

**SWP758**

**International Experience in Urbanization  
and Its Relevance for China**

John Vernon Henderson

**WORLD BANK STAFF WORKING PAPERS  
Number 758**

**A Background Study  
for**

*China: Long-Term Development Issues and Options*

Public Disclosure Authorized

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W67  
10.758  
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HC 3004 E 1167 1167 NO 758

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URBANIZATION AND...

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# CHINA

## Long-Term Development Issues and Options

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- 1 The Asian Experience in Rural Nonagricultural Development and Its Relevance for China (Staff Working Paper 757)
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The World Bank  
Washington, D.C., U.S.A.

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Washington, D.C. 20433, U.S.A.

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First printing February 1986

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#### Library of Congress Cataloging-in-Publication Data

Henderson, John Vernon, 1947-

International experience in urbanization and its  
relevance for China.

(World Bank staff working papers ; no. 758)

"A background study for China, long-term development  
issues and options."

Bibliography: p.

1. Cities and towns--Growth. 2. Cities and towns--  
China--Growth. 3. Urban policy--China. 4. Economic  
development--China. I. China, long-term development  
issues and options. II. Title. III. Series.

HT371.H39 1986

307.7'6'0951

86-1555

ISBN 0-8213-0708-8

## Abstract

This paper examines some of the options for future urbanization in China in the light of international experience. The paper identifies common features of the urban sector across countries, describing trade relations and production patterns among cities in an economy and their relationships to city size distributions, location of economic activity, and regional development. The relationships between economic development, urbanization, industrialization, centralization, and urban concentration are also examined. The paper then describes the major features of industrial location and urbanization in China and their relationship to past policies. The policies discussed include both direct urban and location policies and the indirect effects on urbanization and location of state pricing policies, price subsidies and state allocation policies for resources and goods subject to mandatory planning. Finally, the paper outlines some of the options for future urbanization in China, distinguishing between an option that allows for more rational spatial patterns of investment and location of firms, without a change in population allocation, and an option that, in addition, permits varying degrees of population mobility. The implications of these options for national policies on pricing, markets for materials, investment markets and so forth are also discussed.

(i) The following review of urbanization is divided into three chapters. In the first chapter, urbanization experience in various parts of the world is examined. Based on a variety of scientific papers, it identifies common features of the urban sector across countries, describing trade relations and production patterns among cities in an economy and their relationships to city size distributions, location of economic activity, and regional development. In the course of analysis, the relationships between economic development, urbanization, industrialization, centralization, and urban concentration are examined. The international experience consists of both taking overviews of large samples of countries and looking in some detail at Brazil, the Republic of Korea, the United States as well as examining aspects of Japan, India, and the USSR.

(ii) The first chapter is intended to provide a framework and information relevant to China in choosing among various urbanization policy options. Relevance is broadly viewed so that, while some information may not be directly relevant to China today, it may be relevant ten years from now or in planning for the future.

(iii) The second chapter examines urbanization in China. First, there is a review of some of the important features of industrial concentrated. Second, population location and internal organization of cities are discussed.

(iv) The third chapter examines some policy options for future urbanization.

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Table of Contents

	<u>Page No.</u>
1. LESSONS FROM INTERNATIONAL EXPERIENCE.....	1
Overview.....	1
National Output Patterns, Urban Area Size Distribution and Spatial Dispersion of Urban Population.....	7
The Dynamics of Concentration and Deconcentration.....	32
2. LOCATION AND URBANIZATION IN CHINA.....	42
Industrial Concentration.....	42
Population Location.....	69
Internal Organization of Cities: City Management.....	81
3. CHINA: OPTIONS FOR THE FUTURE.....	88
Options for the Location of Industry.....	89
Options for Location of Population.....	94
REFERENCES .....	97



## 1. LESSONS FROM INTERNATIONAL EXPERIENCE

### Overview

#### Development and Urbanization

1.01 There is a strong relationship between economic development and urbanization. Based on a sample of 111 countries, Renaud (1979) estimated a strong positive statistical relationship between per capita income and the percentage of a country's population that is urbanized. This relationship may be seen by comparing columns (2) and (4) of Table 1.1. We see that as we move from \$250 per capita (India) to \$1,500 (Turkey, Korea) to \$5,000 or more, the percentage of urbanized population increases from about 25 percent to over 75 percent. Note, however, that for even a highly developed country such as the United States, a significant proportion (20-25 percent) of the population remains rural and mostly nonagricultural.

1.02 Urbanization is accomplished initially mostly by rural-urban migration and later by internal growth of the urban population (Squire 1979, Renaud 1979). As documented in Squire (1979), rural-urban migration represents a basic structural change in the economy where either or both national product patterns shift in favor of goods produced in urban areas or technological development in agriculture reduces the demand for agricultural labor. In both cases, urban wages rise relative to rural wages drawing the rural population into cities. The reasons for the structural and technological changes in the economy will be discussed further below.

Table 1.1. URBANIZATION AND ECONOMIC DEVELOPMENT /a

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Country	Per capita income (\$ 1981)	Percentage urbanized		Percentage of urban population living in cities over 1/2 million		Annual growth rates 1970-81 urban pop. rate/total pop. rate
		1960	1981	1960	1980	
India	260	18	24	26	39	3.7/2.1
China	300	18	21	n.a.	51	
Pakistan	350	22	29	33	51	4.3/3.0
Indonesia	530	15	21	34	50	4.0/2.3
Thailand	770	13	15	65	69	3.4/2.5
Nigeria	870	13	21	22	58	4.8/2.5
Peru	1,170	40	66	38	44	3.5/2.6
Turkey	1,540	30	47	32	42	4.1/2.3
Korea, Rep. of	1,700	28	56	61	77	4.3/1.7
Brazil	2,220	46	68	35	52	3.9/2.1
Chile	2,560	68	81	38	44	2.4/1.7
Yugoslavia	2,790	28	43	11	23	2.4/0.9
Venezuela	4,220	67	84	26	44	4.2/3.4
Spain	5,640	51	75	37	44	2.2/1.1
Italy	6,960	59	70	46	52	1.1/0.4
United Kingdom	9,110	86	91	61	55	0.3/0.1
Japan	10,080	62	79	35	42	2.0/1.1
Canada	11,400	69	76	31	62	1.2/1.2
United States	12,820	70	77	65	72	1.5/1.0
Germany, Fed. Rep.	13,450	77	85	48	45	0.5/0.0
USSR	n.a.	44	63	21	33	1.8/0.9
Germany, Dem. Rep.	n.a.	72	77	14	17	0.2/-0.2
Avg. for lower-middle-income countries	850	24	33	28	47	4.3/2.6
Avg. for upper-middle-income countries	2,490	45	63	38	51	3.8/2.2

/a In general, the numbers in columns (5) and (6) are not very accurate, so while they do not give a very accurate picture of levels in 1960 and 1980 they probably give a credible picture of the proportionate increases in population housed in larger cities.

Source: World Development Report 1983, World Bank [except for column (6) for China and columns (5) and (6) for the United States].

### Industrialization and Urbanization

1.03 While there is a strong relationship between the levels of development and urbanization, the link between urbanization and the general level of industrialization appears weaker. If we look at developed countries, the percentage of the labor force in manufacturing has increased only mildly, despite rapid urbanization. For example, in 1880 the United States was 27 percent urbanized, with 19 percent of its labor force in manufacturing. By 1970 it was 73 percent urbanized, but the percentage of the labor force in manufacturing had only risen to 25 percent (Historical Statistics of the United States, Part 1). Similarly, if we look at current middle-income countries worldwide, who have rapidly urbanized since 1950, the average proportion of the labor force in manufacturing has risen only from 14 percent to 19 percent (Squire 1979).

1.04 In almost all these cases, what has happened most dramatically is a shift in the composition of the manufacturing labor force from nondurable (such as textiles and food processing) to durable (such as metals, machinery) goods production. For the United States and Korea for relevant time periods, using both general and specific industrial composition comparisons, in Table 1.2 we see dramatic drops in the ratio of workers engaged in traditional manufacturing (textiles, food processing) to workers engaged in heavy manufacturing (metals, machinery), as populations moved from rural to urban areas. This suggests that urbanization is more closely linked with industrial composition than with industrialization. These notions will be explored later.

Table 1.2. INDUSTRIAL COMPOSITION AND URBANIZATION

(a) United States	Year:	<u>1880</u>	<u>1960</u>
No. of textile workers/no. of iron and steel workers		1.30	0.56
Percent urbanized		27	70
(b) United States	Year:	<u>1940</u>	<u>1970</u>
Nondurable good workers/durable good workers			1.200.73
Percent urbanized		56	73
(c) Korea	Year:	<u>1966</u>	<u>1978</u>
Workers in textile and food processing/ workers in metals and machinery		2.7	1.5
Percent urbanized		35	55

1.05 There is also a suspicion that, as technology in manufacturing has changed, effective utilization of the newer technologies has required greater urbanization. Sophisticated manufacturing techniques demand workers with very diverse specialized skills. To find these employees, firms may need to be located in large urban areas with their larger, more diversely skilled labor market. Hand-in-hand with this is a notion that rates of change in technology have speeded up and that the speed at which firms find out about and adopt the new technologies is affected by whether or not they are located in urbanized areas.

1.06 These comments apply to developed and middle-income countries. The data for current low-income countries raise an unanswered question. These countries generally have a much lower proportion (under 10 percent) of their labor force in manufacturing than developed countries historically, and middle-income countries over the last 40 years, perhaps, as we will suggest, because of their low rates of literary and educational attainment. While it appears that development will require greater industrialization and upgrading

of their labor forces, what is unclear is whether it requires extensive, concentrated urbanization in the near future. The answer appears to depend on the nature of their industrialization.

1.07 We should note that there is a strong link between urbanization and nonmanufacturing labor force activity. First, the percentage of the labor force in agriculture drops precipitously. Second, service activity rises substantially. For example, in the United States, on the basis of industry divisions, there was an increase in service employment (wholesale and retail trade, finance, insurance, real estate, and personal services) from 30 percent to 43 percent of the labor force between 1900 and 1970 (Historical Statistics, op. cit.). Similarly for middle-income countries, service industry employment rose from 14 percent to 19 percent of the labor force between 1950 and 1970 (Squire 1979). This increase in service activity is even more dramatic if one looks at the division of labor on an occupational basis, because of shifting activities within manufacturing from blue-collar work to white-collar technical and clerical work. For example, in the United States, on an occupational basis, in 1900, service (service, sales, clerical) workers and professional and technical workers accounted for (respectively) 17 percent and 4 percent of the labor force. By 1970, these numbers had risen to 38 percent and 14 percent, respectively (Historical Statistics, op. cit.).

#### Urban Concentration and Urbanization

1.08 In general, urban concentration is weakly associated with the extent of urbanization. The relationship that exists suggests that as urbanization increases, urban concentration falls, where concentration reflects the extent to which the urban population is housed mostly in one or two urban areas, as opposed to many. Although, as a national urban population grows, most indivi-

dual urban areas have tended to also grow, the number of urban areas grows faster, so that the share of any one urban area in the national urban population falls (Henderson 1980). However, it is important to note that this does not preclude the widespread phenomenon that, as urbanization increases, a higher proportion of the urban population is housed in (an increasing number of) relatively larger urban areas. That fact is reflected by comparing columns (3) and (4) with (5) and (6) in Table 1.1. While these relationships seem to apply between urbanization and urban concentration, as we will explore later, urban concentration is more closely associated with industrial composition, the country's system of government, the availability of inhabitable land, and the nature of the national transportation system. Also to be explored is the fact that in smaller fast-developing countries, urban concentration sometimes increases rapidly with urbanization for, say, two decades and then drops off.

#### Issues to be Explored

1.09 We are going to explore the links between industrialization, urbanization, and urban concentration from two perspectives.

- (a) By examining large countries which currently have a relatively stable system of cities and the basic concepts about systems of cities, we will explore the relationship between what a country produces and urban concentration and urbanization. We will also examine the extent of spatial dispersion of urban areas and urban population to see why, in some countries, large urban areas are spread throughout the country, while in others they are clustered in small areas containing the national capital and a set of satellite cities.

(b) By examining some rapidly developing countries, we will explore why some countries have experienced initial rapid concentration of the urbanized population into one or two urban areas, followed by deconcentration. Both the reversal of concentration, as well as widespread policies in many of these countries today encouraging deconcentration, may suggest that the initial levels of concentration were unnecessary. Regardless, we will examine deconcentration. By doing so, we hope to learn about the critical aspect of the concentration and deconcentration processes.

National Output Patterns, Urban Area Size Distribution,  
and Spatial Dispersion of the Urban Population

1.10 There is a natural economic relationship between national production patterns, urbanization, and the size distribution of urban areas. The first part of this section will explore this relationship. The second part will explore the determinants of how urban areas are spatially distributed--whether they are clustered close together or spatially dispersed throughout the country. The third part will analyze the conditions which must hold in a country for the relationship between production patterns and urban concentration to be a strong one and will suggest types of government policies which can affect this relationship.

National Production Patterns and Urban Concentration

1.11 We can observe a general pattern, if we look across the system of cities in a country, as urban sizes increase, the share of manufacturing in local employment increases slowly, reaches a maximum, and then declines. In contrast, the share of services appears to rise indefinitely as we move to

larger and larger urban areas. These relationships are postulated as generally holding in most countries by Richardson (1977) and specifically detailed for Japan (Renaud 1979), Korea (Renaud 1979), and the United States (Henderson 1983a). Henderson investigates these relationships for the United States in 1970 for urban areas over 50,000 for a more detailed industrial breakdown. The definition of urban area includes the central city and its suburbs. For heavy manufacturing, he finds that its share is constant or declines weakly with urban area population, while light manufacturing's share weakly increases up to an urban population of five million. In contrast, the relationships for high-technology manufacturing and for modern services (professional activities, business services, finance, insurance, real estate, etc.) are much stronger and sharper. High-technology manufacturing is highly concentrated in urban areas of over one million but under six or seven million. Shares of modern services all experience rapid rates of increase with urban area populations throughout most of the relevant size range of urban areas.

#### Determinants of the General Patterns

1.12 What underlies these patterns? For manufacturing, there has been a detailed examination of hypotheses which would explain these patterns for two large countries, the United States (Bergsman, et al. 1972, 1975; Sveikauskas 1975; Henderson 1983b) and Brazil (Hamer 1983 and Henderson 1982a). Several facts emerge from these examinations. First, smaller and medium-size urban areas tend to be highly specialized in their industrial production patterns (Henderson 1983b, 1982a). About half of the 243 US urban areas over 50,000 in 1970 could be classified as being specialized in one of the following production categories: automobile production, aircraft, shipbuilding, steel, industrial machinery, communication mobile equipment, petrochemicals, textiles,

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apparel, leather products, pulp and paper, and food processing. The other half of the urban areas are either nonindustrialized state capitals, college towns, and agriculture service centers (specialized in warehousing, business, and transport services) or very large diversified, metropolitan areas. A partial typing of US urban areas for 1970 is reported in Table 1.3. For Brazil, the pattern is very similar although, not surprisingly, there are relatively more urban areas specializing in textiles and food processing and fewer in transport equipment, machinery, and petrochemicals.

1.13 It should be noted that specialization in this context is very much a relative concept. Much of a city's labor force is engaged in nonexport service and retail activity. At most, 40 percent of a city's labor force will be engaged in one type of export activity. Typically, specialization is defined on the basis of 10-20 percent of the city's labor force being engaged in a particular manufacturing or service activity, with perhaps another 10-20 percent being involved in diverse other activities, with many support activities for the industry of specialization. Other patterns are possible. For example, an industry typically employing males (iron and steel) is sometimes complemented by an industry likely to employ females (textiles).

1.14 Specialization can also be viewed from another perspective. In Brazil, for most three- and four-digit manufacturing industries, in looking at any one of these industries, there appear to be three sets of urbans. The first set, containing typically well over 50 percent of all urban areas, has absolutely no employment in that industry. The second set, containing typically 35-45 percent of all urban areas, has minimal employment (under 150 workers) in that industry, typically involved in repair and service activities. The final set, containing typically 5-10 percent of all urban

Table 1.3. URBAN SPECIALIZATION IN THE UNITED STATES

The grouping of urban areas is based on extensive cluster analysis as reported in Henderson (1983). The criterion used in reporting these urban areas is very strict. A looser criterion increases the number of urban areas in each category. Employment fractions, where available, are reported in parentheses.

<u>Automobile</u>	<u>Pulp and Paper</u>	<u>Steel</u>
Bay City, MI (13 percent)	Appleton-Oshkosh, WI (13 percent)	Birmingham, AL (8 percent)
Cleveland, OH	Green Bay, WI (11 percent)	Gasden, AL (11 percent)
Detroit, MI (17 percent)	Mobile, AL	Gary Hammond-East Chicago, IN (26 percent)
Flint, MI (36 percent)	Monroe, LA	Huntington-Ashland (WV, KY, OH) (7 percent)
Jackson, MI (7 percent)	Portland, ME	Johntown, PA (13 percent)
Kenoska, WI (16 percent)	Savannah, GA	Pittsburgh, PA
Lansing, MI (15 percent)		Pueblo, CO (8 percent)
Muncie, TN (13 percent)	<u>Shipbuilding</u>	Steubenville-Weirton, OH-WV (29 percent)
Saginaw, MI (17 percent)	Charleston, SC (7 percent)	Wheeling (WV-OH) (7 percent)
South Bend, IN (6 percent)	New London-Groton-Norwich, CT (12 percent)	
Springfield, OH (9 percent)	Newport News-Hampton, VA (17 percent)	<u>Leather Products</u>
Toledo (OH-MI) (8 percent)	Vallejo-Napa, CA (10 percent)	Brockton, MA (6 percent)
<u>Textiles</u> (excluding apparel)	<u>Apparel</u>	Lewiston-Auburn, ME (16+ percent)
Ashville, NC	Allentown-Bethlehem-Easton, PA-NJ (9 percent)	Manchester, NH
Augusta, GA (10 percent)	Atlantic City, NJ	
Chattanooga, TE-GA (11 percent)	El Paso, TX	<u>Petrochemicals</u>
Columbus, GA	Fall River, MA-RI (16 percent)	Baton Rouge, LA (10+ percent)
Greenville, NC (18 percent)	New Bedford, MA (13 percent)	Beaumont-Port Arthur-Orange, TX (18+ percent)
Wilmington, NC (6 percent)	Scranton, PA	Galveston-Texas City, TX (11+ percent)
<u>Food Processing</u> (excluding agriculture, fisheries, and wholesaling)	Wilkes-Barre-Hazleton, PA	Lake Charles, LA (12+ percent)
	<u>College State Capital Towns</u>	
Brownsville-Harlington-San Benito, TX	Austin, TX	<u>Service Centers</u>
McAllen-Phan-Edinburg, TX	Bloomington-Normal, IL	Amarillo, TX
Modesto, CA	Bryant-College Station, TX	Billings, MT
Salinas-Monterey, CA	Champaign-Urbana, IL	Duluth-Superior, MN
Stockton, CA (5 percent)	Columbia, MO	Little Rock-North Little Rock, AR
	Columbus, OH	Omaha, NE
<u>Aircraft</u>	Durham, NC	Spokane, WA
Anaheim-Santa Ana-Garden Grove, CA (5 percent)	Fargo-Moorhead, ND-MN	Springfield, MA
Bridgeport, CT (7 percent)	Gainesville, FL	
Fort Worth, TX (13 percent)	Lafayette, LA	<u>Diverse Manufacturing</u>
Hartford, CT, (11 percent)	Lafayette-W. Lafayette, IN	Dallas, TX
Seattle-Everett, WA (10 percent)	Lexington, KY	Newark, NJ
Wichita, KA (14 percent)	Lubbock, TX	Philadelphia, PA
	Madison, WI	Phoenix, AZ
<u>Radio, Television and Communication Equipment</u>	Raleigh, NC	Syracuse, NY
Binghamton, NY-PA (7 percent)	Reno, NV	
Cedar Rapids, IA	Santa Barbara, CA	<u>Industrial Machinery</u>
Lawrence-Haverhill, MA-NH (7 percent)	Tallahassee, FL	Bristol, CT (10 percent)
Nashua, NH (8 percent)	Terre Haute, IN	Canton, OH (6 percent)
	Tucson, AZ	LaCrosse, WI (11 percent)
	Tuscaloosa, AL	New Britain, CT (10 percent)

areas, has extensive employment in that industry, with that industry often being its industry of specialization. The numbers for different industries are given in Table 1.4 and refer to a region with a total urban population of under 35 million. The data upon which Table 1.4 is based are uncensored precise counts from the 1970 Industrial Census of Brazil covering firms of all sizes (down to one employee) for three- and four-digit industries. Although similar detailed industrial data are not released in the United States, from the Population Census it appears similar patterns exist.

1.15 In Table 1.5, we present the numbers for a variety of US industries which appear to conform to the hypothesized pattern. The numbers in Table 1.5 are not so precise and are based upon how household members categorize the industrial activities at their work place.

1.16 The fact that cities tend to specialize in production and so, vary in type, has important implications for the size distribution of cities. The different types of specialized urban areas fall roughly into different size categories, although this is a weak statistical relationship, suggesting that the forces determining an urban area's size are varied and extremely complex (see later). For example in Brazil, urban areas specializing in textiles and ceramics tend to be smaller than those specializing in iron and steel production, while the latter types of urban areas tend to be smaller than those specializing in transport equipment or machinery (Henderson 1983c).

1.17 These patterns of specialization form a direct link between national output patterns and urban area size distributions. National output patterns are determined by a country's overall natural resources, consumption patterns, trade relationships, and government policies. These production patterns then imply a system of cities, broken into types specializing in the production of different goods, where the numbers of each type depend on the level of

**Table 1.4. EMPLOYMENT CONCENTRATIONS: SOUTHERN BRAZIL:  
NUMBER OF CITIES IN THE EMPLOYMENT INTERVAL**

Employment interval	Out of all 126 urban areas			Out of 26 urban areas with populations of 100,000 to 1/2 M 2,000+	Out of 63 urban areas under 50,000 pop. 500+
	0	1-150	3,000+		
Ceramics (tile, bricks)	54	52	5	1	2
Glass and crystal	96	22	2	0	0
Iron and steel	45	49	6	4	2
Engines and turbines	82	34	1	0	1
Ventilation and refrigeration equipment	56	58	3	1	0
Machine tools and industrial equipment	58	47	2	1	0
Agricultural machinery	53	55	1	0	0
Electrical for households (toasters)	94	28	1	0	0
Communications equip. (radios, TV)	85	34	2	0	0
Accessories for automobiles		24	82	2	30
Artificial fibers	116	4	1	1	0
Spinning and weaving natural fibers	62	15	6	4	11
Spinning and weaving artificial fibers	105	8	3	1	2
Finishing of cloth: spinning		88	17	2	2
Sugar		84	28	1	11
Toys		95	29	1	0
Shoes		28	80	4	10

Source: 1970 Industrial Census of Brazil.

Table 1.5. EMPLOYMENT CONCENTRATION IN US METROPOLITAN AREAS IN 1970:  
NUMBER OF SMSAs /a IN THE EMPLOYMENT INTERVAL

Employment interval	Out of 210 SMSAs with populations from 50,000 to 1 M				Out of 33 SMSAs over 1 M
	<250	2,000-5,000	5,000-10,000	10,000+	10,000+
Blast furnaces, steel works, rolling and finishing mills	168	7	10	6	7
Cutlery, hand tools and other hardware	164	3	1	0	0
Metal stamping	175	3	0	0	2
Engines and turbines	190	1	1	0	1
Farm machinery and equip.	185	3	2	1	0
Construction and mater- ials handling equip.	151	9	1	0	4
Electronic computing	183	3	2	0	3
Household appliances	177	6	3	2	1
Motor vehicles and equipment	130	16	17	8	13
Aircraft and parts	143	12	9	4	11
Shipbuilding	171	4	6	2	2
Photographic equipment and supplies	206	2	1	1	0
Tobacco manufacturers	193	3	3	1	0
Meat products	133	7	0	0	0
Canning and preserving	167	5	0	0	0
Knitting mills textiles	181	4	2	1	1
Yarn thread and fabric mills	145	8	6	3	1
Apparel and accessories	85	16	15	4	9
Pulp, paper and paper board products	147	6	3	0	0
Industrial chemicals	153	4	3	0	1
Rubber products	151	12	2	1	0
Footwear	178	9	1	0	0

/a SMSAs (Standard Metropolitan Statistical Areas) incorporate a central city and its suburbs (including rural population). Approximately 55 percent of all people in SMSAs live in suburbs.

Source: 1970 Population Census, Sixth Count, Table 1270.

national output of the goods that type of city specializes in. The size distribution of cities depends on the numbers of each type of city of differing average size required to meet overall national production patterns. Comparing different economies at a point in time, as production patterns shift away from traditional industries such as natural fiber textiles, warehousing and transport for agricultural output, food processing, retail and personal services for farm communities, and ceramics towards heavy machinery and transport industries, we could expect to see a shift from smaller to medium-size type cities. And, as we will note later, with a shift from general manufacturing into modern services or high-technology manufacturing, we might expect another shift from medium- to large-size urban areas.

1.18 It is important to understand the reasons for industrial specialization by urban areas, for the size differences across urban areas, and for the service orientation of large metropolitan areas. We now briefly explore these reasons, which have to do primarily with the nature of the economies of scale in production which give us population agglomerations in the first place. Greater scale of economic activities in cities enhances productivity through "communications" among firms which enhance the speed of adoption of technological innovations and of reaction to changing national and international market conditions. This occurs through labor market economies for workers and firms searching respectively for specific jobs and specific skill combinations, through greater opportunities for specialization in firm (and worker) activities, and through scale economies in provision of intermediate common inputs (docking facilities, warehousing, power, etc.). The question is whether these scale economies affecting firms in a specific industry arise from own industry size or from more general urban area size. Is the incubator

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the industry itself or the city? This is the critical question. We first examine it for manufacturing industries.

1.19 Manufacturing. For both Brazil and the United States, for almost all manufacturing industries, economies of scale are estimated to arise solely from benefits of increased local industry size, not urban area size. Scale economies of this type are called localization economies. This is particularly true for primary metals, electrical and nonelectrical machinery, transport equipment, petrochemicals, pulp and paper, leather products, and wood products. The extent of localization economics for apparel and textiles in both countries and food processing in Brazil is weaker, suggesting weak benefits from agglomerating employment in these industries as opposed to their being in small towns (rural areas). These industries exhibiting localization economies tend to produce standardized products that are exported from the city around the country and internationally. Because the products are standardized, it is not so important for them to be new centers of innovation. Rather, they benefit from either or both large plant sizes with large assembly lines (for instance, transport equipment) or from large own industry concentrations drawing upon a common labor market (such as pulp and paper, wood products, textiles).

1.20 In contrast, ubiquitous industries, many of whose products are locally consumed (fabricated metals such as cans, cutlery, hand tools, plumbing fixtures, structure of metal products, stampings and nonmetallic minerals such as cement and glass) exhibit little or no scale effects. Volatile consumer-oriented industries such as apparel and publishing appear to benefit more from increases in urban area sizes than their own industry size.

1.21 Why are industries which exhibit localization economies found in smaller and medium-size specialized urban areas? First, from an efficiency point of view, there is the notion that increases in population agglomeration are only beneficial for production. For consumption, it is generally perceived that per-person costs of housing and commuting rise continuously with city size, certain aspects of quality of life (pollution, congestion, crime) decline continuously, and scale benefits in providing public utilities are quickly exhausted (Hirsch 1973). While these notions are subject to some challenge and are explored in detail below, the general conclusion is that for consumption, beyond some relatively small size, increases in urban area size are costly.

1.22 Thus, the efficiency basis for increasing city sizes lies in production. For any city size, industrial efficiency is maximized by relative specialization of that part of an urban area's labor force not engaged in producing housing, local public services, local retail and personal services, etc. Specialization maximizes the exploitation of scale effects within an urban area's export industry, while diversification would dissipate scale effects for any one industry by spreading employment over many industries.

1.23 The extent of these scale effects both tapers off in any industry and differs by type of industry. These facts suggest that, given rising per-resident consumption costs of increasing city size, efficient increases in urban area sizes are limited and the efficient size of an urban area will vary by the industry it specializes in, as well as other considerations.

1.24 Traditional Service Industries. When we look at cities specializing in traditional services industries--higher education, state/provincial government, transport and warehousing, and personal, repair, and retail services for

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farmers, we find a similar pattern. We know that many urban areas over 50,000 and many more cities under 50,000 are specializing in these activities. We presume specialization, as for manufacturing, occurs because of localization economies although the relationships may be more complex. A college urban area will support a variety of education-related activities such as commercial research and testing, research hospitals, educational computer software, and some instrument manufacturing. An urban area specializing in warehousing and transportation can be a transport head for collection of agricultural produce (such as trains) or a mode for wholesale distribution of manufactured products for retailing in smaller towns. Despite these patterns, there is no statistical work estimating localization economies in the service sector. However, for personal, repair, and retail services for farmers, there is a massive literature detailing the patterns observed in different areas at different times.

1.25 This literature describes hierarchies of the smaller towns and cities in an economy whose primary purpose is to provide personal, repair and retail services (no manufacturing) to rural areas. The smallest cities in the hierarchy offer the fewest and most ubiquitous services, while as we ascend the hierarchy of city populations, the number of services offered accumulates until the largest city in the hierarchy (which in itself is quite small, say, under 50,000 in absolute terms) produces the whole range of traditional services. In terms of the range of services, Berry (1968), in looking at US rural areas of 30 years ago, suggests that smaller towns will offer banking, food retailing, repair, farm machinery retailing, and doctors' and religious services; the next larger towns will additionally offer furniture and drug retailing and then dry cleaning and legal services; and the largest towns will

offer hospital and apparel retailing services in addition to all the others previously listed.

1.26 While town sizes are, in part, limited by the factors discussed for manufacturing (scale economies in production versus diseconomies in consumer and commuting activities), there is an additional dominant consideration. This is the cost of delivering these services and retail goods from the towns to people in the rural areas. This cost limits the market area spatially and the extent of sales of any good from any town. Towns producing low-scale economy, expensive to transport goods or services to or selling to a low-density rural area will tend to be smaller.

1.27 Some Qualifications. We should note that the links we have stressed between industrial specialization of a city and city size and national output patterns and the size composition of cities are rough. We explore the roughness of each of these links in turn. While, on average, efficient city size is directly linked to internal industrial composition, in practice the link for a specific city is weak (Henderson 1983c and 1983d). City size is strongly affected by consumption considerations and geographic characteristics such as (i) public service levels, qualities, and taxes; (ii) quality of life measures such as crime rates and pollution levels; (iii) natural amenities such as weather conditions which affect everything from heating costs, to health, to pollution dispersion; and (iv) geological formations affecting the city's shape and transport system. These conditions also affect the desire of high- relative to low-skilled people to live in the city and that skill variation itself will affect the precise production techniques chosen and the composition of support industries for a base industry. In short, each city's attributes are unique and its efficient size different. Unfortunately,

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statistical measures of the relationships involved are subject to error and lack of data; and there is even difficulty in complex models in specifying the conditions describing efficient city size. Moreover, simple simulation work indicates that small variations in the key characteristics of a city can produce large variations in city size without affecting the welfare of residents. In estimation, the lower and upper bounds of the interval in which efficient size is estimated to lie can vary by severalfold. In summary, it is impossible for a planner to specify accurately what efficient size a particular city should be--that efficient size is something which evolves over time. References on this include Tolley, et al. 1979; Yezer and Goldfarb 1982; Henderson 1980, 1983c; and Segal 1976.

1.28       Second, it is true there is a relationship between the industrial composition of national output and the size distribution of cities because many smaller and medium-size cities tend to specialize in industrial production and each type of city, on average, has a different size. However, it must be recognized that on an absolute basis, much industrial production occurs in large metropolitan areas (such as Philadelphia, Chicago, Detroit, and Newark in the United States) and that even some not-so-large metropolitan areas have diverse manufacturing bases (Buffalo, Phoenix, Syracuse, and Dallas in the United States). Part of this is historical, where population has clustered around a resource-based core city, a phenomenon we explore below. But much of it probably involves complex interrelationships between specific industries identified at a very detailed level (looking at four- or five-digit industries rather than two- or three-digit) which we have only just started to study (see Bergsman, et al. 1972, 1975), and for which data are very limited (for instance, censored in the United States due to disclosure problems).

1.29 The analysis so far has applied only to manufacturing and traditional service industries. Particularly for modern service industries, as well as high-technology manufacturing and components of the publishing and apparel industries, the implication is that, because they are concentrated in large, diverse metropolitan areas, they must experience economies mostly from urban size rather than just own-industry size. Moreover, these urbanization economies may arise from the complex interaction of various service industries, diverse labor markets, large local consumer markets for testing products, and the diverse environment for firms engaged in product development and innovation.

1.30 The relationship between urban area sizes, urban concentration, and the proportion of the labor force engaged in professional, technical, business, service, financial, clerical and related occupations can be illustrated. In the United States, the proportion of the urban population living in urbanized areas over one million rose from 39 percent to 47 percent (mostly by expansion of the number of urban areas over one million) between 1950 and 1970 as service occupations expanded and blue-collar occupations declined (from 44 percent of the labor force to 33 percent). More generally, for a sample of 34 countries, Henderson (1980) finds a positive relationship between measures of national urban concentration in larger versus smaller urban areas and the national ratio of service to manufacturing employment, holding other characteristics of countries constant.

Spatial Dispersion of Urban Activity: Centralization and Concentration

1.31 So far, we have focused on urban concentration, or the extent to which the urban population is housed in larger, as opposed to, smaller urban areas. There is, however, the issue of centralization--the extent to which

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these urban areas, big or small, are spread over the country, as opposed to being clustered together in a few small pockets on the coast or around a national capital, for example. There are two interrelated conceptual frameworks used to analyze this question. One deals with the notion of regions and regional comparative advantage and the other with location theory and the location of natural resources.

1.32 In the first, interregional mobility of the population is assumed to be very limited and regional output composition is assumed to depend on comparative advantage and relative regional endowments of labor and resources (Borts and Stein 1964). In the second, interregional mobility of population is assumed to be potentially high for a "reasonable" proportion (10-35 percent) of the population. Regional comparative advantage in production then is based on natural resource endowments and regional populations depend on the labor force needed to utilize those endowments given national production patterns. Work on the United States historically (Williamson 1977 and Henderson 1980), Peru (Thomas 1975), and developing countries generally (Squire 1979) suggests labor, in fact, is highly mobile, with different skill groups moving rapidly across regions to equalize real wages across regions for each skill group. Such mobility may still produce large differences in regional per capita incomes. These differences do not necessarily reflect any inequities or inefficiencies, but simply differences in the skill composition of the labor force, labor force participation, and costs of living. In the analysis to follow, we use the more modern approach and assume interregional labor mobility. For a large country, we could first divide it into several main regions with limited interregional mobility and then subdivide the regions assuming potentially extensive mobility across subdivisions. Our analysis would then focus on activity within a main region.

1.33 We will start by briefly outlining the determinants of whether urban production in an economy tends to be highly centralized into one (sub)region as opposed to being spread out across various (sub)regions. The analysis in this section examines economies which have sufficient urban population to support a large system of cities. We then examine situations where this may not be the case. Our examination of these determinants is brief simply because population dispersion is very much a function of each economy's unique geographic features. After this examination, we then turn to a more general topic. We analyze government policies which can have a critical impact on both the degree of centralization and the degree of urban concentration.

#### Centralization

1.34 Urban areas tend to cluster together to reduce the transport and communications costs of trade among themselves. But natural resources used in production are generally spatially dispersed, whether they be fertile agricultural land, natural harbors for ports, deposits of iron, coal, oil, limestone, etc., or forested lands for timber and pulp and paper. Transport cost efficiencies indicate that urban areas engaged in weight-reducing, resource-using production such as primary metals, heavy machinery, wood products, and food processing will be spread throughout the economy near the resources they use. This also has the advantage that some of the most polluting production (such as iron and steel) often occurs in smaller urban areas, away from major population centers. Also, some footloose production which may not be especially weight-reducing but is highly standardized may be very sensitive in its location choices to cheap power, land, and labor. For this reason, textiles and some other light manufacturing may also be spatially dispersed--staying near major urban markets but far enough away to avoid being affected by the high-wage and land costs in those markets.

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1.35 Much of footloose production will want to cluster very near large cities to remain sensitive to market and technological channels. Thus, we can expect to see large core urban areas engaged, say, in resource-oriented production (a port, food processing center, or heavy manufacturing center), surrounded by footloose cities, or satellites, clustered to have access to the market in the core urban areas, and to each others' markets.

1.36 We should note that the phenomenon of clustering of urban areas often presents a problem in spatially interpreting and defining what an urban or metropolitan area is. For example, there are several definitions of the New York urban area, starting from its five central boroughs and expanding west and north to incorporate outlying urbanized areas. The population range of these definitions goes from 7.5 million up to 18 million or even more. As New York City's economy expanded historically, essentially its labor and housing markets overran other outlying, previously independent urban areas. Thus, while the core urban area may be service- and commerce-oriented with also a market-oriented apparel industry, as its economy overruns outlying areas (such as Newark and Patterson), it has incorporated a diverse set of heavier manufacturing industries. The same problem exists in examining, for example, Chicago, Illinois. If we look at the core urban area compared with its incorporation of parts of the state of Indiana, we get a different picture of its industrial base.

1.37 Given these notions, regardless of how we interpret spatial patterns of clustering, we can state that the extent of urban centralization depends on the centralization of natural resources. If an economy has little in the way of fertile land and natural resources, its urban areas may be clustered around one or two ports which import its resources and export its products (such as

Korea, with the national capital Seoul using Inchon as its port). The ability of urban areas to spread out can be limited by the extent of inhabitable land. On the other hand, if a country has rich inland deposits of iron, coal, forests, fertile land, and so on, it will have major inland metropolitan areas and sets of manufacturing and agricultural service cities (for instance, the United Kingdom, Brazil and the United States).

#### Government Policies Affecting Centralization and Concentration

1.38 Although a country's geographic features greatly influence the spatial dispersion of the urban population, government policies are also critically important. We will illustrate this with an examination of key policies.

#### Transportation Policies

1.39 A country's transportation policies critically affect centralization and concentration. Obviously, a country cannot effectively exploit its hinterland resources if it does not have an effective rail, water, or highway trucking system to get the resources to producers, goods to national population centers, and to ports for export. But it is not simply a matter of resource exploitation. An effective transport system integrates an economy so that the hinterland can develop a full system of cities, producing lighter as well as heavier manufacturing products. It means that footloose producers can cluster near inland users of natural resources or sources of cheap power, labor, and land and still have access to coastal and international markets. The critical role of transport development on decentralization in the United States has been studied systematically by economic historians (Fogel 1964). In currently developing areas such as southern Brazil which have invested in a modern highway system, as well as traditional textiles and food processing,

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one can now find the most sophisticated, modern, light manufacturing production occurring deep in the hinterland in rapidly growing urban areas (Ribeirao Preto, Sao Jose do Rio Preto, and Aracatuba in the interior of the state of Sao Paulo). Of course, the Amazon area of Brazil illustrates that building transport access to hinterlands is not sufficient to ensure development. Also required are the resources to be exploited and people willing to live, or currently living, there.

1.40 Recent research on transportation and spatial development has been focused on the issue of urban concentration. Studies have looked at Korea (Kwon 1981, Song and Choe 1981, Lee 1982a), Colombia (Lee 1982b), Brazil (Townroe 1981), and the United States (Hekman 1982). Most of the work has focused on the determinants of deconcentration of manufacturing industries already in metropolitan areas, or when and what industries are willing to move from major metropolitan areas into outlying areas. Later we will focus on a specific example, but the general conclusions seem to be the following. A critical factor in firms' decisions to deconcentrate is access to major markets: the difference between road access of a 1/2 hour compared with road access of 1-1/2 hours to a major population center will determine what outlying cities will attract manufacturing (Song and Choe 1982, Townroe 1981, Lee 1982b). Firms that do deconcentrate tend to be larger (Lee 1982b) and to produce standardized (brand-name) products. Often, it is only the production activities of the firms which decentralize. The headquarters of the firm often remain in large metropolitan areas to engage in administrative, financial, and certain sales activity (Hekman 1981). Of all the location aspects involved, access to markets may be the most important factor for a location trying to attract industry.

### High-Skill Labor

1.41 Numerous studies have focused on the fact that rapid growth in efficient manufacturing production in a region or in a country simply cannot occur without the presence of reasonable numbers of high-skill workers. There are general studies, with calculations of the very high rates of return to education in developing, compared with developed, countries (see Squire 1979 for a review). There is also Ramos' (1970) work on Latin America, linking the high rates of manufacturing output growth between 1960 and 1970 to growth in labor force quality, not growth in employment. Corresponding to these notions is (perhaps controversial) work on production technology in both the United States and Brazil (Henderson 1982a, 1982b), which indicates that high- and low-skill workers are very poor substitutes in production of manufactured products such as iron and steel, agricultural machinery, transport equipment, textiles, leather products, ceramics, electrical machinery, and nonagricultural machinery. The skill division in this work is based on educational attainment.

1.42 These facts have strong implications for urban development. Poor substitutability means that efficient skill mixes in production are not very flexible and that, as manufacturing industries develop in smaller urban areas, they cannot employ only local, low-skill workers and do without high-skill workers. Although the skill mix in production in any one industry may not be flexible, the high-skill usage of some industries (primary metals and machinery) is much higher than others (textiles, apparel, ceramics, leather products). But for manufacturing production to be decentralized and deconcentrated, so also must high-skill labor.

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1.43 Given the skilled labor force, nationally available, to support a widespread manufacturing base, decentralization and deconcentration of industry and high-skill labor go hand in hand. The complication is that in developing countries, it appears high-skill labor have a strong desire to live in larger, rather than smaller, urban areas and there is a very strong correlation between city size and skill composition of the labor force. Apart from job opportunities, work on Korea (Kwon 1981) and Brazil (Hamer 1983, Henderson 1983c) suggest that for high-skill workers, a key variable in their choice of residential location is the quality of the schooling system for their children. Post-grade school educational quality in smaller urban areas in Brazil is notoriously bad (or nonexistent) and even grade school education in many places is nonexistent or of very low quality (Brazil: Human Resources Special Report, 1979, World Bank). Both Henderson's (1983c) work on southern Brazil, in general, and the German government's work (by GTZ) on the state of Minas Gerais in southern Brazil suggest that a key to attracting high-skill labor to decentralized locations is having a good-quality educational system. Researchers examining Korea (for example, Kwon 1981) indicate the same findings.

1.44 Work on the United States (Getz and Huang 1977, Smith 1978, Henderson 1982b) suggests that high-skill people are much more amenity-oriented in general than low-skill people, placing a high value on good retailing and personal and local public services, as well as on a clean, safe environment. To the extent that small cities cannot offer sophisticated retailing and public services, they cannot attract high-skill workers, at least at wages they can afford (the implication being that very high wages would attract and compensate high-skill workers for the lack of amenities).

1.45 In summary, a key to having decentralized manufacturing is having decentralized high-skill labor. In an economy where people are free to move, one key to inducing high-skill labor to decentralize is to have decentralized high-quality local public services. The question for local public services and, to some extent, for transportation is what determines whether local public services are decentralized.

#### Public Services for Industries

1.46 While we have emphasized the need for decentralized amenities to decentralize high-skill labor for industry, it must be recognized that industries themselves, in developing countries, are often the biggest users of public utilities such as water, electricity, and telephones, often accounting for well over 50 percent of the use of these utilities (Linn 1979). Obviously, for even low-skill industries to decentralize beyond transportation access, public utilities must be decentralized. Although firms, in theory, can (and sometimes do) provide their own water and electrical services, the scale economies in providing these services are such that (Nerlove 1965, Hirsch 1973), for even large plants, the unit cost of service is very high. In Brazil, based on the experience of low-quality service in the 1960s, in most surveys, firms who are deconcentrating from Grande Sao Paulo cite access to reliable utilities as one of their primary concerns (Townroe 1981). Again, we face the question of what determines whether services are decentralized.

#### Centralization of Government Services

1.47 There is a notion that in most countries where government decision-making is highly centralized, provision of public services is spatially biased toward having much higher-quality services in the national capital and major metropolitan areas. In contrast, in federal systems of government where the

states or provinces have a reasonable degree of fiscal autonomy, public services are provided much more uniformly across urban areas (Wu Sic Kee n.d.). The reasoning is simple. People working in a highly centralized government will be biased toward providing services in the (national capital) area where they live and may be insensitive to the needs and concerns of outlying areas. When taxation powers and expenditure decisionmaking are decentralized in a federal system, the regional governments will respond to regional needs and regional cities can develop. In empirical work on urban concentration in 34 countries, Henderson (1980) finds that the most important determinant of national urban concentration is whether a country is federalized or not (or alternatively the ratio of state and local government expenditure to all government expenditure).

1.48 We also note that in highly centralized systems of government, apart from public service provision, firms may feel a strong need to locate near the national capital to be able to lobby effectively and cut through the red tape of bureaucratic decisionmaking. Kwon (1981) and Nam and Ro (1981) suggest that this is a problem for Korea where many firms are unwilling to decentralize from Seoul and lose their access to the central bureaucracy.

1.49 Even in a decentralized, deconcentrated country with a federalized system of government such as Brazil, the central government can still have a strong influence on locational patterns. The illustration is the high level of industrialization of the metropolitan area of Sao Paulo (GSP) (Henderson 1982a and Hamer 1983). Compared with similar-sized US urban area such as New York, Los Angeles, and Chicago, GSP has an incredible concentration of heavy industry. For example, GSP and the combined three US urban areas both account for 20 percent of their respective country's urban populations. However, GSP

accounts for about 40 percent of Brazil's steel production, 71 percent of transport, and most petrochemicals, while the three combined US urban areas account for only 11 percent of all primary metals and very small proportions of transport and petrochemicals.

1.50 For Brazil, there seems to be no efficiency basis for this concentration. These industries do not benefit from generalized urbanization economies; they contribute to the extremely bad environmental conditions in GSP; and they are forced to pay the very high wages and land rents prevailing in GSP. Ordinarily, we believe such firms would not choose to locate there because they could not afford to pay the high wages and land rents. But it is easy to explain why they are there and how they survive. The iron and steel industry is currently 50 percent state-owned. The state forced its initial (late 1940s), and much of its new, operations to locate along the short Rio de Janeiro-GSP axis and appears to have acquired old iron and steel works in GSP as they fell into receivership (Baer 1969). So it is the state-owned production which is located in GSP, while private production has chosen more efficient locations (where there are raw materials) in the interior in the state of Minas Gerais. The state-owned industries survive in GSP because they do not have to pay the competitive cost of capital and can earn very low returns on their investments. Similarly, the petrochemical industry in GSP appears to be largely state-owned. Finally, the automobile transport industry in GSP is foreign-owned, but is constrained in its location choices by the central government. Thus, it seems that government-owned or highly influenced firms are forced to locate in or very near the large metropolitan areas of GSP and Rio de Janeiro, while private producers who are unconstrained choose locations in smaller urban areas.

1.51 Why does the Brazilian government display this bias towards locating heavy and polluting manufacturing industries in the largest urban areas?

While individual government officials may have privately profited from these location constraints, there seems to be a very strong belief by Brazilian officials in the existence of widespread urbanization economies for all industries, whether or not they produce standardized products or interact with other industries (Hamer 1983, Henderson 1982a). The existence of this belief is reflected in the operation of that part of the capital market controlled by the state-owned banking system. Informal information suggests that that part of the money flowing into the banking system used for long-term loans only goes to very large firms (1,000+ employees in highly central locations). This suggests that much of the capital for decentralized, private industrial development has come from what were the original large landholding families who have their own capital resources. That hypothesis is consistent with the general story of how the state of Sao Paulo industrialized (prior to the development of state capitalism): see Katzman (1977).

1.52 While this strong and, we believe, incorrect view that, for efficiency, manufacturing enterprises must locate in large metropolitan areas appears to have also prevailed in other countries such as Japan (Mera 1975) and Korea (Kwon 1981), not all highly centralized systems have a centralization bias. A good example is the USSR.

1.53 Through maintaining a very labor-intensive agricultural sector and a highly capital-intensive industrial sector, it is hypothesized that the USSR has been able to restrict urban concentration severely (Renaud 1979). This restriction on concentration has been enhanced by maintaining a rough, rural, small city-large city wage parity regardless of productivity, and by not

improving the quality of public services in large cities, so that the incentives for legal or illegal migration into larger cities are mostly eliminated (Renaud 1979). Clearly, deconcentration as well as concentration can also be overdone. The costs of having wages unconnected to productivity, of having a low-productivity agricultural sector, and of overcapitalizing industrial production are the subject of much analysis and discussion (Wellisz 1964). We will comment more on Soviet urban concentration later in comparing the USSR and China.

### The Dynamics of Concentration and Deconcentration

1.54 In this section we examine urban concentration and deconcentration in rapidly developing countries. We focus on the costs and benefits of encouraging deconcentration of resources out of major metropolitan areas into nearby cities.

#### Urban Concentration and Deconcentration

1.55 In an earlier section we presented basic notions about relating existing patterns of urban (de)concentration and (de)centralization in a country to the composition of national production and the spatial distribution of public services and transport systems. We have also discussed long-term changes in urban concentration in a developed country such as the United States. What has not been specifically focused on are the rapid changes in urban concentration in some rapidly developing countries such as Japan and Korea. While there has been a mild, worldwide increase in urban concentration which might be related to the relative expansion of the service sector and changes in the composition of the manufacturing sector in many economies in countries which experienced very rapid increases in concentration between 1950

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and 1970, during the 1970s, there has been a sharp drop in the rate of increase in concentration or even a decline in concentration. Mera (1978) focuses on this for Japan and Korea.

1.56 Mera (1978) suggests that a natural process is at work here. In the initial stages of developing modern manufacturing, concentration of the activity in one or two major urban areas enhances an incubator process where firms are discovering what levels of technology (existing abroad) are appropriate to the skills available in the labor force and what markets are available nationally and internationally for what goods. At this stage of development, there are, in essence, urbanization economies available to all industries which make it worthwhile for them to locate in large urban areas with their high wage and land costs. These economies may be enhanced if skilled labor is very scarce in the country so that the country can only support one or two large diverse urban labor markets. Mera (1978) and Kwon (1981) then go on to suggest that there is a natural reversal to this process. The reversal occurs because (i) over time production becomes standardized and firms can move out of the incubator to outlying areas where land is cheaper; and (ii) the quality of life declines and the cost of living rises sufficiently in the main metropolitan areas to drive economic activity to secondary locations.

#### The Initial Concentrations

1.57 While people now recognize that deconcentration is occurring and believe that it is desirable, that view did not always exist. Until the last ten years or so, there was a strong belief in the benefits of overall urban concentration and a perception that spatially concentrated investments in social overhead capital were much more efficient than deconcentrated investments. These beliefs may, in part, account for policies whose impact may have

been to attract excessive numbers of people to large metropolitan areas from smaller urban areas and rural areas. We note several such policies. First, there appear to be spatial biases in public investments toward the largest metropolitan areas observed in, for example, Brazil and Japan, where in the latter case, government investment per capita was about 45 percent higher in the three largest cities compared to the average for other highly urbanized areas (Mera 1975). Moreover, the strong general urban-rural bias in the provision of basic social services in many developing countries is well documented (Squire 1979 and Linn 1979).

1.58 Other spatial policies encouraging urbanization and urban concentration should be mentioned. In many countries including Korea (Renaud 1979), there is the notion that agricultural development has been deemphasized, both by underinvestment in research and development in agriculture (Evenson and Kisler 1975) and by trade protection and capital market policies favoring urban industries (Squire 1979). A result is that incomes in agriculture relative to urban areas have fallen, encouraging rural outmigration. There is very strong evidence (see Squire 1979 for review),<sup>1/</sup> that rural migration is very sensitive to wage differentials. The slowing of rural-urban migration in

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<sup>1/</sup> Prior to rapid urbanization, rural labor is often highly utilized so that urbanization is not necessarily a phenomenon of urban areas soaking up surplus agricultural labor. Looking at the rural male labor force for four areas, we get the following picture from time budget studies (Squire 1979, Table 22)

	<u>Cut-off level of hours per week</u>	<u>Percentage working less than cut-off level of hours</u>
Sri Lanka (1968)	20	10.7
Chile (1968)	41	18.2
Philippines (1962)	40	30.4

Korea in the early 1970s has been related to agricultural income policy which, at least temporarily, eliminated the rural-urban income gap (Song and Choe 1982, Mera 1978).

1.59 Government policies which specifically discriminate against agriculture and traditional manufacturing in favor of modern manufacturing distort development patterns. The welfare costs of resource misallocation from inhibiting some industries while artificially encouraging others are well known. Little, et al. (1970), Barret (1972) and Reboucas (1974) document these misallocations and show for a wide variety of countries that protected industries have very low, net value-added and social rates of return to investment. In contrast are the extremely high rates of return to investment in agricultural research and development documented for countries such as India (Evenson and Kisler 1975), and estimated for investments in diffusing technical information for agriculture in Japan (Harker 1979; see also Renaud 1979 on Korea).

#### The Costs of Urban Concentration

1.60 While much of the literature of 10-20 years ago emphasized the benefits of urban concentration, the more recent literature has emphasized and documented the costs. Two types of costs are emphasized--social overhead capital (SOC) and environmental. Research shows that there have been very high returns to manufacturing from investment in relevant SOC in the United States and Japan (Mera 1975). However, the productivity benefits of spatially concentrating SOC investments appear to be weak (Mera 1975, Table 4.16, p. 121), suggesting that high returns to SOC investments per employee may occur almost equally well in smaller cities. Then the question is, how do the costs of public service provision vary with city size. The data on that are not encouraging.

1.61 The costs of providing roads and commuting costs per resident rise dramatically with urban area population. Zahavi (1976, pp. 76-78), looking at data for a variety of countries, suggests, for example, that in moving from an urban area population of 1 million to 8 million, per-person trip distances can be expected to rise by at least 65 percent with trip times rising even more and per-person road provision, even in a moderately motorized situation (five cars per 100 residents), can be expected to rise 350 percent.

1.62 For public utilities (water, electricity, and waste disposal), while there are economies of scale, even in the best of conditions they are all completely exhausted by urban populations of a half million (Hirsch 1973 and Nerlove 1965). Moreover, there is some confusion surrounding this issue (Linn 1979b). These scale economies refer to economies in operating new, large systems built from scratch. Most expansion of public utilities involves adding to existing systems.

1.63 For electricity, the expansion involves building smaller-scale plants. For water and waste disposal, if the capacity of existing systems is already strained, adding extensions involves either a drop in quality of service or the extremely expensive operation of tearing up old systems. This suggests that long-run costs of supplying public utilities to 250,000 new users in a large metropolitan area can exceed the long-run costs of supplying public utilities to the 200,000 recent residents of a new medium-size urban area. Second, while there are indications that per-person costs fall with population density because fewer feet of pipes and power lines are required per resident, if population density rises rapidly in a city, the capacity of existing systems may be overburdened with similar declines in quality of services or costly overhauling of the system. Third, while provision of, for

example, waste disposal by standardized large-city technology in smaller cities can be very expensive, both the requirements for this utility may decline with city size and less expensive technologies (pit latrines or septic units) can be used. In many cases, Linn (1976) argues they could well be used in larger cities also.

1.64 The second type of costs associated with increases in urban area size are environmental and other social costs (for example, congestion and crime). For a manufacturing firm, part of the true costs of its production are the damages and unpleasantness it imposes on others through pollution emissions. Since dumping emissions into the environment usually costs the firm nothing, it is likely to impose excessive damages on others by, for example, using more-polluting rather than less-polluting inputs (such as soft rather than hard coal). In the absence of effective policies regulating these emissions, it is tempting to conclude that it is best to limit urban area populations so as to limit the number of firms contributing to a poor environment in any location. In many circumstances such a conclusion can be unwarranted. In many developing countries, the worst of the environmental problems in very large, urban areas arise because heavily polluting industries are forced into large metropolitan areas, when in fact they would be best off, apart from environmental considerations, locating in smaller cities in the hinterland where raw materials are. The solution is not to limit the sizes of large urban areas, but to allow heavy industry to relocate.

#### Deconcentration Policies for Seoul, Korea

1.65 Korea has strong policies to encourage industries in Seoul to move from the main urban area to surrounding cities and towns. By examining what deconcentration policies are effective, we can start to determine what

considerations are critical for the successful development of satellite cities surrounding a metropolitan area. We use the example of Seoul, Korea because it is the only country in which a strong deconcentration policy has been implemented and on which research has been done. We first describe the situation in Korea, then examine the policies and processes of deconcentration, and finally draw some conclusions about what policies best prevent undesired concentration or, alternatively, best promote desired deconcentration.

1.66 Korea has two main regions of industrial concentration and growth--the national capital region in the north(-west) and the south(-east) region around Busan, although all provinces are fairly well urbanized. Currently (1975-80), the population of the urban area of Seoul and the entire national capital region are both growing at only 4 percent a year while major southern urban areas, such as Ulsam (9.7 percent), Pohang (9.3 percent) and Busan (5.3 percent) are growing faster (for 1970-80). Within the national capital region, however, some smaller and medium-size cities are growing at very high rates of 10-15 percent and there is rural-urban migration within the national capital region.

1.67 There appears to be a process of both decentralization and deconcentration from the Seoul urban area. Seoul's rate of growth of manufacturing employment from 1973-78 averaged 5.6 percent, but its share in national manufacturing employment fell from 34 percent to 25 percent. In contrast, the growth rates of manufacturing in Busan and its province were, respectively, 12.9 percent and 15.6 percent for 1973-78, with their shares rising modestly. The manufacturing growth rate in the national capital region, other than the Seoul urban area, for 1973-78 was 23.6 percent and its share in manufacturing employment rose from 14.1 percent to 22.9 percent. Thus, while decen-

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tralization to the relatively resource-rich southern part of Korea is occurring, the pervasive phenomenon is deconcentration from the Seoul urban area to the outlying parts of the national capital region.

1.68 More specifically, if we divide the national capital region into five rings, the Central Business District between 1973 and 1980 had a negative manufacturing employment growth rate (-7.6 percent per year), the next ring a zero growth rate, the third and final ring within the Seoul urban area an 11 percent growth rate, while the two rings outside the urban area had growth rates of 22 percent and 34 percent. While existing (mature) firms within Seoul are growing, there is strong outmigration, and the outlying regions are experiencing both high rates of births of firms and mature growth. Almost all relocating firms remain in the national capital region, although the southeast region is experiencing high birth rates of new firms.

1.69 Why has the deconcentration occurred? Kwon (1981) and Song and Choe (1982) indicate that the firms most willing to move are large firms (especially in machinery and metals) producing brand-name or standardized products. They are looking for cheap land and labor and want to avoid the highly congested Seoul area, given incubator effects and urbanization economies may have dissipated over time for their products.

1.70 To enhance this natural process of deconcentration, the central government has instituted a number of policies including tax and credit incentives, the building of industrial sites, prohibition of new firms choosing Seoul locations, and relocation orders for existing firms to move out of Seoul. It appears that the relocation orders which have been given to 3,000 firms (1976-80) are not effective. First, while firms complied initially, the compliance rate has dropped to under 40 percent (Song and Choe 1981). Second,

a small percentage of mover-firms indicated that relocation orders were critical to them (Song and Choe 1981)--relocaters were mostly firms who were planning, or at least willing, to move anyway. The tax and credit incentives are very substantial and many firms take advantage of them. However, their primary impact appears not to be on the decision to move (Song and Choe 1981), but on the overuse of capital relative to other factors. Murray (1981) argues that the incentives have grossly distorted the use of capital by relocating firms.

1.71 The widespread building of industrial sites is similarly panned by various researchers (Renaud 1979, Song and Choe 1981, Murray 1983). It is not that there is anything wrong with the sites: it is just that without certain features, the sites are not used. The targeted satellite city of Banweol in the national capital region is used to illustrate the problems. Banweol had 1,000 industrial sites prepared in 1977; only about 200 have been filled to date. There appear to be two reasons for this dismal performance. First, Banweol, compared to growing satellite cities of Seoul, has poor access to Seoul (1-1/2 hours by road compared with 20-30 minutes). Access to Seoul is viewed as being critical, not just for marketing of goods but for having access to service industries, the central bureaucracy, and specialized high-skill workers. Second, it appears that the central government did not develop good-quality public services in Banweol and it is difficult to get skilled workers to live there. Only 46 percent of Banweol's workers live in Banweol, with 70 percent of the rest commuting the 1-1/2 hours each way from Seoul (Song and Choe 1981). Even industrial services are limited--industrial users of water must buy and pay the high rates for residential-quality water. Firms who have moved to Banweol also complain about the bureaucratic problems

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involved in their interactions with the relocation authorities. In contrast is the fastest-growing satellite city of Seoul, Bucheon. Its distinctive features are rapid access to Seoul and local fiscal autonomy. Bucheon, with a good tax base, provides its own local public services and apparently is well planned by its own population, and not dependent on the sometimes haphazard decisions of central government bureaucrats. However, it must be added that there are fast-growing government satellite cities (Anyang and Gumi).

1.72 In summary, the most effective deconcentration policies are to provide deconcentrated urban sites which (i) have good access to central markets, (ii) have the good-quality local public services demanded by high-skill workers, (iii) have sufficient local autonomy in providing industrial and residential services to be responsive to the needs of workers and firms who move there, and (iv) are not snared in central government bureaucracy.

1.73 There is an entirely different issue involved in the deconcentration policies from Seoul--the trade-off with decentralization. There is the suspicion that, by focusing so much on deconcentration policies in the national capital region, decentralization to the south and other regions has been slowed. While the south is an attractive growth area, given its resources and harbors, the transport network about Busan appears to be much more limited (Maps 4 and 6 in Song and Choe 1981). Second, by apparently focusing on policy implementation in satellite cities around Seoul, the government may have attracted more local rural population and extraprovincial migrants to the urbanized national capital region than otherwise would have happened. In the absence of the deconcentration focus, these migrants and new firms might have chosen locations outside the national capital region.

1.74 The danger of focusing on satellite cities is twofold. First, the central city may eventually overrun the satellites, so that the whole area becomes one massive, highly congested agglomeration, although that tendency can be inhibited by imposing greenbelts around cities. Secondly, the whole area may attract much more population than is intended. While the satellites encourage deconcentration, they may also attract significant numbers of migrants from beyond the region.

## 2. LOCATION AND URBANIZATION IN CHINA

2.01 In Chapter 2 of this paper, aspects of urbanization and location in China are examined. The emphasis is on describing major features of the current system based on the information available, and explaining how these features have arisen given recent and, to some extent, past policies. Policies include not just direct urban and location policies, but the indirect effects on urbanization and location of state pricing policies, price subsidies and state allocation policies for resources and goods under planning. This chapter is divided into three sections. The first deals with industrial location and the second with population location and urbanization. The final section discusses aspects of internal urban management in China.

### Industrial Location

2.02 In this section we discuss four aspects of the allocation and location of productive activities. These are (i) the degree of local specialization and the degree of diffusion of economic activities, (ii) the allocation between large and small cities of heavy and light industry, (iii) the role of

rural industry, and (iv) the location of heavy industry within and between regions.

### Specialization and Diffusion

2.03 The degree of specialization is the extent to which a city's labor force is concentrated in just one particular industrial activity, while the degree of diffusion indicates the extent to which one activity is found in many locations as opposed to only a few locations. In Chapter 1, we showed that in countries which have been studied, cities tended to specialize so as to enhance scale economies in one productive activity and that diffusion was very low. For example, for Brazil and the United States, in examining manufacturing activities, the majority of cities have negligible or zero employment in any one activity and only a handful have significant (say, over 150 employees) in that activity. China does not appear to exhibit these patterns, although the detailed data necessary to analyze the patterns rigorously are not available.

2.04 Relative specialization in China does appear to occur to varying extents and is certainly stressed in current writings. The idea of exploiting scale economies through specialization appears to have wide acceptance, at least as a guiding principle. Casual examination of prefecture-level data for Jiangsu, Hubei, and Gansu is consistent with there being relative specialization across prefectures. Second, the available data on a few cities support the idea that there is some degree of specialization. Wuxi (urban population of 0.8 million) has 11 percent of its total labor force in textiles, silk and apparel (Statistical Yearbook of China 1981); the county town of Dingxi has a high concentration (15-20 percent) in public administration and related

government activities.<sup>2/</sup> Larger metropolitan areas such as Lanzhou (1.4 million urban population) and Nanjing (urban population of 2.2 million), while having, as expected, more diversified economies, do exhibit some tendency toward specialization--Lanzhou in textiles and primary metals and Nanjing in petroleum and chemicals. However, the suspicion is that, in general, the degree of specialization is somewhat less than might be efficient. That suspicion is based on the apparently unusually high degree of diffusion of industries.

2.05 It appears that most types of manufacturing activities are diffused throughout the economy and found in many cities. The high degree of diffusion existing in the 1970s and before is documented in Lyons (1983). Today, while comparative advantage and specialization are stressed, paradoxically municipal planners pride themselves on the long list of different activities found in their city and stress their future plans for expansion of the scope of activities. For example, some Municipal Planning Bureaus stressed how they intend in the next Five-Year Plan to expand into electronics and related activities. Production of industrial products such as tractors, bicycles, watches, sewing machines, and so on appears relatively widespread. While these products are widely traded across provincial boundaries, which is consistent with some degree of specialization (54 percent of state procurement for bicycles cross provincial boundaries), often this trade involves largely exports of Shanghai, Tianjin and Beijing (for bicycles, over 60 percent of the trade

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<sup>2/</sup> Meeting with Dingxi Planning Commission, April 25, 1984.

involves exports of Shanghai and Tianjin<sup>3/</sup>). The critical point is that bicycles and watches are produced at very high cost in unlikely locations. While in many other economies, these small and/or inefficient producers would be put out of business, in China that rarely happens. The reasons for the high degree of diffusion are easy to find--they are many and they reinforce each other.

2.06 Diffusion of industrial activities was inherent in the self-sufficiency drive at the provincial and lower levels, which arose following the Soviet withdrawal and continued on through the Cultural Revolution (Lyons 1983, Orr 1983, Kwon 1983). Apart from the rhetoric of self-sufficiency, the poor transport system and lack of horizontal integration in planning across provinces fostered self-sufficiency (Lyons 1983).

2.07 Today, the high degree of diffusion of activities and the tendencies toward partial self-sufficiency are, perhaps, inadvertently encouraged by a variety of policies and the economic system in general. We review some key elements.

2.08 Price System. If we examine the set of goods which are traded internationally, state prices for raw materials tend to be low relative to prices for light industry manufactured products when compared with world prices. This means that trade in materials across regions, to some extent, involves selling low-priced materials in return for high-priced final good imports. To some extent, it may be more profitable for each region to forego

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<sup>3/</sup> The 60 percent is based on total production figures for Shanghai and Tianjin less the amount sold locally in 1983. For the Shanghai Bicycle Factory (February 29, 1984 meeting), this is stated to be 10 percent of production.

some of the benefits of specialization and trade, hang onto its own raw materials of all sorts and produce a wider range of its own final outputs.

2.09 Materials Allocation. With underpricing, there should be a general excess "demand" for materials. For primary metals and energy, there is a reasonably strong central allocation system, leaving a limited market for above-quota production and trade across provinces, so that there is not an established market for materials. This is reinforced by the inadequate transport system. Many local entities have difficulty purchasing as much material as they want, because of state prices. For many producers, sales of own materials, at least through the state system, are not profitable so that firms who are given excessive allocations to stockpile materials. This results in waste from deterioration and misused land space. For many firms, the difficulty in acquiring materials results in socially unproductive activities such as scavenging, where a commune may employ large numbers of people just to search for gasoline supplies above the allotment to its industries.<sup>4/</sup> It also results in small-scale unprofitable production, particularly in pig iron and steel, at many administrative levels to enhance supplies for profitable local production of final products. It may even pay a province to, say, produce pig iron and steel ingots at a "loss" (for instance, Gansu) to ensure supplies for local industries, given the shadow price of steel ingots. All this results in diffused local production, reducing the degree of concentration in production.

2.10 It is unclear whether the materials allocation system is being improved. Widening markets by encouraging trade in above-quota production is

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<sup>4/</sup> Example cited by Qianzhou Township in Wuxi Municipality, April 17, 1984.

not necessarily helpful, since prices are so out of line. However, if trade can occur at negotiated prices (either explicitly or implicitly through barter), then widening the market should improve allocation and reduce stockpiling. While barter trade is rapidly expanding, there are forces working in the opposite direction. An example is the almost total state acquisition of nonferrous metal production under one national state monopoly. While from a planner's point of view, this could lead to a more socially efficient allocation of materials under correct plans, the potential role of markets in achieving socially efficient allocations is reduced.

2.11       The transport system is undeveloped. Railways are overburdened and trucking is highly undeveloped. Trucking is an essential element in encouraging specialization and trade. While railways are suitable for long hauling of heavy industrial products, their use in short hauling is inflexible and limited. Even the suitability of railways for long hauling is limited in the case of specialized items and small-scale shipping, because of the high costs of collection and distribution of these items for a long-haul journey by rail. Smaller cities cannot specialize and ship goods to larger regional markets if there are not good transport facilities or the producers are not granted access to these facilities. Cities cannot efficiently interact and trade with the rural areas without a trucking system. Poor transport links also require firms to stockpile inventories of inputs and outputs to ensure that they always have reliable supplies to use in production or to ship to buyers.

2.12       The Industrial and Commercial Tax (ICT), which is a pervasive tax (at rates varying by commodity), covers almost all production for sale by all firms. The ICT is essentially a turnover tax, which can largely be avoided by

integrating operations and doing all stages of production within the firm, so tax is paid only on the final stage of production. This incentive for integration is a distortion which discourages firm specialization and concentration in parts production.

2.13 Some Provincial and Municipal Light Industry Bureaus appear to have policies of restricting output of efficient firms, so as to maintain a market for the higher-cost and/or lower-quality output of less efficient firms. In essence, there are production limits ("quotas") imposed as trade barriers. This was observed in Jiangsu where the efficient production of the durable Long March bicycles in Wuxi is strictly limited to one million per year, to leave a market for the output of other firms in the province.<sup>5/</sup> The policy is inexplicable on economic grounds. Much the same story applies to watch production where the state shows a reluctance to close or alter the production mix of weak firms. This policy encourages a profusion of small, scattered firms and discourages specialization and concentration. It should be noted that there are policies being implemented and under discussion which could reduce these tendencies. There is an emphasis on standardization and concentration of parts production. For bicycles in Jiangsu, there is discussion about reducing the number of brands from five to two and having the three former producers engage in parts production for the surviving two. There is also direct pressure from the Commerce Bureau at some local levels. The Commerce Bureau, at some levels of administration, is emphasizing acquisition of only high-quality products and is increasingly refusing to procure at the wholesale level low-quality products. The idea is to leave the inefficient to

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<sup>5/</sup> Meeting with Wuxi Light Industry Bureau, April 14, 1984

flounder in the market place to reduce the stockpiling of unsaleable goods. Finally, certain proposed reforms of the corporate income tax system would penalize the inefficient relative to the efficient.

2.14 By international standards, the service sector in China is anemic, as indicated in Table 2.1. The same data indicate a vacuum in the trade sector--commerce and marketing, which includes, in US terms, retail and whole-sale trade, finance, insurance, and other business services. This sector is vital since it makes it possible for regions to trade extensively with each other.

Table 2.1. SERVICE SECTOR

<u>(a) Percentage of Labor Force in the Service Industry (1980/81)</u>						
<u>China</u>	<u>Other low- inc. countries</u>	<u>Low-middle- inc. countries</u>	<u>High-middle- inc. countries</u>	<u>Yugoslavia</u>	<u>Hungary</u>	<u>Romania</u>
15	38	43	51	45	34	27

  

<u>(b) Percentage of Labor Force in Detailed Service Sector</u>					
	<u>US, 1970</u>	<u>US, 1900</u>		<u>China, 1981</u>	
	<u>Nationally</u>	<u>Overall lab. force</u>	<u>Nonagri. lab. force</u>	<u>Overall lab. force</u>	<u>"Nonrural"/a lab. force</u>
Overall trade (commerce, marketing, service trade, etc.)	n.a.	14	23	4	14
Wholesale and retail trade	21				
Finance, insurance, real estate and business services	7				

/a For "staff and workers" nationally plus individual urban laborers.

Sources: Historical Statistics of the United States (1970), Statistical Yearbook of China, 1981, and World Development Report, 1980.

2.15 There is some question about whether the figures for China in Table 2.1 on the size of the service industry are comparable to other countries. For example, almost the entire "commune" economy in rural areas appears to be lumped into the agricultural sector, with only 2 percent of collective and individual workers in rural areas being categorized in the service sector. In contrast, the comparable urban group (staff and workers in urban collective units and individual urban workers) has 29 percent categorized in services. This might raise a suspicion that there must be "agricultural" workers doing service activity in rural areas. However, the most recent more detailed figures on commune employment for 1983 refute this notion. Moreover, the notion that the trade sector is undeveloped appears to hold up, independent of the question of proper industrial categorization of activity. For example, looking at the occupational categories for Wuxi City (the only figures available), only 4 percent of the labor force is engaged in what appear to be sales activities (purchasing and sales of commodities, financial business, commerce, supply and marketing of materials--and customs officials). In the United States, what appear to be similar types of trade activities occupy 12 percent of the labor force nationally and more in major urban centers.

2.16 Economic Adjustments. Some of the above points stress the notion that the state has generally been unwilling to close down inefficient operations and consolidate. Thus, while new firms producing a product may expand, old ones rarely close or shift operations, resulting in a high degree of diffusion of activities. Not only have firms been permitted to operate at a loss, pricing and taxation policies can also encourage survival of the inefficient. Since energy is underpriced and land is zero priced, old firms occupying enormous tracts of land in the middle of cities continue to operate with

very outdated, high energy-using equipment. Two examples are the Wuxi Steel Company and the Lanzhou Iron and Steel Works, which will be discussed later.

2.17 Rather than state firms adjusting to changing economic conditions, the emphasis is on the collective and commune sector bearing the brunt of national and regional adjustment. The drive since 1978 towards standardization and consolidation has heavily involved the commune sector. Between 1978 and 1981, the share of machine building in commune gross value of industrial output fell from 33.5 percent to 26.3 percent with supposedly incredibly dramatic drops in output of machine tools, automobile parts, and agricultural machinery (1982 Almanac of China's Economy, pp. 194-196). While some of these closings (or changes in production patterns) represent the "discipline of the market," others occurred by direct order and cutting off of supplies. It appears that some officials simply view CBEs<sup>6/</sup> as a residual sector that should not compete with the state sector.<sup>7/</sup>

2.18 While this recent adjustment in CBE activity should result in a drop in diffusion and increase in the degree of local specialization, it is not clear that this particular adjustment is efficient. The commune sector gives the impression of being highly vibrant and relatively efficient. Given their difficulties in obtaining materials, supplies and their financial structure, in contrast to state firms, they appear to be more subject to the disciplines of the market place and less able to persist in inefficient activities.

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<sup>6/</sup> Commune- and brigade-operated enterprises.

<sup>7/</sup> Discussions with Jiangsu Light Industry Bureau, April 11, 1984.

### Industrial Concentration in Large Metropolitan Areas

2.19 In contrast to developed countries such as the United States and the United Kingdom, both currently and historically, China appears to have concentrated both its light and heavy manufacturing in its very largest cities-- Shanghai, Beijing, and Tianjin. In Table 2.2, the share of industrial output relative to population shares are noted for groups of Chinese and US cities, as well as for individual cities and historical comparisons. Shanghai is compared to the United States' most industrial city (Chicago) and its largest (New York). Beijing is compared with the US capital. Table 2.3 provides more detail, especially for types of industries. Even for the United States' most industrialized urban area, Chicago, industrial concentration is much less and the two other US urban areas today have relatively little industry and almost no heavy industry. Even in comparison with the historical United States, Shanghai's 1981 share of national manufacturing output relative to its population shares is about fourfold greater than Chicago or New York in 1914.

2.20 The industrial concentration focus on China's large urban areas might be expected to continue as reflected by the (State Council) investment shares going to these cities in various categories in 1981. In particular, Shanghai appears to be the recipient of high concentrations of industrial investment. Industrial investment in Beijing does appear to be less, but not total state investments, as social investments are emphasized currently. The numbers for 1982 indicate the same pattern, with Shanghai's share of new state industrial investment rising to 13.2 percent. Provincial figures also support this pattern. For example, between 1975 and 1982, fixed assets of state-owned industries in the four coastal provinces of Jiangsu, Zhejiang, Anhui, and Fujian rose by 104 percent while in the three interior provinces of Shanxi, Gansu and Qinghai they rose by 71 percent.

2.21 In Chapter 1, it was argued that focusing industrial development on large metropolitan areas, particularly for certain types of heavy industry and for production of standardized products, is inefficient. Many of these industries only experience localization economies and, hence, are just as well off in terms of scale effects in smaller cities where the opportunity costs of land and labor are lower. Second, it is generally more efficient to locate resource-using, weight-reducing production processes (such as iron and steel) near resource deposits rather than near consumption centers. Finally, locating heavy industry in large metropolitan areas involves putting the heaviest industrial polluters in the midst of the greatest number of victims.

Table 2.2. INDUSTRIAL CONCENTRATION IN LARGE CITIES /a

Ratios:	<u>Share in national industrial output</u> Share of metro areas in national pop.	<u>Share in national industrial output</u> Share in national urban pop.
18 Chinese key cities	4.5	1.5
15 US metropolitan districts (1914)	2.2	1.0
17 largest US urban areas (1972)	1.1	0.8
Shanghai	9.8	3.8
Chicago (1914)	2.6	1.2
New York (1914)	2.1	0.9
Chicago (1977)	1.4	1.1
New York (1977)	0.8	0.6
Beijing (1981)	4.7	1.6
Washington (1977)	0.2	0.2

/a For China, these figures are for 1981. For the United States, the production figures are from the 1914, 1972 and 1977 Census of Manufacturers and the population figures from the 1910 and 1970 Population Census and Census estimates for 1914.

Table 2.3. INDUSTRIAL CONCENTRATION /a

	Shanghai	Chicago (1977)	New York (1977)	Beijing (1981)	Washington (1977)
Metropolitan area as percent of national population	1.2	3.4	4.9	0.9	1.4
Urban area as percent of urban population	3.1	4.6	6.7	2.7	1.7
Percent of national industrial output	11.8	4.9	3.7	4.2	0.3
Percent of light industry	13.1	-	-	3.8	-
Percent of heavy industry	10.3	-	-	4.6	-
Percent of primary (metals = metallurgy for China)	15.8	5.1	0.1	4.8	n.a.
Percent of machinery	15.8	5.7	0.1	5.0	0.1
Percent of state industrial staff and workers	5.8	-	-	3.1	-
Percent of new state industrial investment	10.3	-	-	2.7	-
Percent of new state investment in: Civil public utilities	8.7	-	-	16.1	-
Culture, education, public health and social welfare	3.8	-	-	8.2	-
Research	4.2	-	-	29.0	-

/a See footnote to Table 2.2.

2.22 The basis for locating production of standardized products in large metropolitan areas would be urbanization economies arising from incubation effects. Incubation effects arise in an infant urban-industrial economy where there is an absence of high skills and industrial experience. In China, at this point, these incubation effects for basic heavy industries producing standardized products should not exist to any great extent. China has the largest urban population in the world and ranks high in a variety of industrial products. The only case for incubation effects for standardized products would be state restrictions on the flows of technologies (restricting new technologies from going to smaller urban areas) and on the lack of access to markets for smaller urban area producers. But this, of course, is not an argument for locating these heavy industries in large metropolitan areas, but rather for allowing free flow of technology and improving and granting transport access to smaller cities.

2.23 Despite these arguments, the productivity data might indicate to policymakers that locating industry in large metropolitan areas is extremely efficient. First, we will show why and then show why this conclusion may not be warranted. Consider Shanghai. Shanghai's industrial output per worker is 2.4 times the national average. Clearly, there are problems in making comparisons since the composition of industrial output in Shanghai is different from the national output and its capital stock may be of different vintage. Even a less-pronounced, higher-average product per worker could easily be interpreted as meaning we should focus industrial investment on large urban areas. That evaluation can only be made after including other considerations, and given these, Shanghai's high output per worker would probably not suggest that Shanghai is socially more efficient than smaller urban areas.

2.24 For large urban areas to be as socially efficient as smaller urban areas, they must have much higher average products of labor. This is because the social costs of living in larger urban areas are much higher, including the opportunity costs of land and housing, commuting, food and so on. In market economies, consumers pay most of these higher costs so that money wages must rise dramatically to maintain the same consumer standard of living. These increases in wages directly reflect the increases in costs of living and give us an approximate measure of how much living costs rise with city size. For Southern Brazil, Henderson (1983c) estimates that, controlling for skill levels and amenities, wages of workers must rise by 0.66 percent for each 1 percent increase in urban area population to maintain the same consumer standard of living. For the United States, the corresponding wage increase is 0.33 percent (Henderson 1983d). Thus, in Brazil, over the size range of urban areas, in moving from populations of under 50,000 to ones over 200,000, wages must more than double and in moving from medium-size cities to large metropolitan areas, wages must rise by another 50 percent or so. For example, in a sample of 109 southern Brazilian cities ranging in size from about 10,000 to 10 million, wages for urban low-skill workers were 3.1 times higher in Sao Paulo compared to the smallest cities. These percentage increases in wages should equal the percentage increases in private costs of living. The magnitudes involved are consistent with Thomas's (1981) estimates of cost-of-living variations in Peru.

2.25 For producers to be able to pay these dramatically higher wages, output per worker must be correspondingly higher. Depending on production technology, if wages vary across cities in an industry by 2.5 times, then output per worker will vary by two times or more. For example, among the 36

steel-producing cities (with over 100 steel employees) in southern Brazil, wages for low-skill workers vary 2.7-fold within the sample, while value added per worker varies by 6.1-fold and value added per worker in the largest private-sector steel city (Belo Horizonte) is 1.8 times the average for the 36 cities.

2.26 In general, a firm engaged in standardized production would not choose to locate in extremely large metropolitan areas and pay the high wages there, but would choose to concentrate with other firms in the same industry in smaller urban areas with low-wage costs. In Brazil, the government steel producers in Sao Paulo appear to survive by government subsidization (and value added per worker in Sao Paulo, which is the largest steel-producing city, is only 11 percent higher than the average for the 36 cities). In summary, higher output per worker is not a signal to focus industrial development on large metropolitan areas, or the output per worker would have to be sufficiently higher than the social opportunity costs of maintaining a worker in the city, and this will only apply in industries enjoying urbanization economies.

2.27 To assess whether Shanghai's high output per worker indicates that it is a more socially efficient production site, an assessment would be required of what its opportunity costs of consumption are and to what extent firms face these costs. This is a complicated issue, even if assessments are made at current prices, let alone true shadow prices. First, there is the difference in urban and rural assessments and then the difference between large cities and small cities. Because of food and housing price subsidies, urban relative to rural residents do not pay their costs of living. On average, local urban firms do pay the local price subsidy costs since these

come out of their taxes, but the cost of an additional worker to the firm does not include the price subsidies. Neither do the price subsidies include the extra costs of transporting and marketing in urban versus rural areas which could add 5-10 percent extra to costs (based on comparing free market prices in urban versus rural areas of food products).

2.28 In comparing large cities with small, costs for large cities are understated in several ways. First, there are the additional transport and marketing costs of consumer goods. Second, and most critically, are land cost differences--both land used by the firm in production and land used by employees in residences. Land costs in Shanghai could be 10-20 times that of nearby cities of half a million to one million in size and 100-150 times prices in agriculture. Finally, there are capital costs. Because of labor shortages due partly to population restrictions, firms in Shanghai expand production by increasing capital usage and intensity. This is reflected by the patterns of state investment noted in Table 2.3, and by the way firms might choose to use retained profits. While this might not necessarily be a problem, it is a problem if capital is underpriced as it is in China.

2.29 Thus, production in Shanghai which looks very profitable and has low official unit costs may, in fact, be much less socially profitable and have higher social unit costs of production than firms in smaller cities. In calculating true unit costs of production, four basic adjustments are required. First, an opportunity cost must be assessed for land used in production. Second, wage costs must be reassessed to account for the additional cost of housing and feeding workers in larger cities. If we use Brazilian numbers as a guideline, true labor costs in Shanghai would be 2.5-3 times costs in county towns of 10,000-15,000. Third, capital costs per unit of output should

reflect an opportunity and depreciation cost of around 15 percent of stock value, rather than the 3-4 percent currently used. Finally, costs of materials must be reassessed to allow for greater transport and distribution costs of bringing materials into Shanghai. All these adjustments occur even before we assess the impact of price reform.

2.30 Thus, it should be possible to take most standardized production activity out of Shanghai, put it in a smaller city on the same scale of operation (in a much more specialized city), and reduce social unit costs of production. The response by some officials to this suggestion is to say that industrial management in smaller cities is inferior, but that is just a function of the state allocation of managers, where better managers are assigned to larger cities. For example, if the Shanghai bicycle factory had to pay the full opportunity costs of production, this would add Y 10-20 to the unit cost of each bicycle compared to a medium-size city (including doubling wage costs and pricing land use at Y 20/square meter per year for its 180,000 square meters). In other words, transferring the factory to a nearby medium-size city would save Y 10-20 per bicycle in opportunity costs, providing the same excellent management was retained.

2.31 There is little to indicate that the pattern of industrial concentration in major metropolitan areas is changing. If anything, the concentration is increasing. Although from the population perspective officials recognize the social costs of locating people in larger cities (see para. 2.69), this recognition does not appear to apply to assessing the unit costs of production. The major impetus would be drastic price reform which would include removing food and housing price subsidies, taxation of land to "price" its opportunity cost (see para. 2.82), and proper costing of capital. Under cur-

rent reforms, pricing of land could occur for new housing to the extent new housing will be sold at a price varying by city size and location. Such experiments are under way in various forms, although in the basic experiment in four cities (Zhongzhou, Changzhou, Shashi, Siping), workers only pay one third of the cost of housing. Proper pricing of capital seems unlikely as long as firms are state-owned and receive "free" investment allocations from the state. Of course, the expansion of financing by loans and own resources may face firms with a more realistic opportunity cost of capital.

2.32 There is also a variety of policies which reinforce industrial concentration in large metropolitan areas. The concepts of economic zones and municipal administration and planning could both reinforce the current patterns. The first involves large metropolitan areas leading medium- and smaller-size cities and, the second, major cities leading surrounding counties. Implicit in both is a hierarchy system where those lower in the hierarchy are, to some extent, to be delegated responsibility for some particularly less-sophisticated parts production and given used machinery and outdated technology. In terms of parts production, one idea is that simple parts production should occur in nearby counties, while sophisticated production and assembly should occur in central cities. Experience in other countries, however, indicates that assembly which requires large tracts of land (for assembly lines) often occurs in suburbs. In fact, most durable manufacturing is suburbanized. For example, in New York and Los Angeles, shares of the central cities in primary metals, machinery and transport equipment are far below their shares in overall manufacturing (textiles, apparel, publishing and so on).

2.33 In terms of technology, the idea of uprooting old machinery in central cities and shipping it out to nearby county towns is often expressed. For example, Wuxi intends to relocate its traditional textile equipment in the county and put its new equipment in the core city.

2.34 While such policies can be quite reasonable, the hierarchy notion has no economic basis. Medium- and small-size cities are perfectly capable of efficient production of sophisticated standardized products. In fact, the Ministry of Urban and Rural Construction claims medium-size cities yield a higher return per Y 100 of investment than larger cities. The most hopeful sign is the notion that heavy industry can and should be suburbanized and located in the surrounding counties of cities, if only for environmental reasons, or even located in further away small cities. Nanjing has explicit plans for large-scale expansion of suburban production of tracks, petroleum and petrochemicals and steel. In Gansu, expansion of heavy industry is slated for four cities, all removed from Lanzhou.

2.35 One of the key problems in assessing the role of large metropolitan areas is that in market economies, their activities are more oriented to services, production of volatile market-oriented products (high-fashion apparel and publishing), and product development activities. In China, these sectors are so small and intercity communications so bad that, at the moment, they could not be the dominant activities of large metropolitan areas. As China develops, however, the state could plan increasingly for rapid expansion of these activities in large metropolitan areas.

#### Rural Industrial Activity

2.36 China's pattern of rural nonfarm activity is markedly different from other developing countries. First, the percentage of the rural labor force in

nonfarm activity and the percentage of household income deriving from that activity are, respectively, 12 percent and 11 percent, compared with 20-40 percent in other countries (Ho 1984). Second, while in most countries the majority of nonfarm workers engage in service activity, in China the percentage is trivial. Finally, within nonservice activities, China has very high proportions of machinery-building and coal-extraction activity, in addition to the expected textile and building-materials industries, and relatively little of food processing, handicrafts and wood products found in other countries.

2.37 The focus of China's nonservice, nonfarm rural activity in part results from definitional problems. Many of the large brigade and commune headquarters where heavier industry is found would be counted in the urban sector in other countries. For example, in Wuxi county, while the official urban population in communes is 71,600, Wuxi officials consider the actual urban population of communes to be either 182,000 or 224,000 based upon the populations in the large commune headquarters and, respectively, excluding and including local "agricultural" households. Many of these headquarters are industrial towns with 10,000 or more residents. This definitional problem will be further explored in paras. 2.59-2.67.

2.38 Apart from the definitional problems, the strong focus on heavier industry also reflects the general diffusion of economic activity discussed earlier, resulting from self-sufficiency policies and tendencies, and current pricing and materials allocation systems. But there is something far more fundamental involved in assessing the dearth of service, food processing, and handicraft activities.

2.39 As detailed by Fei (1983), the traditional linking roles of small towns between farm communities and the industrialized urban sector have been largely destroyed, in China, over the last 30 years. The traditional linking roles in a market economy such as urban-rural transport, hierarchical commerce, food processing, and household handicraft industries were drastically reduced by several factors. The state commerce sector, with its rigid structure and relatively few rural outlets, cut rural commercial activity to a miniscule level and eliminated the detailed functions of different towns in an interactive hierarchical system. The emphasis on grain production and self-sufficiency eliminated many forms of food processing and much food processing was regionally centralized. Finally, the role of the handicraft sector was sharply cut back in the economic system.

2.40 Under the current reforms, these lost economic activities are fast reviving with the rapid development of private and cooperative retailing and transport in rural areas. These sectors are still economically deprived by a lack of fuel, by a poor road system, and by inadequate supplies of consumer durables to rural commercial outlets. Even the state stores in richer communes in Jiangsu have difficulty getting supplies of high-quality items, with the result that their potential customers often travel to nearby cities to buy the durables they need.

2.41 Since the state monopolizes the formal wholesale sector (apart from wholesale fairs, run periodically), the state still plays a critical role in rural commercial development. At national level, the Ministry of Commerce<sup>8/</sup> plans to increase sixfold the number of outlets in rural areas (threefold in

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<sup>8/</sup> Ministry of Commerce meeting, April 6, 1984, in Beijing.

urban areas) and increase fourfold the number of employees (twofold in urban areas) over the next 10-15 years. At least in Jiangsu, the role of the state in this rural commercial expansion is viewed as being rather minimal. Unless the state is willing to allow for cooperative and private wholesaling, the lack of strong wholesaling activities in rural areas will sharply limit the development of the commercial sector there. Strong wholesale and transport sectors in rural areas are essential to rural distribution of urban-produced goods. As noted earlier, the lack of commodity distribution encourages small-scale, inefficient rural production of potentially standardized consumer goods, so rural areas can supply themselves.

2.42 In production, under the new reforms, handicrafts and food processing in smaller towns are reviving. The food processing sector itself is fast-growing with activities such as canning and refining growing nationally at rates of 12-15 percent, and provinces such as Jiangsu are planning to locate the expansion of food processing in rural sectors (north of the Yangtze in Jiangsu), away from the state-favored (more urban) locations of pre-1978. For handicrafts, there is still the problem that a significant portion of the market is international export. Since small-scale rural producers cannot establish their own international markets, they must rely on state wholesale purchases for export. Allowing more private and cooperative purchasing and export ventures with access to rail transport would help foster growth in the handicraft sector, particularly in the interior.

Regional Location: Heavy Industry

2.43 There are two central issues we will focus on. One is location of heavy industry in the coast as opposed to the interior, involving resources

extracted from the interior. The second is the location of materials processing and metals production within regions, with iron and steel as the example. The two issues are closely related economically in terms of efficiency criteria for location of metals processing, given input and output transport cost considerations. However, they have somewhat different histories and sociopolitical overtones.

2.44 Economic policy in China has swung back and forth on how much to stress economic development in the interior. Development for mineral-rich provinces such as Gansu involves heavy industry, particularly metals. In the early 1950s, there was an emphasis on balancing development and on developing key point cities in the interior with strong industrial bases (Lanzhou, Chongqing, Xi'an, Chengdu). This emphasis on key point cities was replaced by an emphasis on rural and small-city industrialization and self-sufficiency, starting with the Great Leap Forward and continuing in varying degrees until 1976. During 1961-65, there was some readjustment from the Great Leap Forward, stressing heavy industrial development in industrial cities, including key point cities.<sup>9/</sup>

2.45 Today, the stress is on development of coastal cities including heavy and metals industries. That can be seen by simply examining state investment in capital construction in industry. For example, while Chongqing, Xi'an, Chengdu and Lanzhou together account for 5 percent of state staff and workers and 4.5 percent of state industrial output, in 1981 they received only 2.4 percent of state industrial investment. The contrast with Shanghai may be seen by examining Table 2.3. In 1981, Shanghai got 10.3 percent of industrial

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<sup>9/</sup> Orr (1983).

investment with only 5.8 percent of the industrial labor force. Although it produced 11.8 percent of industrial output, its mix of products is heavily weighted in favor of relatively high-price items (relative to shadow prices). Second, for heavy industry, its share of investment--11.3 percent--exceeded its share of output. For 1982, the figures to make these specific comparisons are not published, but other (provincial) data indicate, if anything, the coastal stress in industrial investment is increasing.

2.46 The arguments for favoring the coast and deemphasizing key point cities are as follows: First, returns to investment in coastal cities appear higher. This may be partly illusory. Returns to aggregate heavy investment may be higher on the coast, but there may be a composition problem. Coastal heavy industry tends to involve the later or more sophisticated stages of metals production while interior industry, the extractive and earlier processing stages. If state prices relative to shadow prices on products from earlier production stages are lower than for later production stages, then at appropriate shadow prices, coastal investments might not be more profitable.

2.47 Also, larger coastal cities will have higher opportunity costs of workers and land than key point cities which, if figured in calculations, would dramatically lower the returns to coastal investment. This would be even more true if interior cities employed more local (as opposed to imported) labor under contracts where the wages of staff and workers in the interior fell relative to the coast. Right now, the standard of living of urban workers relative to rural workers is much higher in the interior than the coast. If for locally recruited lower-skill workers (perhaps under contract) this relative differential were narrowed, the interior could lower its lower-skill labor costs nearer to their opportunity costs, lower its costs of production, and increase its profitability.

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2.48 Second, it is often cited that coastal industries are better managed and hence more profitable. However, that has nothing to do with profitability of industry location. It has to do with the assignment of managers. If better managers were assigned to the interior and appropriately compensated for a relatively undesirable locational assignment, interior firms would be better managed. This notion also applies to the dissemination of technology. There is a notion that coastal cities can make better use of newer technologies than interior cities because of their experience and higher skills. Therefore, there should be a hierarchy in technology usage where interior cities are handed down or left with older technologies and machinery. However, given a base labor force in the interior which is fairly well educated (at a minimum, fully literate with most workers having junior-middle school and beyond), the primary determinant of how quickly new technologies can be adapted should be the education and resourcefulness of the managers. Interior industries are almost as capable of absorbing the same technologies as the coast, if they are assigned the same quality managers.

2.49 A third justification for deemphasizing key point cities is that they represent a focus on big city development which is unnecessary. This appears to be a justifiable criticism, but one which applies even more to coastal city development. Much raw material processing, even at later stages, can be carried out in small towns. In some sense, this has partially occurred in Lanzhou where all the heavy industry is located in suburbs outside the city proper. Moreover, in the future in Gansu, the plans are to go one step further and locate expansion in ferrous metals, petrochemicals, nickel, and coal in separate small cities (under 200,000) nearer resource deposits and, in some cases, hundreds of kilometers northwest of Lanzhou in the Hexi corridor.

2.50 We now turn to the second general topic in heavy industry location, the precise intraregional and also interregional location of materials processing based on transport cost and related considerations. While many locational choices for, say, steel mills in all countries are frequently based on historical and political considerations rather than current economic conditions, China appears to have particularly unusual examples of locational choices which have never had an economic basis. We cite some of these examples to illustrate some of the principles involved.

2.51 The first example concerns iron and steel production in Gansu. The two main operations are at Lanzhou and Jiuquan. Jiuquan is located 500 kilometers northwest of Lanzhou near iron ore and coal deposits. It could be a large-scale efficient operation and there have been plans to complete the investment to make it so, since its inception in 1958. It appears this completion is now imminent. While the development of Jiuquan zigzagged, Lanzhou went ahead with a steel works plant. Currently, that steel works plant has underutilized capacity, outdated equipment, and gets its pig iron and coking coal from Jiuquan. At each stage of operation, output is cooled and then reheated for the next stage. Except as possibly a processor of local scrap, the Lanzhou operation no longer has a strong economic basis and generally loses money. This fact is recognized. However, Lanzhou is a provincial enterprise, while Jiuquan is now a joint enterprise with a center whose output is controlled by the center. Provincial officials maintain the Lanzhou plant so as to ensure themselves a supply of steel for local use. Poor provincial-center coordination appears to rule out a rational formal policy whereby Lanzhou would be closed or shifted to scrap processing in return for guaranteed steel supplies for the province from Jiuquan in the future.

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2.52 A second example concerns steel production in Jiangsu. The operations at Suzhou in the north of the province are limited to pig iron production despite the fact that it has the raw materials to produce steel and, from a locational point of view could, along with Nanjing, be the major steel production center in the province. Instead, there are a variety of other small-scale, low-efficiency operations such as in Suzhou and Wuxi--the former being an integrated works with no local supplies of raw materials. The latter utilizes scrap in an electric-arc process and, with changes, could be a viable operation. These inefficient operations tend to be municipal- or county-owned and may, once again, be there to ensure steel supplies for local areas as well as continued high-status employment for the staff and workers involved. With better pricing and freer markets, as mentioned earlier, this need to sustain inefficient small-scale operations to ensure local materials supplies would be reduced. Ensuring local supplies for Jiangsu is an understandable objective of local planners under current pricing and allocation systems, given Jiangsu imports from outside the province 60 percent of the steel ingots it consumes.

#### Population Location

2.53 In this section we examine urban versus rural location and coast versus hinterland population location. Much of the detail of the section concerns urbanization since that is the most complicated aspect of population location. We start by describing the basic urban-rural system and then move onto describing basic migration policies. These policies raise a variety of efficiency and equity issues.

2.54 In China, people are officially either urban or rural people. Urban people get urban grain and oil rations at subsidized prices, rent subsidies, and medical care subsidies. In 1981, it would appear that each urban resident received, on average, a Y 226 financial subsidy.<sup>10/</sup> They vote at the state enterprise level and in urban neighborhood elections. Their children have access to state schools in urban areas. In short, being an urban (or "grain ration") person gives one certain entitlements generally not available to rural persons--most of these are specific to one as an urban person, although some may come simply because an urban person is much more likely to live in an official city. People start life as urban people if and only if their mother is an urban person. A rural person can become an urban person by gaining employment in a state enterprise or becoming a cadre member.

2.55 While most urban people live in official urban areas, not all do. State employees and cadres in rural areas are urban people. Second, many people living in smaller official urban areas and de facto urban areas are rural people. These people can be agricultural workers, but most are now peasant workers or "temporary" people. Peasant workers appear to work in urban enterprises as contract workers, individual workers, or collective workers. Temporary people include students, part-time workers, and "others."

2.56 It is useful to compare an urban family in an official urban area with a rural family in a rural area. In particular, the household per capita income of an urban family was still roughly double that of a rural (peasant) family in 1982, although there may still be greater labor force participation in urban areas. Unlike market economies where such a difference in nominal

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<sup>10/</sup> Note by De Wulf (1984).

incomes may mainly underlie a corresponding difference in cost of living between urban and rural areas, in China these are real income differences. In fact, given the enormous food subsidies in urban areas and the differences in quality of schooling and medical care, the nominal differences may understate the true differences. Not only is per-person consumption of consumer durables much higher in urban areas (the multiples higher in 1982 are for sewing machines 3.1, watches 5.5, bicycles 4.1, radios 2.2, and television sets 10.2), but so is the consumption of cloth. Even caloric intake, which is typically 20 percent higher in rural areas in developing countries because of the differing physical work requirements, is higher in urban areas in China.

2.57 Rural people may get employment in CBEs which, in a rich province such as Jiangsu, can pay more than a state job. A standard worker in a successful CBE in Wuxi county in 1983 appeared to earn, with bonuses, no less than Y 1,000 per year, and as much as Y 1,500.<sup>11/</sup> However, any rural household would be unlikely to have more than one member working in a CBE; even in rich communes, over half the labor force remains in agriculture. Nationally, of course, CBE employment in rural areas is about 8 percent of the labor force.

2.58 Given these large income differences, there is strong pressure for rural-urban migration. Before discussing migration policy, we need first to examine the definitions of urban versus rural areas, as distinct from the definitions of urban versus rural people.

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<sup>11/</sup> Visit to Qianzhou and Huazhang Township on April 17 and 18, 1984.

### Definitions and City Size Distribution

2.59 In China, in 1982, the official urban population was 21 percent of total population. That is similar to other low-income countries, but far below the level (33 percent) for lower-middle-income countries which China aspires to join in the near future. However, it is very unclear how accurate the 21 percent figure is. While the 21 percent is supposed to include the population of all towns with 3,000 or more permanent residents, at least 70 percent of whom are nonagriculture, in practice, the actual count to get the 21 percent may deviate significantly from this definition. First, the definition appears to vary by province. In Jiangsu, for example, the official urban population appears to cover only and all people on urban grain rations (irrespective of where they live), while Gansu tries to count all urban residents (irrespective of grain ration status), but only in statutory towns and municipalities.

2.60 Second, "temporary" residents are excluded from official urban counts. This includes those officially estimated to be on temporary residence permits in the 1982 Census even if they have been there over one year, who are, in effect, part of a "permanent" (and expanding) population base. Also, part of de facto temporary residents are those officially in cities on temporary residence permits but who were reported in the 1982 Census by their families as living in their home villages (note: the 1982 Census did not involve house-to-house interviews or reporting in person). Finally, there are people such as domestics who live in urban areas without any type of registration there. Officials in individual cities tended to cite figures indicating that 5-10 percent of their populations were these types of temporary residents.

2.61 A third factor is the long (perhaps, on occasion, indefinite) lag in the upgrading of urban areas from one official category to another, which appears to exclude many small towns from the urban category. In economic terms, China has statutory municipalities (cheng shi) which are cities of over 200,000 residents, county towns (xian cheng), and other statutory towns (cheng zhen) which are not the seat of a county. The application procedure to move from being a town to a municipality, and more critically, from being a rural place to being a statutory town seems very uncertain. In particular, township centers (xiang zheng fu) which are the former commune headquarters and administrative villages (xiang zheng cun) seem unlikely or extremely slow to be upgraded to cheng zhen status, even if they become large market towns (zi zhen) of 10,000 people.

2.62 It is instructive to illustrate this problem with the example of Wuxi municipality, which consists of three counties. There is one municipality, Wuxi, and two county towns, Yshing and Jiangying. In addition, there are 9 statutory towns and 101 xiang. Since the municipality is in Jiangsu, its official urban population is the 0.95 million in the area receiving urban grain rations. If it followed the national criterion for urban populations, its urban population would probably be 0.95-1.1 million. This would add the 0.16 million rural people in Wuxi city and subtract those receiving grain rations in the xiang.

2.63 However, the de facto urban population is considered to be much larger by local officials. First, there are 100,000 official (from the Census) "temporary" residents in Wuxi who have been there for over a year. Second, the county towns contain 30 percent more people than are officially counted as urban (and have grain ration status). Third, officials would

include all residents of township centers which average effectively 5,000-6,500 population as urban, even though in Jiangsu their official urban populations are only on third of this count and nationally, officially they would be zero. The 9 statutory towns and 101 township centers together contain roughly 0.62 million people as opposed to Jiangsu's official count of 0.21 million. These adjustments would raise the de facto urban population to 1.65 million, probably a number comparable to counts in other countries. But that is 70 percent higher than the official estimate.

2.64 Some caveats on the example are in order. First, based on the numbers for Wuxi city and the two counties in the municipality outside Wuxi county, 18-19 percent of this population is in agriculture or sideline activities, which is high by international standards and reflects the significant agricultural activity in China which occurs alongside factories and apartments in urban areas. Second, based on the numbers for the two counties outside Wuxi county, about 30 percent of these urban residents in xiang and statutory towns are "peasant workers." Peasant workers may work in CBEs, rather than state enterprises, or may be contract workers. However, the catch is that a large number may not always live within the boundaries of the township center, but may commute from a natural or administrative village nearby (say, within 100-200 meters) of the boundary.

2.65 According to provincial officials, these definitional problems are much less of a problem in Gansu which has only a few market towns over 10,000. The official urban count for Gansu exceeded Gansu's own estimate by the 0.4 million or so agricultural households counted as urban in county and statutory towns. The problem of peasant and temporary workers appeared to exist once again in discussions with county-level as opposed to provincial-

level officials. For example, the resident population of Dingxi town exceeds the official count by 20 percent.

2.66 This problem of official counts of urban populations as opposed to counts consistent with typical international definitions appears also in examining suburbs of metropolitan areas. By population density figures, the suburban populations of Shanghai, Beijing and Tianjin would be mostly counted as urban in the United States. For example, the suburban population density (excluding farm land) in Shanghai is well over 2,300 per square kilometer. In the United States, a population density of 400 per square kilometer qualifies as an urban area and densities in the suburbs in New York, Los Angeles, Chicago, and San Francisco (excluding rural areas) are, respectively, 1,525, 1,906, 1,394, and 1,551. For Shanghai, large suburban market towns and/or industrialized township centers are not included as urban.

2.67 Given official definitions, it is still useful to examine China's official size distribution of cities. First, from Table 2.4a, it is not an unusual distribution by international standards relative to other large countries, except for its proportion of population in small cities. China seems to have a significantly lower proportion of its population in smaller cities (under 100,000) with only 32 percent compared with 42 percent, 41 percent, and 47 percent for Brazil, the USSR, and India respectively. This reflects in part the omission of large spatial concentrations of people at commune headquarters which are not counted as urban in China. There may also be a true lack of smaller cities given the absence of an infrastructure of small cities performing urban functions (wholesale and retail trade, finance, repairs, and other services).

Table 2.4:

A. <u>Percentage of Urban Population by City Size</u>					
<u>Brazil, 1970</u> /a		<u>USSR, 1977</u> /b		<u>India, 1971</u> /c	
Over 250,000	49	Over 500,000	31	Over 100,000	52
100-250,000	8	100,000-500,000	29	50-100,000	12
20-100,000	15	50-100,000	10	Under 50,000	47
Under 20,000	27	Under 50,000	31		
<u>United States, 1970</u> /d		<u>China, 1981</u> /e		<u>Percentage under 100,000</u>	
Over 1 million	47	Over 1 million	36	Brazil	42
500,000-1 million	10	500,000-1 million	15	USSR	41
100,000-500,000	18	100,000-500,000	18	India	59
50-100,000	4	Under 100,000	32	United States	26
Under 50,000	22			China	32
B. <u>Number of Cities by Size in China</u>					
	<u>1982</u>	<u>2000 Projections</u>			
Urban areas over 500,000	48	59			
200-500,000	71	73			
Cities under 200,000	126	253			
County and statutory towns	3,107 (1983)	3,200			

/a Based on urbanization definitions as described for SMSAs in United States (see Table 2.1, footnote b). Source: Brazil Human Resources, World Bank Special Report.

/b These are for USSR "settlements." Source: James Bater, The Soviet City.

/c These are for Indian "cities." Source: A. Bose (1977), "Urbanization in India," IUSSP Working Paper No. 3.

/d These are for US urbanized areas (see previous subsection) over 50,000 plus urban places under 50,000. Source: Statistical Abstract, US.

/e These are for Chinese cities and towns.

### Migration Policies

2.68 In Table 2.4b, we present the numbers of cities by size and future projections by the Ministry of Urban and Rural Construction. Partially implicit in these figures are the official policies on future urbanization. The growth in numbers and sizes of statutory municipalities is to be strictly limited. Apart from rhetoric on big city evils, one practical reason is to limit state food subsidies to urban residents which already take up over 25 percent of the government budget. However, an economic rationale is apparent for part of the policy.

2.69 The private advantages of moving from rural areas to cities are enormous and probably increase with city-size in China. As noted earlier, the net social benefit of a worker moving to a large city may be negligible or even negative, given the high costs of feeding, transporting, and housing workers in large cities. Thus, from a particular social point of view, it may be best to restrict entry to existing large cities. This does not imply that the number of large cities should not increase. If the service and high-technology sector in China were to rapidly expand compared with other (growing) sectors, this could imply that many more larger cities would be beneficial. There is also the notion that China is focusing state investment on a few cities to spur industrial growth without labor force growth in those cities. It may be that it would be better to spread this investment among a greater number of large cities and allow labor force growth in more currently medium-size cities so they can grow into large-size cities.

2.70 The migration pressure to move to large cities could also become more difficult to restrain. Already, unofficial estimates for some large cities indicate that the number of official temporary workers and unofficial

workers is 5-15 percent, depending on the city. Obviously, price reform would be one way to restrain migration, but would imply a massive redistribution of income from the urban to rural sector. This reform would involve agricultural prices rising, elimination of urban food and housing subsidies, and shadow pricing of land and, hence, housing in cities.

2.71 The second aspect of urbanization policy is that the number of small cities is projected to double, although the number of county-level towns will remain unchanged. The population of existing county towns is projected to double to 140 million. While, given current tendencies, we should see rapid growth in urban areas under 200,000, the miniscule increase in the number of county-level towns implies that the growing industrialized township centers are not going to be permitted to become statutory towns.

2.72 There appear to be disturbing social implications in all these plans. The current expansion in urban labor forces in small cities and towns is primarily through contract workers, that is, people who will not be granted urban, or grain ration, status. This division within cities between those with urban entitlements and those without could produce social conflicts, if left intact. Under current guidelines workers, but not their families, will be allowed to move to county-level towns. This either implies families will be split or, generally, only single people will move. Single people will eventually want to marry, implying that they are likely to seek out other single peasant workers in the city or to bring, by whatever means, rural spouses into the city. While the new migrants may be happy to accept these restrictions in return for an increased living standard, their children may deeply resent the status imposed on them by birth which sets them apart from their neighbors in terms of living standards, political rights, and access to urban schools and medical care.

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2.73 Secondly, the continued separation of official urban and unofficial urban areas (largely township centers) could, as living standards rise, produce strong pressures to remove these arbitrary classifications. Within rural areas, as township centers continue to industrialize, there may become a social distinction between people who have high-paying CBE jobs and those who have lower-paying agricultural jobs. While within townships there is, at least in parts of Jiangsu, some transfer of CBE profits to agricultural workers through subsidization of grain procurement prices and while CBE jobs tend to be spread around among township households, such equitable treatment may not prevail everywhere. One already sees a distinction between the young who get CBE jobs and the old who are left on the farms and between the better educated and the less educated. In a decade or so, these individual distinctions could easily turn into distinctions across entire families, where there will be high-income "urbanized" rural families and low-income "agricultural" rural families living within short distances of each other. Again, this is ripe for producing social tensions. Price reform would help by raising agricultural prices and incomes relative to industrial prices and incomes, which would encourage rather than force people to farm.

2.74 Finally, we note that under the current system there is a hierarchical brain drain involved. The key to moving up the system from rural to CBE employment and from rural to state enterprise employment and urban status is higher education. The strong selection process for higher education starts early with the selection of students to attend key schools, starting at the junior-middle-school level or even earlier. The best rural students will go through the higher education system and graduate into a state enterprise with urban status. The next best set of rural students will graduate from high

school and get formal technical training locally and then a good-paying job in a local CBE or county-run enterprise with, perhaps, a change from rural to urban status. There is a very limited economic basis for this type of social hierarchy. Agriculture and rural industry also need bright well-educated people. In fact, as noted in Chapter 1, in a developed country such as the United States, there is a negative correlation between city size and the ratio of well- to less-educated people.

### Regional Issues

2.75 The other aspects to migration and population location concern regional population issues. Under the current system, the policy is basically one of no interregional movement of rural people and low-skill workers, "free" movement of high-skill workers from richer to poorer regions, and temporary (1-5 years) movement of high-skill workers from richer to poorer regions under cooperative arrangements between provinces.

2.76 The basic economic problem concerns the inability of agricultural workers to move. In some regions, families are farming land, year after year, which is unable to support them: and thus, they must subsist in part on grain transferred in by the state. There is no economic basis for people farming unproductive land when there are so many other productive opportunities in the economy. Moreover, as an equity issue, peasants in richer areas have several-fold higher incomes than in poorer areas, and that gap may be growing. This income gap is not a difference based on skill and ability differentials or on effort; it is a gap based primarily on birthright and migration restrictions. As a first move, free rural-to-rural migration within five or six large regions would alleviate the worst of these problems.

2.77 This rural inequality is, in cases such as Gansu, compounded by other considerations. While suffering from poor agricultural conditions due to geography and lack of rainfall and water economically able to be tapped for irrigation, Gansu has a fairly rich mineral base. However, the labor force recruited in the 1950-60s for state enterprises involved in primary metals and related activities was largely brought in from outside the province (1-2 million workers in a province with 2.3 million or so grain ration people currently). Thus the employment opportunities in the state sector were largely closed to the indigenous residents. Minerals are priced at way below world prices and shipped to coastal areas for processing into high-priced consumer goods. Of course, a large percentage of profits reverts to the center anyways. The extent of local processing appears to be limited--iron ore with 20 percent content is shipped out by rail. While there is now discussion of rural recruitment of labor for industrial employment expansion, there appears to be little integration between CBEs and state industries. In fact, CBEs look to enterprises in other (distant) provinces for cooperative agreements. In short, there appears to be little idea that minerals could be mined for the benefit of local provincial residents in terms of direct job opportunities, expansion of local industries, and spending of revenue on public sector projects such as irrigation.

Internal Organization of Cities: City Management

2.78 Several things strike a visiting urban specialist to China. One is the unfortunate widespread imposition of the 1970s western solution to urban housing problems. The second is the misuse of land by factories. The third is inadequate current urban traffic management and control, and the lack of

planning for future parking and capacity needs of a country moving into more widespread use of motor scooters and even automobiles. The fourth is a positive note. The notion that heavy-polluting urban production should be suburbanized seems widespread and an integral part of policy. In Lanzhou, all heavy industry is suburbanized; and in Nanjing and to some extent Wuxi, expansion of heavy industry is allocated to the suburbs. In this section, we focus on the city management issues which are most important in terms of national resource usage--housing and urban land.

#### Land Use Management

2.79 Cities in China are developed under land use planning and cities are now required to submit city plans to the Ministry of Urban and Rural Construction for approval. Environmental issues, the layout of streets and public parks, protection of historical zones, sewage and water provision, and the separation of residences away from industrial enterprises into residential neighborhoods are all current concerns. The last represents a departure from some of the practices over the last 30 years whereby people were supposed to live within walking distance from work. Long commutes are now occurring and the idea of creating residential neighborhoods away from industrial centers for environmental and aesthetic reasons, as well as ease in providing public services such as schools, is becoming the predominant policy.

2.80 What is striking in Chinese cities is the checkerboard pattern of land use. Industries, housing, and farming are still found side by side, not just on city edges but in the core of the city. There is a tendency toward the typical pattern of urban land use where, as we move out from the city center, we start with a core of service and industrial activities surrounded by a residential ring and then move onto agricultural land and suburban

industry and residential zones. In China, state enterprises in the core city have often been granted enormous tracts of land, far beyond their industrial needs. Some of the surplus land is used to provide worker housing and services, but sometimes large pieces of land are used for dumping of wastes and for growing of crops. These last two uses are simply not the best use of prime land in core cities. While the original motivation may have been to give enough land to enterprises to allow for expansion, some of these enterprises have not expanded very much.

2.81 An example is the Wuxi Steel Works, which occupies 600,000 square kilometers of prime land in Wuxi. Large sections of the land are used for farming, dumping of the factory's wastes, and haphazard storage of scrap iron used as inputs. Even in the buildings for the workshops, in some instances only a small part of the building is used. The rest is unused, containing unused machines, surplus materials or absolutely nothing.

2.82 Land is completely unpriced. No factory or other user of land pays any kind of land rent. To leave scarce urban land completely unpriced can only result in prolonged land misallocation. Land could be priced through taxation without being made a commodity. The opportunity cost of land rises dramatically within a city as we move from agricultural land on the city edges to core land in the inner city. In an older city with higher population densities in the core such as Wuxi, it might be reasonable to expect land opportunity costs to rise by 25 percent per kilometer as we move along a ray from the city edge to the city center. Let us assume an opportunity (rental) cost

of land in agricultural of, say, Y 40.8 per square meter.<sup>12/</sup> Wuxi is roughly 10 kilometers in radius and, with prices rising at 25 percent per kilometer, the opportunity rental cost of land in the city center would be Y 10 per square meter. Note a similar-size city in the United States might have land opportunity costs in the center of say Y 450 per square meter, so we are assessing quite a low cost. Similarly, in a metropolitan area such as Shanghai with an effective radius of, say, 20 kilometers, opportunity costs at the city center might be Y 120 per square meter. Again, this is fraction of, say, New York City's land opportunity cost in downtown Manhattan which can be well over Y 1,500 per square meter.

2.83 If the Wuxi Steel Works had to pay rent of say Y 10 per square meter, its land rent costs would be Y 6.6 million, which is certainly more than its retained profits. But if it had to pay these rents, it would fairly quickly divest itself of much of the surplus land it uses for crops and dumping of wastes--land whose opportunity product is certainly no more than Y 1 per square meter, compared with the opportunity cost of Y 10.

2.84 Pricing of scarce land in core cities could free up a surprising amount of surplus land now held by factories and some government agencies. It might also help the city to decide how much land to devote to roads and boulevards, given the revenue to be lost if that land is not put into production. The feeling one gets is that far too little land in Chinese cities is devoted to residential housing and that proper land pricing would result in a significant reallocation of land to residents.

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<sup>12/</sup> At official prices the average product of prime agricultural land might be Y 1 per square meter or perhaps Y 2 per square meter at shadow prices. We assume land's share in agriculture is 0.4.

2.85 Implementing a fairly rational pricing scheme for land simply involves instituting a land tax system, where the assessed amount varies with distance from the city center, accounting for the particular features of each city. It may be that the private housing market in most cities is sufficiently large to observe housing values and using a typical land share coefficient of, say, 0.15, infer land values and then land rents. Such data could then be used to estimate sophisticated land rent contours and, from that, assess taxes. However, the setup costs of collecting this data and doing the estimation are not trivial.

2.86 There are two advantages to the scheme. One would be a more rational allocation of land and less wastage of land. The second would be the revenue raised. For example, if Wuxi can be approximated by a circle of a radius of 10 kilometers and we integrate over opportunity costs rising from Y 0.8 up to Y 10 per square meter, we get total land rental costs of roughly Y 716 million. If over half the land is in roads, canals, parks and other public use and does not pay taxes, that still would leave land tax revenues of, say, Y 350 million.

#### Urban Housing

2.87 In this subsection, we focus on how to respond to increased demand for housing in cities, caused by rising incomes and populations. One way is to renovate existing structures for greater density and/or qualities and to build new housing at the city edge. Another is to tear down existing structures and replace them with high-density new structures. The issues in choosing a strategy are cost effectiveness, the adequacy and quality of new construction for meeting not just current but also future housing demands, and the institutional arrangements under which housing is administered for ensur-

ing adequate maintenance and meeting consumer needs. Many countries, including the United States, initially adopted the second strategy of tear down the old and put up the new, but have since moved to the first strategy of retaining and renovating the old, as well as building new housing. We now turn to an examination of China's strategies and its institutional arrangements in the housing market.

2.88 The response to housing shortages in many cities in China (for instance, Beijing and Lanzhou) has been to tear down existing one- and two-story housing and replace them with five- to ten-story apartment buildings. There are now new residential developments consisting of many apartment buildings constructed as a residential neighborhood on the site of a former traditional neighborhood. These apartment buildings are drab, unimaginative constructions with little outside space and no facilities for personal bathing and laundry. Bathing for the family is often done at work places by coupon or in public bath houses. There is no allocation of space and facilities within a building to have a common laundry room. There are few playgrounds or space for parks allocated. The density of a well-managed and more pleasant development that we visited in Wuxi was 70,000 per square meter, which is very high.

2.89 There appear to be several problems with this intensive development and reconstruction strategy. First, the financing is structured in such a way that the housing is not well-maintained because rents do not cover operating costs. Raising rents would help, but converting the units to condominiums and thus providing residents with a direct incentive to maintain their units would help even more. Second, the housing does not meet the social needs of the people for play space and outdoor play opportunities for children and facilities for laundry and bathing. As incomes rise and people's consumption pat-

terns change, these deficiencies may become more pronounced. While this type of apartment housing may be adequate for today, it is most unlikely to meet the needs of the people in the year 2000 when incomes may have doubled or tripled. But these are expensive permanent structures that would be impossible to renovate. This means in the year 2000, the housing "shortage" will be even more pronounced, with little remedy other than to tear down these concrete apartment blocks. A fourth problem concerns the lack of consideration of China's traditional extended family structure. Apartment blocks are not conducive to housing and maintaining the links of an extended family.

2.90        However, more critically as some other countries have discovered, the basic strategy of destroying existing traditional housing seems flawed. First, it often involves the removal of high-quality housing. For example, in Lanzhou we visited a well-maintained traditional Muslim community. Each extended family was housed in three or four 1-2 room units around a small courtyard. The units were in good repair and well painted. They had an adequate water supply. There were new additions to many of the buildings. It was a visibly thriving community. The city, however, plans to tear the community down and replace it with the typical drab, badly maintained public enterprise apartment buildings. This is in a city with ample room for expansion on unproductive agricultural land on the outskirts.

2.91        A more positive note is found in Jiangsu where the official policy of tear down the old and put up the new has been replaced by a policy of developing suburban housing on vacant (agricultural) land (Nanjing and Wuxi) and by a policy of preserving the old private neighborhoods (Suzhou). The rationale stated by local officials was that, with demolition and reconstruction after all the original residents have been rehoused, only an additional

40 percent new neighborhood population can be housed. The point is that the traditional neighborhoods are already fairly high-density and with second-story additions, this can be increased as need arises. They have the additional advantage for the state of being privately financed and well maintained, as well as serving the extended family structure. This type of reasoning is precisely the motivation for switching housing strategies in some countries to a strategy of renovation as well as new construction.

2.92 Finally, the notion of building more imaginative town and row housing with private outside space and some room for additions and renovations does not appear to be a major element of official policy involving new construction. The imaginative high-density but only two- or three-story housing developments found in New Delhi or Manila with their private spaces and often attractive designs were not visible in China. Only in Jiangsu at the provincial level was there mention of allowing development of lots with private housing.

### 3. CHINA: OPTIONS FOR THE FUTURE

3.01 The benchmark option will be the status quo discussed in Chapter 3. The status quo is characterized first by a diffusion of small-scale production of manufactured products throughout smaller cities and the countryside, combined almost paradoxically with an extremely high concentration of standardized production of manufactured products in the very largest metropolitan areas. It is also characterized by a freezing of the rural labor force in the countryside, a freeze that is permitting large movements into surrounding smaller cities and towns, but not larger cities. Finally, under the status quo, the social structure is changing from two groups of spatially separated

people to a two-group urban structure plus a two (or more)-group rural structure--a multigroup system no longer involving spatial separation of the groups.

3.02 The options we will discuss fall under two broad categories--an option that allows more rational spatial patterns of investment and location of firms without a change in population allocation and an option that, in addition, permits varying degrees of population mobility. The viability of the options is closely linked to national policies on pricing, markets for materials, investment markets, and so on.

### Options for Location of Industry

#### Diffusion Versus Concentration at the Local Level

3.03 The first option would be to reduce the degree of diffusion of small-scale production and encourage industrial concentration and specialization in smaller cities and towns. This would permit a better scale for plant and industry operation in local areas and could, if properly done, result in better location choices for materials processing industries. Unfortunately, such an objective is not easily obtained under the current mixed economic system. The ideas of closing inefficient state operations and consolidating production of standardized parts are not new in China, and to some extent, have been implemented in the rural industrial sector. However, their introduction in the state sector appears at best to be slow and hesitant, perhaps because of political considerations as well as the local economic incentives (discussed earlier) to hang onto materials and engage in diversified production.

3.04 Reform of the economic system as currently envisioned could help, but further reforms are probably essential. The current reforms which involve making firms and managers more responsible for losses could lead to consolidation where inefficient plants are closed or, more specifically, switch production patterns to goods for which the local area has a greater comparative advantage. Opening up markets with more above-quota sales could help, but that is doubtful because of the pricing system. With materials still underpriced, there is excess demand in materials markets and final products are still overpriced so that, in the long term, excess supplies develop, diversification not concentration is encouraged. This is reflected in the fact that the share of interprovincial trade in industrial output may be dropping (Byrd 1984, p. 39), or at least is stagnant.

3.05 It would appear that price reform is critical to achieving a better degree of concentration, specialization, and trade. Such reform could involve a complete realignment of prices. Alternatively and less dramatically, it could involve freezing (or for some products reducing) the total national output under-quota so all expanded output is for markets and allowing those market sales, particularly for materials and intermediate inputs, to occur at completely free prices, not just within a narrow band. If a large portion of sales could occur at market prices, this would reduce the incentives to hold on to materials and produce a diversified range of products. There is, however, a financial asymmetry here. While having market prices above quota prices for currently underpriced products would free up materials markets and encourage materials trade, having market prices eventually fall below quota prices for overpriced goods implies state subsidization of quota production.

3.06 While price, enterprise, and market reform would provide the financial incentives to encourage consolidation of production patterns and greater interprefecture and interprovincial trade, two other forces still strongly inhibit achieving these goals. First, the transport system, especially the roads by which much above-quota production and collective product flows, are sufficiently underdeveloped so as to provide a serious impediment to the development of trade patterns. More and wider roads and better regulation of traffic are needed so truck and bicycle traffic do not impede each other. Freer markets in and better pricing of fuel would result in a better allocation of fuels and resources currently devoted to scavaging.

3.07 The second inhibitive force is the state monopoly in wholesaling. Allowing for competitive wholesaling would open up channels by which above-quota and outside-quota production can be marketed. Local industrial concentration and increased scale of local operations for rural and small city industry require these producers to sell their products more and more outside their local area. Even with excellent communications, for these producers to find the ultimate consumers of their product requires them not just to try and bring the market to these particular consumers which is beyond the scope of any firm, but requires that the markets, in essence, come to the producers. This is normally done by an enormous competitive wholesale sector seeking out high-quality suppliers, buying their products, and then marketing the production of diversified firms in the widespread market of diversified consumers. The marketing involves a large sales force traveling around to retail outlets conveying with samples the rich array of consumer products available from different firms. In short, competitive wholesaling is an absolutely essential element in a developing country in the efficient workings of markets and transmitting of information in the market place.

Diffusion Versus Concentration at the National Level

3.08 At a national level, almost paradoxically, past and current policies have resulted in a tremendous concentration of both standardized products and materials-intensive production in the very largest urban areas. These are usually activities that in some countries are decentralized to specialized smaller and medium-size cities, leaving large metropolitan areas as centers for innovative activity, for production of volatile market-oriented products, and for all forms of service activities. In China, the state patterns of investment have placed both heavy and standardized light industry in the largest urban areas; and the state allocation of technology and high-quality managers and technicians has also helped make some of the large state firms in coastal cities more profitable than state firms elsewhere.

3.09 Moreover, from the point of view of the state sector in, say, Shanghai, given the effective freezing of its labor force, the way for it to expand production is to be allocated more and more capital investments and more technical innovations. As stated repeatedly in Chapters 1 and 2 of this paper, while these patterns may be privately profitable, they are not socially profitable. There is no indication that this pattern of focusing development in a few large coastal cities is changing. While better social accounting at the national level could produce a better set of goals, that would not alter what is locally profitable. Moreover, with the state loosening its hold on the economy, proper social accounting and direction by the center might result in little or no change.

3.10 Once again, price reform seems critical to achieving more efficient production patterns. Pricing of urban land through land taxation could result in firms paying near the opportunity cost of industrial land; and proper pric-

ing of urban housing (including the land occupied) would face residents with the costs of housing themselves in large cities. In addition, elimination of urban food and transport subsidies would force residents to face their non-housing costs of residing in larger urban areas. Facing residents with these costs and then allowing firms to pay them higher wages as a compensation would face firms with the true cost of labor in larger cities. For Shanghai firms, all these reforms could, for example, double their wage costs. Finally, making firms really pay the opportunity cost of capital would reduce the tendency towards overcapitalization. In summary, if firms producing either standardized or heavy industrial products faced their true social costs of production, over time much production would decentralize and large metropolitan areas could reorient their production patterns.

#### Implications for Regional Equity

3.11 Decentralization of heavy industry and standardized production from coastal metropolitan areas would obviously help smaller and medium-sized cities in nearby provinces. However, it would also help mineral-rich interior provinces. If, as is probably necessary, this were accompanied by price reform, this would help even up interregional income differences. Development in China necessarily involves increased demand for interior raw materials. The way then for development benefits to spread to the interior is first for employment opportunities in processing industries to develop there. The second is for material prices to rise to reflect their scarcity value, encouraging further supplies and processing and spreading the financial benefits of development nationwide. Just as the farmers of Jiangsu are rewarded for their rich agricultural and water resources, so should the workers and peasants of Gansu be rewarded for the natural endowments of their province. This is even more the case if they are prohibited from moving interregionally.

Options for Location of Population

3.12 In discussing population location and mobility, we are going to introduce population mobility in steps, discussing the implications of each step. As a national policy, the increasing degree of de facto urbanization in some township centers and other market towns and the increasing degree of official urbanization in county towns and smaller cities is essential to efficient development patterns and efficient scale of developing industrial activities at local levels. It would also seem reasonable that the number of medium- and larger-sized cities, although not necessarily their typical sizes, should increase. An expanded role of the service sector and expanded innovation and development of consumer products could suggest an expanded role for larger- and medium-sized cities. Those regions feeling strong population pressures in rural areas could permit migration into certain smaller key cities with the idea that in the long term these cities could double or triple in population.

3.13 Perhaps the key mobility issue from an efficiency point of view concerns interprovincial migration of peasants. Right now in certain areas of China, peasants are farming land which cannot even support them, let alone provide them with above-subsistence income to enjoy the benefits of national economic development. These peasants should be allowed to leave this land where their net social product after their own consumption is negative and move to areas where their net social product would be positive. This need not involve massive interregional migration, but could involve relatively free rural-to-rural migration within half a dozen or so large regions of China. Such movements are now occurring on an experimental basis within Gansu. There is apparently, so far, no lack of volunteer families willing to move from the

poor areas of Gansu to areas that are even potentially richer. These types of programs could be expanded and could also involve some interprovincial moves. Then, under relatively stable conditions, peasants could move to improve their own welfare and raise national agricultural output by furthering farming of productive land. Alternatively, many of these peasants could leave the land completely and become low-skill industrial workers. Given they are mostly literate, this is feasible and in the long term, with the need to shrink the agricultural labor force, even desirable.

3.14        However, it should be recognized that free population movements under the current pricing system would be a disaster. While the private benefits of urbanizing are generally very high, the net social benefits for some existing large cities may be miniscule. Secondly, while the private benefits of living in interior regions are relatively very low, the social benefits at social opportunity prices for raw materials and agricultural products are somewhat higher. Free migration would result in an overshift of population into urban areas and probably an overshift out of interior regions.

3.15        Unfortunately, the policy of allowing limited interregional mobility and migration into larger cities without price reform may not be feasible. If some mobility of low-skill people is permitted institutionally, it may be very difficult to restrain the movement and limit it.

3.16        Price reform would obviously help place limits on movements. Raising the procurement prices of agricultural products and raising food prices in urban areas would help induce people to stay in rural areas. Raising procurement prices for raw materials and allowing provinces to retain and locally redistribute those increased revenues would help hold people in mineral-rich areas. The mechanism for redistribution of the benefits locally could be the

expansion of employment opportunities in an expanded processing and mineral products sector in interior regions. This would also make more sense given location-transport cost considerations.

3.17 In countries where prices and mobility are both reasonably free, the current perception is that the allocation of population is reasonably efficient. While in some developing countries there appeared, in the 1960s, to be disastrous overconcentrations of population in certain regions or cities, it is now recognized that some of the "overconcentrations" were only a transitory stage and migration rates have since dropped dramatically and population allocations stabilized. It is also recognized that overconcentration sometimes results from government policies which discriminate in favor of gaining regions, in terms of quality of local public services, wage benefits in state-owned firms, and so on.

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