convergence or maximum city size.

Static analyses of city size have focused principally on testing for convergence or an optimal city size. Optimal or maximum city size was estimated by minimizing average costs for some composite of costs associated with public functions, congestion, pollution, factors of production, information, business services. Predictably, the size of virtually every major city far exceeds the minimum cost size. Thus by default, the simple, but compelling observation that not only are costs a function of city size but, more importantly, so is productivity in the form of agglomeration and scale economies. Dwellers/users are prompted to endure higher costs if those costs are more than offset with higher productivity. Comparison of productivity with cost, both of which are increasing functions of city size, provides the basis for defining an optimal city size (Alonso 1971). In his static analysis, optimal size, from the perspective of city dwellers/users is the one at which the excess of total productivity over total cost is at its maximum. City size appears to be governed by dynamic processes which evolve in response to the presence of agglomeration economies, changes in technology, market access, migration, quality and quality of labor, political and administrative access, surrounding competitive opportunities for economic activity, and employment opportunities. But we know that few, if any, cities remain at the same size for a very long time. Also, productivity and costs are continuously evolving and productivity may increase faster than costs (Alonso 1971; Alonso 1994; and Henderson 1988). Cities in which productivity evolves more rapidly than costs would likely be more attractive to potential dwellers/users.

3.2 Empirical Evidence of Long-Term City Growth Under Industrialization

Recent research (Eaton et al. 1992) using city population data from France and Japan provides a test for divergent, convergent, and parallel growth among the 80 largest cities in these two industrializing economies. The particular cases of France between 1876 and 1990, and Japan between 1925 and 1985, were selected because both were experiencing industrialization with substantially increased urbanization during these time intervals. Strong similarities in income level, stability of their national boundaries, and full settlement of their respective land areas at the beginning of industrialization, provided reasonable control for confounding influences on migration and city growth.

The evidence from both countries is consistent with a parallel growth pattern and clearly rejects the divergent growth hypothesis. No new cities emerged during the data period in either country. Analysis of the French data demonstrated that the size distribution of cities did not change over the 120 years during a time of rapid population growth, movement of population from rural into urbanizing areas, and substantial per capita income growth. Japanese data were slightly more divergent with movement toward less equal distribution of city sizes. Also, the share of larger cities went up, influenced most by higher population growth rates in Tokyo. Regression analyses of the initial level of population for a given city and their same period growth rate showed no significance in either country. Eaton et al. (1993) conclude: (i) the city population growth experience of these two countries provides evidence that high rates of national population growth had virtually no effect on distribution of city sizes; (ii) forces which drive industrialization appear to be present in individual cities in proportion to their initial population size.

4.0 Identification of Significant Interactions Between Regional and Industrial Development Initiatives

Industrial policies are designed to create capacity in key industries focused primarily on domestic markets, to reduce imports, and to make selective expansions in export capacity. First concern is with economic efficiency and establishing comparative advantage in providing for domestic demand. However, industrial policy may influence the location of economic activity either directly through government siting or indirectly through incentives to the private sector. As a secondary concern, governments may use industrial policy to promote development of lagging regions or to favor a more decentralized location pattern in a sector.

In contrast, regional policies are designed to reduce differential growth rates in economic activity and per capita income among regions, to integrate lagging regions into the national economy, and to spread growth and urbanization away from traditional primate cities into multiple urbanizing areas. First concern is with distribution of economic activity and income among subnational regions. Compatibility between industrial and regional policy depends on the sectors targeted and their requirements for scale and agglomeration economies (Alonso 1994; and Markusen 1994).

4.1 Interrelationships Between Industrial and Regional Policy Initiatives

Accommodation of regional policy priorities can reduce the effectiveness in meeting industrial policy objectives through diminishment of agglomeration and scale economies, principally through decentralization into too many outlying centers. Costs in the form of short- to medium-term efficiency losses must be offset by improved equity and longer term gains in growth and efficiency. At their best, regional policies, given sufficient early aid in the form of well-supported industrial complexes, can become new growth centers. A larger number of medium-size cities is thought

to protect the national economy from diseconomies in its primate city by offering lower cost sites for cost-sensitive firms. Dispersed growth centers can improve income distribution and fuel growth through cost savings and by expanding demand within the domestic economy (Alonso 1994; and Markusen 1994).

Historically, industrialization policies have been initiated in many countries to accomplish import substitution and to encourage exports based on use of unskilled labor. There is substantial evidence, especially in Korea, that these policies have complemented regional policies because they distributed essential infrastructure and economic activity more broadly than would have been the case without them. Recent outward looking shifts in industrial policies, which are designed to attract high-technology industries, strongly favor growth in a few major urban centers principally in coastal locations. At the same time, fiscal pressures and abiding concerns with top down regional policies have prompted devolution of responsibility and initiative for development to provincial and local levels. This promises to set off vigorous interregional competition for economic activity. Thus, recent trends in industrial policy, changing market emphasis, and decentralized control of financial resources, may encourage further polarization in existing primate cities and reduce the complementarity of industrial policy for addressing distributional objectives. These policy interactions will sharpen focus on conflicts and encourage ingenuity in identifying remaining complementarities (Kloosterman 1996; Markusen 1994; and Alonso 1994).

4.2 Changing Industry Location Requirements

Agglomeration and Scale Economies. Both economies of scale *increasing returns to size of production facility* and agglomeration economies *cost savings from the co-location of complementary economic activity* are positively associated with large urban concentrations. Any uncertainty concerning the availability of scale and agglomeration economies discourages (require public initiative to) redirect investment in industrial activities away from congested, high-income urban areas. Industries favored with economies

of scale may also benefit from the presence of complementary industries or shared labor, resource, and information pools typically located in large urban regions (Batten 1995; Cox 1995; Knight 1995; Lucas 1988; and Markusen 1994).

Export-Orientation. Recent emphasis in industrial policy on export-oriented policies clearly does not favor decentralization. Firms located central to national markets may lose comparative advantage to new or expanding industries located in coastal locations. Export-oriented policies favor emergence of larger scale industries whose reliance on agglomeration economies may solidify their commitment to existing metropolitan centers at the same time displacing smaller regionally oriented firms. Expansion of high-tech export industries is more likely to attract private investment into nationally dominant cities where skilled labor, information, and business services are known to be available. A trade orientation places greater importance on legal and political issues such as market access, technology transfer, and intellectual property rights, all of which favor national capital cities. This is in contrast to diseconomies of scale, congestion, and high input costs, which may encourage consideration of alternative locations and acceptance of government incentives to decentralize to outlying locations (Bruno 1994; Cox 1995; Markusen; and Todaro 1996).

Capital Intensity, Scale and Specialized Inputs. Industries vary in terms of capital intensity and minimum efficient scale of production. They also have very different capacity to benefit from agglomeration depending on their market orientation and the extent of vertical integration. Domestic orientation for industries replacing manufactured imports may be compatible with regional priorities when they are linked to adequate infrastructure of domestic distribution. An export orientation with standardized mass production processes can also locate away from major urban centers without much disadvantage. In contrast are innovative industries that demand skilled labor, business services, and access to information-where locations in remote regions can be deadly. Even when information and inputs can be procured over distance, the uncertainty and risk introduced by rapid change in products and technologies keeps them rooted in major urban centers (Markusen 1994).

Growth Stages and Inter-country Location Changes. -With development, countries

typically pass through distinct eras or stages. On Korea, for example, from 1960-1975 production emphasis was dominated by labor-intensive textiles; from the early 1970s to 1980, emphasis was on chemicals manufacturing and high-tech industries. Shifts from traditional manufacturing (textiles, apparel, chemicals, machinery, and electronics) toward high-tech innovation-based industries (aircraft, computers, producer electronics, communications, and pharmaceuticals) in developed countries moves manufacturing capacity to lower cost countries. Industrial countries focus on sectors requiring innovation and human capital investment, oftentimes at the expense of regional goals (Alonso 1994; and Markusen 1994).

Devolution of Responsibility for Industrial Policy.-Political difficulties in implementation of regional policy and mixed results have encouraged a decentralized approach to economic development. The power of agglomerative forces, central government fiscal pressures, and political conflict over the regional deployment of resources have contributed to disillusionment with regional policy. A federal structure in which local/regional governments wield greater discretion over infrastructure provision and economic development incentives appears to be evolving in several Pacific Rim countries including Japan and Korea. This devolution of responsibility is an implicit regional policy. It may reduce costs for the central government, and it frees/provincial initiatives from top down command type approaches (Markusen 1994; Alonso 1994; and Cox 1995).

5.0 Speculative Forecast of the Future Development of Incheon Metropolitan Complex

Impetus for Further Growth and Development.-The location and function of the Incheon metropolitan area, as an established transshipment point, the satellite port of Seoul region, and the target zone for significant quantities of public and private investments in infrastructure and high-end manufacturing, respectively, virtually assures that it will continue to grow more rapidly than other outlying industrial complexes. Expansions in transport access and capacity, such as the

Tri-port Project, will provide larger domestic markets and attending scale economies for Inchon-based manufacturing, including communication equipment and high-tech products (Inchon Metropolitan Government).

Location in Seoul Region Urban Field.-It is highly probable that the Inchon complex will become even more tightly woven into the economically dynamic urban field centered on the Seoul region. As a part of this urban field, the further growth and development of Inchon, relative to other outlying industrial complexes, is favored by the presence of the strong outward orientation of a port city and relatively better access to agglomeration economies including, access to better schools, corporate headquarters, business services, government offices, and research, which were formerly centered principally in the Seoul region and the traditional manufacturing centers of Pusan and Taegu. Given the rapid pace of improvements in communication, transport access, and the further development of Inchon, a greater portion of these agglomeration economies will be available locally. Although these may be helpful to traditional heavy industry, they are especially attractive to high-end manufacturing and high-tech industries whose production is aimed principally at export markets (Batten 1995; Knight 1995; Krugman 1994; and Markusen 1994)

Science Base, Education, and Local Initiatives.-Recent government actions taken to transfer responsibility for economic development to outlying industrial complexes, including the Inchon region, will increase local autonomy and power in business-related decisions, as well as revenues to support expansion of complementary infrastructure, research, education and skills development, and business support activities. Because of its location within the urban field of the Seoul region, Inchon can be expected to provide an exception to the parallel growth patterns which have been observed among major cities in other industrial countries, such as Japan and France. The emergence of a science base to support/extend the availability of innovation and entrepreneurship in the area provides a magnet for expansion of high-tech industry. Continued rapid growth of the Inchon complex can be evaluated as a success for decentralized industrial policy, but, because of its proximity to Seoul and its potentially higher long-term

growth than will be experienced by most other outlying complexes, it will be considered at variance with regional policies aimed at balancing economic growth and income across regions (Eaton et al. 1992; Knight 1995; and Lucas 1988).

6.0 Researchable Topics

Research directed at determination of optimal city size appears to offer very little that is instructive for planning the future of primate cities and their surrounding urban field. In fact, it appears that economically dynamic adaptations to increasing city size are emerging in "polynuclear" fields surrounding primate cities in several countries, including Brazil, Japan, Indonesian, Mexico, and the United States (Alonso 1994 ; Church et al. 1996 ; Lucas 1988 ; and Shatter 1996). In these countries, primate cities are adapting to the diseconomies of hyperurbanization by extending their urban fields to include lower cost and functionally specialized subcenters. Research effort focused on determining optimal city size and balancing regional equities may be more productive if refocused on problems and opportunities of subcenters within the urban fields of primate cities, such as what appears to be the case with the Incheon complex.

Industry Location Requirements. - Linkage between industry-specific high-tech and other high-end manufacturing and their reliance on access to innovation and entrepreneurship as well as traditionally defined agglomeration and scale economies, role of information technology in location choice, role of political governance and regulatory environment, role of security, and amenities.

Devolution of Development Initiatives, Responsibility, and Funding. - Local/provincial v. national development initiatives, adequacy of funding, competition and duplication of facilities, tax/revenue base to maintain/expand access to science base, human capital, and other public goods.

Efficiency Costs for Maintaining Regional Equity. - Measures of tradeoffs between regional and industrial policies in context of national growth and development priorities including regional equity in access to employment and income.

Diminishing Fertility Rates. - Economic and social consequence including priorities established for industry growth initiatives, education and training emphases, comparative advantage, migration policy, foreign workers, and off-shore expansion of labor-intensive industries.

Emergence of Primate City Urban fields.- Problems and opportunities of sustaining scale and agglomeration economies within functionally decentralized subcenters-"polynucleation"-impacts on congestion, pollution, and factor costs.

Economic Integration, Trade Liberalization, and Borderless Economies. - Implications for national macroeconomic policies ; impacts on interregional trade in commodities and factors, including specialized labor, and international contracting for specialized services.

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