3
Economic Specialization and the Contemporary Metropolitan Growth Process

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Contemporary United States metropolitan growth patterns are such that while numerous MSAs are growing slowly or losing population, others are growing rapidly. We contend that (1) despite the myriad problems associated with many large cities, these metropolitan growth patterns are not first and foremost a function of city size, and (2) underlying the contemporary metropolitan population experience is an economic structure consideration that is of major importance. We further argue that this underlying structural influence is indicative of the relation between national economic development patterns and the settlement process. A major economic transformation is in progress, with settlement implications as important as those assigned the agrarian-to-industrial transformation of the past century. This economic transformation contributes to a shift in the locus of growth, and thus to a dichotomy, i.e. a pattern of urban growth and a pattern of urban decline.

The long-standing U.S. population growth trend in which metropolitan areas grew more rapidly than nonmetropolitan areas is now reversed. During the 1970s metropolitan areas grew at a rate of 10.2 percent—or slightly below the national rate of 11.4 percent—while nonmetropolitan areas increased at a rate of 15.1 percent. This comparative growth pattern is distinctly contrary to the growth experience of previous decades, and it appears that it was only by the addition of thirty-five new and small urbanized areas to the Metropolitan Statistical Area (MSA) classification that the share of aggregate population in MSAs could increase. Examination of growth rates for specific MSAs reveals a condition of slow growth or no growth for many. Indeed, twenty-nine MSAs as defined in this study experienced population decline during the 1970s (table 1); many more are growing slowly or are virtually stagnant. Many of the metropolitan

TABLE 3.1
Selected MSA Experiencing Population Loss, 1970–1980

MSA	1980 Population	Population Loss 1970-1980 Absolute	Decrease
Terre Haute, IN	156,949	18,194	-10.4
New York, NY	9,120,346	853,370	-8.6
Jersey City, NY	556,972	50,867	-8.4
Cleveland, OH	1,898,825	164,904	-8.0
Buffalo, NY	1,242,826	106,385	-7.9
Pittsfield, MA	90,505	6,312	-6.5
Utica/Rome, NY	320,180	20,297	-6.0
Pittsburgh, PA	2,263,894	137,468	-5.7
Boston, MA	2,763,357	135,744	-4.7
Newark, NJ	1,965,969	91,499	-4.4
Elmira, NY	97,656	3,881	-3.8
Stamford, CT	198,854	7,486	-3.6
Paterson-Clifton-Passaic, NY	447,585	13,197	-2.9
Akron, OH	660,382	18,911	-2.8
Dayton, OH	830,070	22,461	-2.6
St. Louis, MO	2,356,460	54,424	-2.3
Philadelphia, PA	4,716,818	107,292	-2.2
New Britain, CT	142,241	3,028	-2.1
Springfield, MA	530,668	11,084	-2.0
Springfield, OH	183,885	3,721	-2.0

MSA	1980 Population	Absolute	Decrease
Steubenville, OH	163,099	3,286	-2.0
Detroit, MI	4,353,413	81,638	-1.8
Bridgeport, CT	395,455	6,279	-1.6
Great Falls, MT	80,696	1,108	-1.4
Youngstown/Warren, OH	531,350	5,774	-1.1

Note: MSA definitions are those indicated by the U.S. Bureau of the Census in 1974.

Source: **Compiled from U.S. Bureau of the Census, *1980 Census of Population, Characteristics of the Population; 1970 Census of Population, General Population Characteristics.***

places experiencing population loss were among the larger MSAs, and all save one are found within the U.S. urban-industrial coreland.

In contrast, some metropolitan centers are growing—and in some instances at rapid rates (table 2). The rapidly growing MSAs are most often moderate to modest in size, though not exclusively so. Nevertheless, those centers with a population below 500,000 now seem to be aggregating a larger share of the total metropolitan population (table 3). In regard to nonmetropolitan areas, their growth rates are above the national norm and their populations are again increasing. The aforementioned trends are generally interpreted as an increasing dispersion of population, a dispersion based not simply on a metropolitan-nonmetropolitan dichotomy in population growth rates but also the phenomenon of decreasing central city population, slow growth or decrease in selective metropolitan area populations, and an increase of population in selective metropolitan areas and in nonmetropolitan cities and rural areas.

Several worthy perspectives have been offered in explanation of these variations in contemporary urban growth and include, among other things, dispersion of economic activity, elderly migration, residential preference, public policy, and energy considerations. We concur with Bourne's (1980) implicit warning against dependence upon a single set of variables for explanation of these growth processes. Nevertheless, our intent is to focus at the macro level upon only one of the several forces now possibly affecting the metropolitan growth experience: the sectoral adjustment currently under way in the national economy. The spatial

TABLE 3.2
Twenty Most Rapidly Growing MSAs, 1970–1980

MSA	1980 Population	Population Increase 1970-1980	
		Absolute	Percent
Fort Myers, FL	205,266	100,050	95.1
Ocala, FL	122,488	53,458	77.4
Las Vegas, NV	463,087	189,799	69.4
Sarasota, FL	202,251	81,838	68.0
Fort Collins, CO	149,184	59,284	65.9
W. Palm Beach, FL	576,863	227,870	65.3
Fort Lauderdale, FL	1,018,200	398,100	64.2
Olympia, WA	124,264	47,370	61.6
Bryan-College Station, TX	93,588	35,610	61.4
Reno, NV	193,623	72,555	59.9
Provo, UT	218,106	80,330	58.3
McAllen, TX	283,229	101,694	56.0
Phoenix, AZ	1,509,052	537,824	55.4
Richland, WA	144,469	51,113	54.8
Orlando, FL	700,055	246,785	54.4
Boise City, ID	173,036	60,806	54.2
Bradenton, FL	148,442	51,327	52.8
Daytona Beach, FL	258,762	89,275	52.7
Santa Cruz, CA	188,141	64,357	52.0
Tucson, AZ	531,443	179,775	51.1

Source: **Compiled from U.S. Bureau of the Census, *1980 Census of Population, Characteristics of the Population; 1970 Census of Population, General Population Characteristics.***

TABLE 3.3
Cities by Population Size, 1960–1980 (incorporated places of 10,000 population or more)

POPULATION SIZE	NUMBER OF CITIES			POPULATION (millions)			PERCENT OF TOTAL			CUMULATIVE PERCENT		
	1960	1970	1980	1960	1970	1980	1960	1970	1980	1960	1970	1980
Total	1,654	2,031	2,199	91.0	107.7	112.5	100.0	100.0	100.0			
1,000,000 or more	5	6	6	17.5	18.9	17.5	19.2	17.5	15.6	19.2	17.5	15.6
500,000-1,000,000	16	20	16	11.1	13.1	10.9	12.2	12.2	9.8	31.4	29.7	25.6
250,000-500,000	30	31	34	10.8	10.7	12.2	11.8	9.9	10.8	43.2	39.6	36.1
100,000-250,000	79	99	113	11.4	14.1	16.5	12.5	13.1	14.7	55.7	52.7	50.8
50,000-100,000	180	234	250	12.5	16.3	17.3	13.7	15.0	15.4	69.5	67.9	66.2
25,000-50,000	366	474	528	12.7	16.4	18.4	14.0	15.2	16.4	83.5	83.1	82.6
10,000-25,000	978	1,167	1,252	15.1	18.2	19.6	16.5	16.9	17.4	100.0	100.0	100.0

Source: **U.S. Bureau of the Census, *Statistical Abstract of the United States: 1981* (Washington, D.C.: Government Printing Office, 1981), p. 16.**

impact of this sectoral adjustment is such that it contributes uneven impulses to the urban population growth process.

Background

Urbanization has been the most long-standing and spatially pervasive U.S. settlement process. It has contributed an increasing share of the population to metropolitan places for more than a century, particularly to the larger metropolitan centers. The specific location of this metropolitan growth was an outgrowth of initial locational advantage and its cumulative effect in assuring successive rounds of growth; at least until interceding forces redirected the spatial outcome of the process (Pred, 1965). Industrialization was for numerous decades the underlying force that fueled the process.

Borchert's (1967) interpretation of U.S. metropolitan evolution specifies the transport and industrial technology that provided the particular locational and site advantages. His Sail-Wagon Epoch (1790–1830), Iron Horse Epoch (1830–1970), Steel Rail Epoch (1870–1920), and Auto-Air Amenity Epoch (1920–1960) reference the technology that provided growth emphasis to particular places at particular times. Most important to his perspective is recognition that the process has no predictable end, i.e. as fundamental changes occur in the nation's technology or economy, a new set of conditions is established and past growth ceases to be a good predictor of future growth. When some "basic component of the nation's society or economy or technology 'turns a corner' and a new epoch opens, a new set of overriding and long term forces go into effect" (Borchert, 1967, 325). The transfer of locational advantage that occurs may redirect the growth impetus from one set of cities to another. Indeed, recent decades, and particularly the 1970s, witnessed an accumulation of evidence and argument suggesting that a new "epoch" in metropolitan evolution may be in the offing (Phillips and Brunn, 1978; Borchert, 1983).

If a new epoch of U.S. metropolitan growth is in the offing, it may be inappropriate to assign a single impetus as causal to the revised process. One of the several forces, however, may be that of sectoral adjustment within the economy. Indeed, several recent arguments extended in explanation of the revised growth trends are either implicitly or explicitly supportive of sectoral adjustment.

Thompson (1975, 1977) cautions against the temptation of viewing urban problems as a function of city size and suggests industry mix (fast- or slow-growth industries) and degree of specialization as a more creditable variable in explaining urban growth. Product specialization involving income-elastic demand in a rising real-income and limited-

competition era (Detroit after World War II) may correspond with or stimulate growth. At other times specialization may generate a condition in which the economic structure of a particular city is incongruent with the long-term national cycle. Sectoral adjustment within the national economy promotes selectively some cities, and likely does so to the detriment of some others. The resulting differential in growth will be particularly significant in an era of lowered natural rates of population increase. The problem of persistent inflation and recurring recessions adds to the structural discomfiture. Income-elastic specialization in an era of slow or no real income growth can be expected to curtail demand for selective industries (Thompson, 1977). Furthermore, the growth industries will most likely be those in which productivity advances significantly. The economic advantage or disadvantage stemming from structural condition can be expected to manifest in variable urban growth.

Dramatic shifts in the aspatial structure of urban economies is perhaps unavoidable, as is also its corollary, a spatial articulation of these transformations that is nonrandom and equally pronounced. Baumol's (1967) macroeconomic model of unbalanced growth may speak to the very essence of the urban crisis, i.e. selective urban decay and decline. The model asserts the existence of two very distinct sectors differentiated by the nature of labor participation in each. In one sector labor functions as an instrument for the provision of some product; in the second, labor itself becomes the end product, e.g. teachers, live performers, police, hospital personnel, service inspectors. The first sector may be viewed as technically progressive in that innovations and scale economies give rise to an accumulation of enhanced labor productivity. The second sector is contrasted as technologically nonprogressive and made up of activities that by their very nature permit only limited or sporadic increases in output per worker hour. If wages in these two sectors are assumed to covary (not an unrealistic assumption), then several important results can be deduced: (1) costs per unit output in the nonprogressive sector rise unavoidably, and (2) if output in the nonprogressive sector is increased, or just maintained at a constant level, then an increasing share of the total labor force must be shifted into the nonprogressive sector and the quantity of labor committed to the progressive sector must approach zero in the limit. Baumol continues his argument by suggesting that expansion of employment in certain activities that are technologically nonprogressive (and especially those that are income elastic and relatively price inelastic) within the services sector (retailing and higher education, for example), is a natural and unavoidable by-product of enhanced productivity elsewhere. The important point is that incessant sectoral

changes in the economy may provide for concomitant trends in the space economy, i.e. a spatial pattern of urban growth and decline.

Another perspective argued forcefully is that the U.S. metropolitan growth experience may be interpreted as an outgrowth of production system dynamics (Scott, 1982). Three metropolitan development stages are evident in the U.S. experience. An initial stage of development generated large-scale, material-intensive manufacturing and small-scale, labor-intensive manufacturing clusters in developing metropolitan centers. Transport needs and scale economies in the transport sector itself, labor pools, and information flow generated massive metropolitan concentration (Thompson, 1975). The seeds of change germinated early and resulted from the technologic improvement and capital deepening encouraged by the nature of the capital-labor relation (Scott, 1982; Clark, 1981). The second phase is then one of decentralization brought about or driven by more efficient production technologies, standardization technologies, technologic advances leading to labor deskilling, and the spatial separation of white- and blue-collar functions, a particularly distinctive twentieth-century phenomenon for the United States. The foregoing phases have their concomitants in population growth, i.e. initial concentration in a metropolitan hierarchy followed by a long period of slow but continuous decentralization, evident first as central-city decline but later including selective metropolitan population decline and metropolitan growth (in the periphery) and nonmetropolitan growth. It is this stage of manufacturing decentralization and dispersion that Scott (1982) underscores as one of the most significant processes underlying contemporary metropolitan development. The decentralization of manufacturing reaches completion in its essentials during the third stage. The core city retains services activity and labor-intensive management and control functions. These activities seem to have potential for providing relief for older job-loss-plagued urban centers; however, even the long-term effects (spatial) of modern information technologies may forestall recovery based on this component of the economic system. The optimism of a decade past for the ability of the services sector to assure recovery is not warranted for all places.

The long-term processes referenced above include adjustments that create stresses on the metropolitan system that are evident as population decline, job loss, municipal finance stress, and loss of social services—perhaps all entwined in a cumulative cycle of deterioration. Examples of such conditions in metropolitan settings became increasingly evident during the 1970s. Implicit in the long-term change described by Scott is structural change in the economic system, particularly the manufacturing sector, and it can be expected to manifest in the metropolitan environment.

Norton's (1979) analysis of the post-World War II city (not the metropolitan area) growth experience further directs attention to the role of manufacturing in current settlement restructuring. He found that the ability of a central city to grow, or effectively counter suburbanization, was a function of its ability to expand territory by annexation (and accordingly population) and the ability of the larger metropolis (the MSA) of which the city was a part to experience economic growth. In the former case, older cities find growth by annexation nearly impossible and are, therefore, more prone to population loss. In the latter case, i.e. growth of the larger metropolis of which the city is a component, manufacturing health was determined to be the strongest correlate of growth. Contrary to the initial anticipation by Thompson and others, services-sector growth was not found generally capable of offsetting the negative effects of manufacturing loss. More to the point, Norton found the growth of services activities to be a continuing correlate of (and attributable to) manufacturing growth.

Specialization and Population Growth

Despite absolute population loss by a number of large metropolitan regions during the 1970s, metropolitan area growth rates are not simply a matter of size. Perusal of the list of metropolitan centers that lost population reveals that communities in virtually all size categories were subject to potential population decline (table 1). Though a number of large metropolitan centers decreased in population, large size per se has not precluded growth (see tables 2, 3, 4).

There is, in contrast, a relatively strong relationship between the economic structure of a metropolitan area and its fortune. There is an assortment of aggregate trends in the composition of the U.S. economy, some of internal origin and others externally imposed, that provide for differential vitality among the myriad activities that constitute the economy, and hence also provide for systematic and differential urban growth and decline. In sum, one subset of U.S. metropolitan areas is relatively specialized in the "right" things, and there are less fortunate cities specialized in the "wrong" activities and for which adjustment may be a long and traumatic process. For example, manufacturing cities generally did not fare well during the 1970s. Pearson's coefficient of correlation between metropolitan change between 1970 and 1980 and the percentage of total employment in manufacturing in 1970 is -0.61. This measure represents no more than a crude summary of the manifestation of major changes taking place in the structure of the economy in the aggregate. Dramatic shifts have taken place in the absolute and relative sizes of

TABLE 3.4
MSA Population Change, 1970–1980, by MSA Size in 1970

Population Growth	Size in 1970		
1970-1980	<200,000	200-250,000	>500,000
Fast Growth[1]	66[2]	36	37 (139)
Slow Growth	41	50	31 (122)
	107	86	68 (261)

1. Fast-growth cities are those with growth rates in excess of the national median of 9.6 percent.
2. Number of cities.

Source: Compiled from U.S. Bureau of the Census, *1970 Census of Population; 1980 Census of Population.*

the basic economic sectors throughout the entire period of urban-industrial evolution.

Several generalizations are possible about the behavior of the economy since 1910. A review of employment trends during the past seventy years suggests two distinct time periods during which structural shifts were evident nationally (table 5). The period between World War I and World War II (1920–40) is characterized by massive shifts out of primary activities, especially agriculture, in both relative and absolute terms. The remaining activities functioned as growth sectors and contributed to a continuing process of urbanization fueled by rural-to-urban migration. The second period (1950–80) at first exhibits a continued movement of labor out of primary activities but then witnesses a definite subsiding of this shift. It is the relative employment decline in the industrial sector that clearly distinguishes the latter period from the earlier. The nearly two of every five employed persons participating in the industrial sector in 1950 decreased to one in five by the 1980s. The United States may now be experiencing an absolute decline in industrial employment for the first time in its modern history. Simultaneous with this change, tertiary employment increased from 19 to 29 percent and quaternary employment from 31 to 47 percent of the labor force. It has been argued

TABLE 3.5
Sectoral Shifts in the U.S. Labor Force, 1910–1980

Year	ECONOMIC SECTOR			
	Primary	Secondary	Tertiary	Quarternary
1910	31.1	36.3	17.7	14.9
1920	32.5	32.0	17.8	17.7
1930	20.4	35.3	19.8	24.5
1940	15.4	37.2	22.5	24.9
1950	11.9	38.3	19.0	30.8
1960	6.0	34.8	17.2	42.0
1970	3.1	28.6	21.9	46.4
1980	2.1	22.5	28.8	46.6

Source: **Compiled from Daniel Bell of "The Social Framework the Information Society," in *The Computer Age: A Twenty-Year View* edited by M. L. Dertouzos and Joel Moses (Cambridge: MIT Press, 1979), p. 163–211.**

that the services and information sectors have become in fact the basic economic activities (Hirschorn, 1979).

It was the broad and sweeping sectoral shifts during the initial industrial transformation that gave rise to the U.S. city. Currently, an alternate structural evolution is responsible, in part, for the relative vigor of the U.S. city. There has been and is occurring a reallocation of employment opportunity in both relative and absolute terms. The economy has come to be dominated by services- and information-sector employment, and the urban growth experience is being influenced by this trend.

The relationship between metropolitan growth and urban economic structure can be illustrated further with reference to a simple five-sector economy. Table 6 assumes a primary sector (farming, mining, and fishing), a durables manufacturing sector (metals, machinery, transportation equipment, etc.), a nondurables manufacturing sector (food, textiles, chemicals, etc.), a public-services sector (government and assorted services, such as police and fire protection), and a private-services sector (personal services, business services). The most notable association in table 6 is that between

TABLE 3.6
Relationships between MSA Economic Structure in 1970 and MSA Population Change during the 1970s

	Population Change	Primary Employment	Durables Employment	Nondurables Employment	Private Services	Public Services
Population Change	____	.33	-.51	-.32	.45	.11
Primary Employment		____	-.34	-.23	.12	-.05
Durables Employment			____	-.02	-.63	-.38
Nondurables Employment				____	-.44	-.23
Private Services					____	-.15
Public Services						____

Note: Economic structure as measured by employment in each of five sectors.

the proportion of employment in durables manufacturing and population change from 1970 to 1980. Metropolitan centers with a large proportion of employment in durables exhibit slower growth, or even decline, when compared to centers with lesser durables employment. A similar relationship exists between nondurables employment and population growth, though at a weaker level. Additionally, no significant relationship exists between the level of durables sector employment and the nondurables sector—hence the two sectors may be thought of as operating independent of each other on metropolitan population change.

There exists a strong positive association between the proportion of employment that is in the private-services sector and population change during the 1970s. A weaker, although significant, relationship is found between public-services employment and population change. It is apparent that U.S. cities that depend heavily on basic manufacturing for employment are also likely to be those experiencing difficulty in maintaining growth. Those whose employment dependence is based more upon services activities have experienced the more rapid growth during the decade of the 1970s. Though both durables and nondurables manufacturing are associated with the lower rates of growth, there exists significant variation internal to these two broad sectors. For example, the correlation coefficient between the proportion of manufacturing employment in metals (in 1970) and metropolitan population change between 1970 and 1980 is −.18. Similar, although not quite as strong, associations are evident between employment in nonelectrical machinery and transportation equipment and 1970s population change (−.16 and −.12, respectively). No significant relationship exists between the proportion of metropolitan manufacturing employment in electrical machinery and population change in the 1970s. A relatively strong positive association exists between metropolitan population change (1970–1980) and furniture employment (+.24) as a proportion of total manufacturing employment.

Within the nondurables-manufacturing sector, relative textiles employment is the only activity that provides a significant negative relationship with metropolitan population change during the 1970s (−.10). The proportion of manufacturing employment in production of chemicals is not significantly related to metropolitan population change. In contrast, relative manufacturing employment in food processing (+.23) and printing (+.30) are positively associated with 1970s metropolitan population growth.

In summary, relative manufacturing employment in furniture, food processing, printing, and furniture are positively associated with metropolitan population change during the decade of the 1970s. These manufacturing activities are often relatively small scale and can reflect

the growth of localized markets. On the other hand, relative employment in metals (primary and fabricated), nonelectrical machinery, and transportation equipment are negatively associated with metropolitan population change during the 1970s. These, then, are the manufacturing specialties less likely to be associated with growth.

Among the relationships identified, it is the more general association between manufacturing and population growth that is most important because it points toward the inability of manufacturing to stimulate metropolitan growth. The weakness of manufacturing as a propulsive activity stems from three considerations. First, postindustrial economic development presents a modified conceptual image, i.e. services and information activities become not only the dominant source of employment but in point of fact the basic (as opposed to nonbasic) economic activity (Stanback and Noyelle, 1982; Noyelle, 1983). The perspective of services as basic economic activity seems particularly true when applied to distributive services, those associated with corporate activities, nonprofit services, and select government enterprises. The foregoing, rather than retailing and consumer services, have been the activities experiencing the more rapid employment growth (Noyelle, 1983). Even much of the manufacturing corporation's employment itself becomes service and information providing in nature. Such activities generate their own or independent locational focus, and need not coincide with the locus of manufacturing per se.

Second, the manufacturing that does exist has long demonstrated a dynamic locational pattern as evident in the plethora of studies detailing central city to suburban shifts, metropolitan to nonmetropolitan movement, and dispersal from industrial coreland to periphery (e.g. Cohen and Berry, 1975; Norton and Rees, 1979). Central-city problems, the capital-labor relation, product-cycle notions, business climate, dispersing markets, and labor costs are among the many considerations cited in explanation of these shifts in the location of manufacturing employment. New manufacturing investment often has occurred in places other than in the existent and older manufacturing centers.

Third, there exists the international dimension or the global reordering of the space economy, particularly the manufacturing sector. A number of developed and developing nations have become major producers of manufactured goods, aided by multinational investors from the United States and elsewhere. The largest single purchasing unit for such varied goods historically has been the U.S. domestic market. Domestic producers have long been successful in supplying the bulk of these goods, particularly during the affluent postwar years. More recently, penetration of the market

TABLE 3.7
United States Imports of Manufactured Products

Products	1978 Import penetration[1] ratio (Percent)	1968 Import penetration[1] ratio (Percent)	1968-1978 Change in Import penetration ratio (Percent)
TOTAL	7.39	4.00	3.39
Food and kindred products	3.68	3.58	.10
Tobacco manufactures	.50	.29	.21
Textile mill products	4.03	5.17	-1.14
Apparel and other textile products	11.79	4.14	7.65
Lumber and wood products	9.12	9.25	-.13
Furniture and fixtures	4.54	1.75	2.79
Paper and allied products	6.54	6.00	.54
Printing and publishing	.94	.91	.03
Chemicals and allied products	4.26	2.24	2.02
Petroleum refining	6.91	5.15	1.76
Rubber and misc. plastic products	5.55	3.00	2.55
Leather and leather products	27.20	9.08	18.12
Stone, clay and glass products	4.19	2.98	1.21
Iron and steel mill products	11.01	8.39	2.62
Other primary metals	9.58	8.00	1.58
Fabricated metal products	3.85	1.88	1.97
Machinery, except electrical	7.16	3.42	3.74
Electrical and electronic equipment	10.89	4.08	6.81
Motor vehicles and equipment	9.29[9]	3.00[2]	6.29[2]
Other transportation equipment	4.15	1.88	2.27
Instruments and related products	12.12	5.17	6.95
Miscellaneous manufacturing indust.	17.82	10.12	7.70

1. **Based on ratio of imports to new supply (domestic shipments plus imports).**
2. **Excludes imports of motor vehicles and parts under the Canadian Automotive Agreement amounting to $8.5 billion. (Not all trade under the Canadian Automotive Agreement is classified as primary to SIC 371).**

Source: **U.S. Department of Commerce, Bureau of Industrial Economics, *1981 U.S. Industrial Outlook* (Washington, D.C.: Government Printing Office), p. xxix.**

by foreign producers has increased greatly and concentrated sectorally, with the direct result of variable spatial impact.

The U.S. economy has undergone a dramatic internationalization during the past two decades. This is evident in the real increase in value of both exports and imports and the increasing share of GNP accounted for by trade. However, the internationalization of the economy has had uneven impact, particularly on manufacturing, and thus because of metropolitan specialization has contributed to an uneven impetus to the U.S. metropolitan centers. Within the manufacturing sector, trade deficits have been in the vicinity of $5 billion per year. The import penetration ratio increased from 4 percent in 1968 to 7.39 percent in 1978 (table 7).

The increase in penetration ratios (imports as a proportion of total new supply) within the manufacturing sector is uneven and revealing. Among nondurable manufactured goods, apparel and leather goods in particular exhibit a sharply declining share of the domestic market. Changes in import penetration for durable manufactured goods is equally dramatic. Domestic producers of primary metals, machinery, electrical and electronic equipment, instruments, motor vehicles, and miscellaneous goods (musical instruments, sporting goods, jewelry, etc.) have all experienced a decline in share of the rich U.S. market. Employment change by sector is strongly and inversely related to the increased penetration of foreign manufacturers into the domestic market. The rank correlation between percentage change in two-digit SIC group employment (1976–77) and percentage change in the import penetration ratio is −0.61. The major anomalies include those manufactures with some element of market or material orientation, or those that experienced rapid automation (food products and tobacco processing) and for whom employment changes are not attributable to direct foreign competition. In summary, a strong element of foreign competition with uneven impact on the manufacturing sectors and then, accordingly, uneven impact spatially is suggested.

The reasons for the competitive weakness of U.S. manufacturing have been widely debated and are not of direct issue here, but the weakness seems to be a result of complex and interacting factors that include labor cost and productivity, management approaches, and government.

The implication of the foregoing arguments is that the systematic spatial variation in the pattern of population growth and decline may, at least in part, be attributable to systematic variation in the economic composition of those very same metropolitan areas. Table 8 illustrates the structural distinctiveness of cities in the aggregate located in the various census divisions contained in figure 1. It is the census divisions in which manufacturing, especially durables manufacturing, contributes most strongly to total employment where most of the slow growth or declining metropolitan areas are located. Coversely, the divisions with highly developed public and private service employment contain the growth centers.

The Spatial Expression

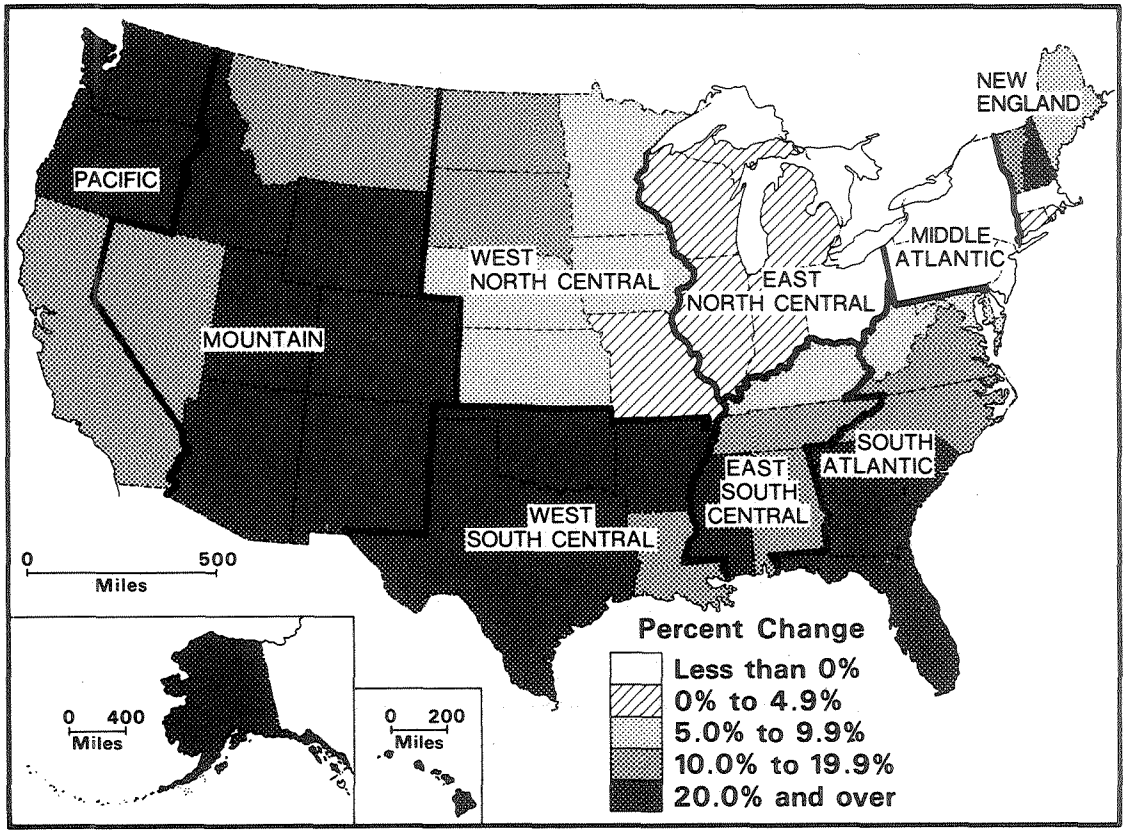
The statistical aggregates mask a systematic spatial variation in urban growth and decline (fig. 1). These patterns are well known to most observers and are summarized here only briefly. The most rapid growth occurs in the metropolitan areas of the Mountain Census Division, although the absolute increase experienced by metropolitan areas within

TABLE 3.8
Economic Structure of Metropolitan Areas by Census Division

CENSUS DIVISION	POPULATION GROWTH (PERCENT)	PERCENT OF EMPLOYMENT TOTAL BY ECONOMIC SECTORS				
		PRIMARY	DURABLES	NONDURABLES	PRIVATE SERVICE	PUBLIC SERVICE
New England	(0.5)	1.3	23.5	1817	52.2	4.3
Middle Atlantic	(-3.3)	2.7	23.6	15.6	53.1	5.0
South Atlantic	(17.6)	2.7	11.1	13.3	64.7	8.2
East South Central	(11.0)	2.2	13.3	16.3	61.9	6.3
West South Central	(25.0)	5.9	7.7	15.6	64.2	6.6
East North Central	(1.5)	2.8	25.6	11.5	56.1	4.0
West North Central	(4.9)	3.8	13.8	10.9	65.0	6.5
Mountain	(42.4)	3.8	8.7	7.8	71.9	7.8
Pacific	(18.3)	6.8	11.3	8.3	64.3	9.3

Source: **Calculated by the authors.**

FIGURE 3.1
Percent Change in Metropolitan Population 1970 to 1980



that division (slightly more than 1.7 million) does not surpass that enjoyed by the Pacific Division (4.5 million), South Atlantic Division (3.6 million), or West South Central Division (3.3 million). The North, from the central to eastern portions, experienced sluggish growth in its cities.

The New England, Middle Atlantic, and East North Central divisions contain metropolitan areas that were mainly either slow growing or declining in population. The Middle Atlantic Division alone lost nearly 1 million people from its metropolitan areas. The so-called rust bowl contained no metropolitan area that grew faster than the national median. Manufacturing was roughly 40 percent of the total employment in the division in 1970. More critically, manufacture of durable products engaged nearly 25 percent of total employment in these cities in the aggregate in 1970.

In each of the foregoing divisions there are cities that are anomalistic to the more general trend of the area. For example, though most New England metropolitan areas are growing slowly or even declining, there are aberrant cases. Danbury, Connecticut (26.7 percent), and Nashua (32.4 percent) and Manchester (21.3 percent), New Hampshire, are three examples of metropolitan areas growing more rapidly than the national median of 9.6 percent during the 1970s. Each has experienced the growth of the electronic products industry. Danbury has been stimulated by IBM and Union Carbide headquarters location, and its function as an attractive bedroom community for New York City. Atlantic City, New Jersey, was one of the few cities in the Atlantic Division to attain double-digit percentage growth during the decade of the 1970s, but without the generation of a Las Vegas-type function, it too would have undoubtedly declined. In the East North Central Division, seven of the nine metropolitan areas that experienced double-digit percentage growth in the 1970s were essentially college or university centers of moderate size (e.g. Bloomington and Lafayette, Indiana; Ann Arbor, Michigan; and Madison, Wisconsin).

No slow-growing metropolitan areas existed in the Pacific Division during the 1970s. The most rapidly growing were centers of agricultural production and processing, such as Salinas-Monterey, Fresno, Modesto, and Bakersfield, California, and Yakima, Washington. The Pacific Division and the Mountain Division engage less than 20 percent of total employment in manufacturing of any sort, and services (both public and private) employed well over 70 percent in each case. The Mountain Division cities, including Tucson, Las Vegas, Phoenix, and Albuquerque, are very highly specialized in the services sector. In the fast-growing Mountain Division only Great Falls, Montana, and Pueblo, Colorado, were slow growers, and both share a high percentage of employment in manufacture

of metals. In the South, west central to the coast, considerable growth characterized the urban areas of the region. The few exceptions include Louisville, Kentucky, which is involved heavily in the manufacture of metals, and machinery, and Wichita Falls, Texas, Lawton, Oklahoma, and Columbus, Georgia, where military fluctuations have impacted on growth patterns during the 1970s. Southern cities, central to the Atlantic coast, engage in considerable nondurables production, e.g. textiles and chemicals, with high levels of services orientation as well. They experienced considerable population growth during the 1970s.

Summary

There is in progress a dramatic transformation of the U.S. urban system, and it is especially evident in spatial variation in metropolitan population change. Particular North American regions experience rapid rates of metropolitan growth, while other regions contain numerous metropolitan centers with slow or even no growth. The contention that variations in metropolitan growth are not a function of city size but are, at least in part, an outgrowth of a national transformation in economic structure is supported in this paper. The growth cities tend to be those specialized in services and information activities. Cities specialized in manufacturing, on the other hand, are commonly slow-growth cities. More important the cities specialized in manufacturing are in certain regions; the cities specialized in the growing tertiary and quaternary activities are in the other regions.

This relationship between the nature of the economic activity upon which a city is dependent and its growth experience is accentuated currently because of both the intensity of the internationalization of the economy and internally generated sectoral shifts in the U.S. economy. These underlying forces that we have stressed, and perhaps those deliberately not considered herein, certainly do not appear ephemeral. Rather, it can be anticipated that the growth or curtailment impulses will be long running and contribute to continuing adjustment in U.S. metropolitan population distribution.

References

Baumol, W. J. 1967. "Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis." *American Economic Review* 57, 415–26.

Borchert, J. R. 1967. "American Metropolitan Evolution." *Geographical Review* 57, 301–32.

———. 1983. "Instability in American Metropolitan Growth." *Geographical Review* 73, 127–49.

Bourne, L. S. 1980. "Alternative Perspectives on Urban Decline and Population Deconcentration." *Urban Geography* 1, 39–52.

Clark, G. 1981. "The Employment Relation and Spatial Division of Labor: A Hypothesis." *Annals of the Association of American Geographers* 71, 412–24.

Cohen, Y. S., and Berry, J. L. 1975. "Spatial Components of Manufacturing Change." Research Paper No. 172. Chicago: University of Chicago, Department of Geography.

Hirschorn, L. 1979. "The Urban Crisis: A Post-Industrial Perspective." *Journal of Regional Science* 19, 109–17.

Norton, R. D. 1979. *City Lifecycles and American Urban Policy.* New York: Academic Press.

Norton, R. D., and Rees, J. 1979. "The Product Cycle and the Spatial Decentralization of American Manufacturing." *Regional Studies* 13, 141–51.

Noyelle, T. J. 1983. "The Rise of Advanced Services: Some Implications for Economic Development in U.S. Cities." *Journal of the American Planning Association* 49, 280–90.

Phillips, P. D., and Brunn, S. D. 1978. "Slow Growth: A New Epoch of American Metropolitan Evolution." *Geographical Review* 68, 274–92.

Pred, A. 1965. "Industrialization, Initial Advantage, and American Metropolitan Growth." *Geographical Review* 55, 158–85.

Scott, A. J. 1982. "Production System Dynamics and Metropolitan Development." *Annals of the Association of American Geographers* 72, 185–200.

Stanback, T. M., Jr., and Noyell, T. J. 1982. *Cities in Transition.* Totowa, N.J.: Allanheld, Osmun.

Thompson, W. R. 1975. "Economic Processes and Employment Problems in Declining Metropolitan Areas." In *Post-Industrial America: Metropolitan Decline and Inter-Regional Job Shifts,* edited by G. Sternlieb and J. Hughes, 187–218. New Brunswick, N.J.: Rutgers University Center for Urban Policy Research.

———. 1977. "The Urban Development Process." In *Small Cities in Transition: The Dynamics of Growth and Decline,* edited by H. J. Bryce, 95–112. Cambridge, Mass.: Ballinger.