

# The Dynamics of Urban GROWTH in Three Chinese Cities



Shahid Yusuf Weiping Wu



# The Dynamics of Urban Growth in Three Chinese Cities

Shahid Yusuf Weiping Wu

PUBLISHED FOR THE WORLD BANK OXFORD UNIVERSITY PRESS Oxford University Press
OXFORD NEW YORK TORONTO
DELHI BOMBAY CALCUTTA MADRAS KARACHI
KUALA LUMPUR SINGAPORE HONG KONG TOKYO
NAIROBI DAR ES SALAAM CAPE TOWN
MELBOURNE AUCKLAND
and associated companies in
BERLIN IBADAN

© 1997 The International Bank for Reconstruction and Development / THE WORLD BANK 1818 H Street, N.W. Washington, D.C. 20433, U.S.A.

Published by Oxford University Press, Inc. 198 Madison Avenue, New York, N.Y. 10016

Oxford is a registered trademark of Oxford University Press. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission of Oxford University Press.

Manufactured in the United States of America First printing August 1997

The findings, interpretations, and conclusions expressed in this study are entirely those of the authors and should not be attributed in any manner to the World Bank, to its affiliated organizations, or to members of its Board of Executive Directors or the countries they represent. The boundaries, colors, and other information shown on any map in this volume do not imply on the part of the World Bank any judgment on the legal status of any territory or the endorsement or acceptance of such boundaries.

Cover: Detail from a Chinese scroll, courtesy of the Freer Gallery of Art, Smithsonian Institution, Washington, D.C.

Library of Congress Cataloging-in-Publication Data

Yusuf, Shahid, 1949-

The dynamics of urban growth in three Chinese cities / Shahid Yusuf and Weiping Wu.

p. cm. Published for the World Bank Includes bibliographical references and index. ISBN 0-19-521113-8

1. Urbanization—China—Case studies. 2. Industrialization—China—Case studies 3. Shanghai (China)—Economic conditions. 4. Tientsin (China)—Economic conditions. 5. Canton (China)—Economic conditions. I. Wu, Weiping. II. World Bank. III. Title. HT384.C6Y87 1997

307.76'0951—dc21



### Preface

This book would not have been possible without the assistance and support of many individuals and organizations. First, we want to acknowledge the contribution of two authors of an earlier World Bank report from which we drew a considerable amount of information: Shekhar Shah (World Bank) and Barry Naughton (University of California at San Diego). Shekhar Shah also made valuable suggestions about the outline of the book. We are also grateful to the anonymous referees, who reviewed both the previous report and the manuscript of this book, for their constructive criticisms and suggestions.

Several individuals and groups deserve special thanks. Gary Jefferson (Brandeis University) and I. J. Singh and Dilip Ratha (World Bank) were extremely generous in providing access to large data bases on China's industrial enterprises. The Consortium for International Earth Science Information Network (CIESIN) provided us with base maps of China at no cost and with valuable technical assistance. Within the World Bank, the Asian Technical Department and the cartography unit helped with geographic mapping. William Easterly, Andrew Hamer, Rajiv Lall, Vikram Nehru, and Robert Taylor provided help and information for the book. We also want to thank those who assisted us technically, including Larry Austin, Les Barker, Charlene Hsu, Jeffrey N. Lecksell, Julia Li, and Min Zhu of the World Bank, Liu Chuang and Jack Evans of the CIESIN, John Zhao of Brandeis University, and Scott Kennedy of the Brookings Institution.

We are very grateful to the Policy Research Department of the World Bank, which provided us with a wonderful working environment. Special thanks go to the director, Lyn Squire, who supported our effort; to

#### x Preface

Sushma Rajan, whose invaluable help improved every aspect of the book; and to Robert Akl and Maria Elena Edwards, who offered technical support.

We would also like to thank the following persons for invaluable assistance with the production and publication of this book: Paola Brezny, James Feather, Kathryn Dahl, Elizabeth Forsyth, Rebecca Glenister, Sherry Holmberg, William O. Lively, Barbara Malczak, and Jason Peaco.

Both of us have survived the sweet, protracted agony of authorship more or less unscathed because of the care and support lavishly provided on the home front. Weiping Wu thanks Michael Crowley for love and encouragement that eased the final and most taxing stages of revision. Behind Shahid Yusuf there stood Natasha, Nadia, and Zain. Their enthusiasm for the project ensured that the manuscript never languished and that the year of writing was lived joyfully.



# Abbreviations and Data Notes

| FBIS-CHI         | Foreign Broadcast Information Services—China      |  |  |
|------------------|---|--|--|
| FDI              | Foreign direct investment                         |  |  |
| GDP              | Gross domestic product                            |  |  |
| GNP              | Gross national product                            |  |  |
| GVIAO            | Gross value of industrial and agricultural output |  |  |
| GVIO             | Gross value of industrial output                  |  |  |
| R <b>&amp;</b> D | Research and development                          |  |  |
| TEU              | Twenty-foot equivalent unit                       |  |  |
| Y                | Yuan  |  |  |

Market exchange rates, Chinese yuan/U.S. dollar, 1964–96 (IMF, International Financial Statistics Yearbook, February 1997)

| 1964-71 | 2.46 | 1984    | 2.80 |
|---------|------|---------|------|
| 1972    | 2.24 | 1985    | 3.20 |
| 1973    | 2.02 | 1986–88 | 3.72 |
| 1974    | 1.84 | 1989    | 4.72 |
| 1975    | 1.97 | 1990    | 5.22 |
| 1976    | 1.88 | 1991    | 5.43 |
| 1977    | 1.73 | 1992    | 5.75 |
| 1978    | 1.58 | 1993    | 5.80 |
| 1979    | 1.50 | 1994    | 8.45 |
| 1980    | 1.53 | 1995    | 8.31 |
| 1981    | 1.75 | 1996    | 8.30 |
| 1982    | 1.92 | 1997    | 8.30 |
| 1983    | 1.98 |         |      |



#### **Contents**

#### Preface ix

#### Abbreviations and Data Notes xi

# 1. The Dynamics of Urban Growth: Location, Size, Structure, and Reforms 1

Reforms: Background and Framework 1

China's Urbanization 4

Selecting Three Cities 6

Factor Supplies and Their Efficient Use 9

Neighborhood Effects: The Impact of Location 10

Agglomeration: Size, Economies of Scale and Scope, and Externalities 11

Urban Life Cycle and Costs 13

Outline of the Book 15

Appendix: Definition of Cities and Hinterlands 16

## 2. China's Changing Urban Geography: The Rise of Three Cities 18

The Urban World of Imperial China 19
The Growth of Coastal Cities 25
Economic and Industrial Policy after 1949 29
Urbanization and Urban Policy 36
Summary 42

#### 3. Shanghai: Renaissance City 44

Industrial Transition: From the 1940s to the 1960s 46 Socialism's Industrial Pillar 47

Preparing the Ground for Reform 48

The Scale of Agglomeration 49

Automobiles and Fashion Garments: Externalities at Work 53

Diseconomies: State-Owned Enterprises and Infrastructure 59

Neighborhood Effects 66

Human Capital and Technology 69

The Infrastructure of Finance 70

Capital Flows and Industry 74

Fiscal Relations and Revenue Generation 77

Summary: Reform and Urban Development 82

#### 4. Tianjin: A Port, Its Neighborhood, and Its Ambition 86

Resource Endowment and Growth 87

Industrial Development and Services 90

Neighborhood Effects and Transport-Induced Development 94 Industrial Prospects 98

The Rise of a High-Technology Corridor: Electronics 100

Colonizing Auto Industry Niches 106

Summary: Reforming for Growth 108

#### 5. Guangzhou: The Pearl in the Delta

Urban Infrastructure 113

The Politics of Reform: Why Guangdong Was First

Industrial Structure and Agglomeration Economies

Neighborhood Effects 123

Transport-Induced Development 132

Labor Mobility 134

The Rise of Producer Services 136

Summary 137

#### 6. Similarities, Contrasts, and Lessons: Three Cities and Others 139

Three Cities Compared 140

Driving Forces for Urban Change in China

Urban Prospects: International Experience

Summary 174

#### 7. A Map of the Future 175

Strategy in Capsule 176

Municipal Finances and Resource Mobilization 177

Taking the State Sector into the Twenty-first Century 177

Human Capital, Foreign Direct Investment, and Technology Transfer

Infrastructure 183

Producer Services 185

Summary 186

#### Notes 188

#### Bibliography 203

#### Index 220

#### **Tables**

- 2.1 Population and Rank of Large Metropolitan Centers in China, Selected Years, 1922–93 22
- 2.2 Higher Education Institutions in China, by Province, Selected Years, 1922–94 32
- 2.3 Transport Networks in China, by Province, 1994 33
- 2.4 Gross Value of Industrial Output in China, by Province, 1985 and 1990 (1980 Prices) 37
- Gross Value of Industrial Output in China, by Province,
   1990 and 1994 (1990 Prices) 38
- 2.6 Urban Development in China, by Region, Selected Years, 1949–94 39
- 3.1 Macro Indicators for Shanghai, Tianjin, and Guangzhou, Selected Years, 1952–93 45
- 3.2 Major Indicators for Shanghai, Tianjin, and Guangzhou, 1993 50
- 3.3 Gross Value of Industrial Output in Shanghai, Selected Years, 1985–93 51
- 3.4 Foreign Trade in Shanghai, Selected Years, 1978–93 58
- 3.5 Loss-Making Industrial Enterprises in Shanghai and Tianjin, 1987–94 60
- 3.6 Urban Infrastructure of Shanghai, Tianjin, and Guangzhou, 1990 and 1994 62
- 3.7 Indicators for Infrastructure in Selected Countries, Various Years 63
- 3.8 Education of the Labor Force in Selected Sectors in Shanghai, 1990 68
- 3.9 Foreign Investment in Shanghai, 1986–93 76
- 3.10 Fiscal Relations in Shanghai, 1980 and 1984–91 79
- 4.1 Education of the Labor Force in Selected Sectors in Tianjin, 1990 88
- 4.2 Gross Value of Industrial Output in Tianjin, Selected Years, 1985–93 91
- 4.3 Foreign Investment in Tianjin, 1986–93 104
- 5.1 Gross Value of Industrial Output in Guangzhou, Selected Years, 1986–93 118
- 5.2 Foreign Trade in Guangzhou, 1985 and 1990–93 122
- 5.3 Foreign Investment in Guangzhou, Selected Years, 1979–93 126
- 5.4 Macro Indicators for Guangdong Province and Pearl River Delta, 1993 130
- 6.1 Industrial Comparative Advantages in Shanghai, Tianjin, and Guangzhou, 1988–92 Average 142
- 6.2 Demographic Profiles of Shanghai, Tianjin, and Guangzhou, 1990–91 149
- 6.3 Shares of Gross Value of Industrial Output of Selected Subsectors in Shanghai, Tianjin, and Guangzhou and Secondary Cities in the Hinterlands, 1985 and 1991 152

#### **Figures**

- 1.1 Three Cities and Their Hinterlands, China 7
- 2.1 China's Railway System, 1994 34
- 2.2 China's Road System, 1994 35
- 2.3 China's Urban Population by City Size, Selected Years, 1950–90 41
- 3.1 Industrial Structure of Shanghai, 1985 and 1993 52
- 3.2 Shanghai and Its Environs 64
- 4.1 Industrial Structure of Tianjin, 1985 and 1993 93
- 4.2 Tianjin and Its Environs 96
- 5.1 Industrial Structure of Guangzhou, 1986 and 1993 119
- 5.2 Guangzhou and Its Environs 131
- 6.1 Textiles Industry in Shanghai, Tianjin, and Guangzhou, 1988–92 143
- 6.2 Machine-Building Industry in Shanghai, Tianjin, and Guangzhou, 1988–92 144
- 6.3 Metallurgy Industry in Shanghai, Tianjin, and Guangzhou, 1988–92 145
- 6.4 Chemicals Industry in Shanghai, Tianjin, and Guangzhou, 1988–92 146
- 6.5 Transport Equipment Industry in Shanghai, Tianjin, and Guangzhou, 1988–92 147
- 6.6 Electronics Industry in Shanghai, Tianjin, and Guangzhou, 1988–92 148
- 6.7 Urban Life Cycle: Population Pyramids for All Cities of China and for Shanghai, Tianjin, and Guangzhou, circa 1990 150



The Dynamics
of Urban Growth:
Location, Size, Structure,
and Reforms

Gazing a few decades into the future, optimists see China moving steadily to the top of the economic league. For example, several sources forecast that China will be the world's second largest economy by 2005 (Australian National University 1995) and the world's largest economy by 2020 (Australia 1997; OECD 1997). Although China's per capita income might still trail behind that of some Western economies, in the aggregate China's domestic product will be the largest. Many skeptics are not persuaded that the recent high growth rates will persist for long. In their view, a variety of systemic forces, some already apparent, will increasingly constrain China's expansion in the years ahead. Both the optimists and the skeptics base their assessments on an evaluation of China's urban economy, which is the principal driving force. This book should be of interest to both camps. Its theme is the interplay of geography, size, and industrial structure in determining the industrial vigor of cities. Its message, which is abundantly illustrated by the experience of three Chinese cities, is that turning each of these factors to the city's benefit requires sound policymaking. Unless initiatives are taken to exploit inherited capabilities and to approach comparative advantage in a dynamic framework, a strong production base can start to decay, pulling the city into a vicious, downward spiral.

#### Reforms: Background and Framework

Reforms began inconspicuously in the mid-1970s. Farmers in a handful of China's poorest agricultural counties demanded to be released from the commune system and returned to the autonomy of household production. At first the central government resisted, but then, in the face of

agricultural stagnation and rural unrest, it cautiously permitted experiments in Anhui, Guangdong, and Sichuan.¹ By 1978 these stirrings of change had acquired sufficient political backing and economic credibility for the government to announce a reform program at the plenary session of the Eleventh Party Congress, held in December. The congress signaled a break from the past and committed China to pragmatically exploring pathways to modernization (see Fewsmith 1994 and Riskin 1987 for excellent accounts of the circumstances leading up to this decision). It was the beginning of the end of an era in which ideology was an arbiter of institutional acceptability and a touchstone for policy.

What was initially a limited mandate for reform has grown with each passing year to cover all facets of economic life in China. The Four Modernizations Program, launched in 1978, was pragmatic and experimental in outlook. Its ambitions for the economy were pitched high, but its scope and the degree of institutional change anticipated initially were rather narrow. They grew wider as reforms proved successful and generated "imbalances," which could only be smoothed away by further changes (see Lin 1994). In the earlier years, agriculture was the principal beneficiary, and expansion in farm output accounted for about half of overall economic growth. Agriculture, which until 1983 included rural industry, grew at an average annual rate of 7 percent between 1978 and 1984 and was responsible for 30 percent of overall growth. Thereafter, growth declined, averaging 4 percent annually for the remainder of the 1980s.

After 1983 the spread of reform brought industry to the forefront. Since then, the urban industrial economy has been largely responsible for China's nonpareil industrial growth (which averaged 12 percent a year between 1978 and 1995). This is a considerable departure from trends that emerged shortly after the communist government came to power. Maoist policies were colored by the earlier persecution of communists in cities such as Shanghai. With its antiurban bias, the Maoist vision considered cities to be parasitic and strived to contain "nonproductive," mainly service-related, activities (see Buck 1978; Murphy 1980; Chang 1994). One tenet that was never pursued aggressively was to unite city and countryside. Others that were implemented to varying degrees called for dispersing industry, building regional self-sufficiency so as to enhance defense capabilities, and curbing the growth of the urban populace. The Third Front policy, whose genesis was the perceived threat to China following U.S. involvement in Vietnam, transferred some heavy industry from the coast to the interior provinces and absorbed between a third and half of all gross investment between 1966 and 1973 (see Naughton 1988; Bramall 1993; Zhao 1996).

Urban industrial change in China since the early 1980s has followed a circuitous path, and the next step is still being teased forth (see Shirk 1993; Fewsmith 1994; and the commentary in Yang 1996b). Inevitably,

the story emerging is complex, but its principal elements are now falling into place. First, China's reforms do not constitute the unfolding of a grand design; rather at each major juncture they have been a hedged and extensively brokered response to emerging contingencies.<sup>2</sup> For instance, once the government eased controls on agriculture, permitted rural markets, and encouraged collective industry to expand, the resulting dynamic generated pressure to allow urban industrial enterprises to face the new competition from rural producers. Thus each round of reforms has carried the seeds for future actions.

Second, China's size and its long history of decentralized management within a unitary framework have meant that reforms are interactive (with the initiative shifting between central and local players), defined in broad terms, interpreted variously, and implemented unevenly. At the outset of the reform era, the balance of power might have favored the center. But with central leaders having to build coalitions (or factions) composed of party, provincial, and People's Liberation Army leaders to shore up their own positions, power has tended to become more diffused (Dittmer and Wu 1995 discuss the importance of personal relationships and factions in Chinese politics). The prosperous coastal provinces have acquired a bigger say in the conduct and pace of reforms under the decentralized regime. While retaining the role of key decisionmakers, central government leaders have had to listen, negotiate, compromise, and occasionally retreat in their dealings with other national stakeholders. Increasingly they have had to respond to the demands of the "selectorate," a term Shirk (1993) uses to describe the key central and provincial players.

Third, gradual administrative decentralization since the late 1970s, the rise of rural industry, and price reform have all influenced fiscal decentralization. The last, in turn, has profoundly increased the incentives to introduce new changes. Administrative decentralization has transferred more autonomy to China's 30 province-level units (prior to 1997, when the city of Chongging was added as the 31st province-level unit), which have delegated authority to the 2,166 county- and lower-level units. Rural industrialization has provided local governments with additional tax revenue and off-budgetary sources of income. And industrial price reform has drastically eroded the profitability of state enterprises and the revenues derived from these profits. The upshot of all these is a diminution of central administrative and fiscal capacity, which, in turn, has moderated the central government's ability to manage the course of reforms or to take major initiatives. On balance, the course of fiscal change favored the provinces and very likely induced rapid growth, at least in the coastal region. But tax reforms introduced after 1994 reflect a cross-provincial agreement that too much decentralization, by fiscally impoverishing the center, would be detrimental to macroeconomic stability and national development.

Fourth, nationwide growth and the double-digit rates at which rural industry has expanded in many provinces have brought out two important characteristics of the Chinese economy: the extraordinary sense of place and the magnitude of social capital accumulated by China's local communities (*social capital*, a term coined by James Coleman, refers to community organizations, associations, and networks). Local networks, associations, and kin-based ties help generate resources, the institutional arrangements to minimize entrepreneurial risk, and the capacity to provide effective governance, all of which are necessary for development (see Keating 1995). To an unusual degree, history and tradition have equipped China for decentralized development.

Fifth, from the very start, industrial reform has been a carefully circumscribed process, which has kept pace with other reforms. In addition, because ownership of state enterprises is distributed across the central, provincial, and municipal governments, all parties have had an interest in proceeding cautiously. They have been forced to do so because enterprise reform in China affects well over 100 million workers, who constitute the most powerful political bloc in the country. Furthermore, a very large proportion of China's industrial capital is tied up in the state sector, and any radical moves to impose market-based solutions on the public sector would quickly bankrupt between a third and a half of all state enterprises.

This brings us to the final point. China's transition to the market has been successful and prolonged for several reasons. It has succeeded because decentralization mobilized local governments to provide the administrative infrastructure needed to ignite and sustain the growth of industry and the elaboration of markets. It has been prolonged because all the principal players want to reform the state sector gradually. In this way, they minimize the risks of potential upheaval and the costs for the urban workforce. This does not mean that the social costs have been dissipated, only that they are being shouldered by the dynamic segments of the economy.

#### China's Urbanization

If we examine the pattern of urbanization in China from the start of the century to the present day, the first four decades saw rapid urban growth with a concentration of population in port cities and in cities strategically located along major transport arteries. War and dislocation during the 1940s interrupted the process, which resumed once the communist government restored order in the early 1950s. That is, a normal tendency apparent worldwide reemerged, with more and more people gravitating toward cities, especially those in the coastal belt. Urbanization crested in 1960, with about a fifth of the population residing in cities.

Thereafter, China diverged sharply from the normal pattern.3 The share of the urban populace actually fell, and the growth of major cities, such as Shanghai, was curbed as some manufacturing plants and workers were shifted to smaller cities in the deep interior. Until the 1970s, severe restraints on mobility, enforced mainly through the hukou (household registration) formally introduced and implemented since 1958, checked the flow of people to cities (see Ma and Fan 1994). The hukou determined access to housing, basic foodstuffs, and urban services such as education and health care. Use of the hukou to limit rural-urban migration and even movement within cities, together with the transfer of several million city youth to rural areas, helped to maintain the level of urbanization at a nearly constant 19 percent between 1960 and 1980 (Zhou 1991). Step by step, however, these restraints have been scaled back and the antiurban bias erased. The result has been a surge in rural-urban migration (Chang 1994 notes that 117 million people migrated to urban areas during 1979-90, most of them on a temporary basis; also see Goldstein 1990; Gui and Liu 1992). Because development has been most rapid in the coastal provinces, cities along the eastern seaboard have attracted the largest number of migrants. Once a rarity, throngs of visitors and migrants are now commonplace in the coastal cities. Their presence, which is especially visible around railway stations, is evident throughout the cities, and they contribute significantly to the workforce on construction sites, in some service activities, and in certain assembly industries.

This reversal in urbanization policies has restored the "normal" pattern of urban growth. According to estimates by the State Statistical Bureau, China's urban population, which was 134 million in 1980, was 478 million in 1994, or roughly a fifth of the total for developing countries. It is growing at close to 6 percent a year, which is among the highest rates for developing countries. Kojima (1995) estimates that the adjusted rate of urban population growth during 1982–91 was 6.2 percent a year, which has no precedent in economic history. The number of cities rose from 223 to 622 between 1980 and 1994. In 1994 China had 32 megacities, 42 large cities, 173 medium cities, and 375 small cities (see the appendix to this chapter for definitions). Currently, China's urban economy—industry plus services—is the source of two-thirds of gross domestic product (GDP). If current trends persist, the number of urban dwellers will have doubled by the turn of the century, and all but a fifth of national output will be generated by urban areas.

For these reasons, an analysis of China's urban economy that adopts a geographic perspective and is informed by historical trends extending to the beginning of this century can be profitable in three ways: first, attention to geographic and historical angles can enrich the economic analysis of recent development in China; second, concentrating on the

6

urban industrial sector, which is the hub of economic activity, makes it easier to apprehend the interplay between reform and growth; third, a well-honed sense of urban dynamics is critical to appreciating China's future economic prospects and to understanding what further reforms will be required to deal with old problems still unsolved and new ones lying in wait.

#### **Selecting Three Cities**

There are several alternative methods of analyzing China's urban economy. It can be done on a macro scale using a broad brush and composing a picture from aggregate trends and the pattern of urban development seen on a national scale. At the other extreme, a single industrial subsector can provide insight into certain aspects of urban change. For the armature of our story, we have juxtaposed the macro and the subsectoral experience of three major and strategically situated cities: Guangzhou, Shanghai, and Tianjin (see figure 1.1). These cities were selected for several compelling reasons. First, they are among the most important urban centers in China, and two of them enjoy the status of provinces.<sup>5</sup> The State Statistical Bureau puts their combined industrial product at 9.9 percent of China's industrial output in 1994.6 Second, they share certain similarities—each is a major industrial center with a coastal location, a rich hinterland, and a privileged place in China's urban and industrial history. Third, the differences among them are also significant, and their industrial structure varies considerably—it is most diversified in Shanghai and narrowest in Guangzhou—but there are signs of convergence, as Shanghai and Tianjin have begun to concentrate on fewer core activities and have joined with Guangzhou in emphasizing the development of producer services. Examining their experience can help to uncover the forces driving this convergence. Fourth, all three cities have been active reformers, but their reform programs have differed in timing and scope and in the determination with which they have been implemented. A comparison across the three cities highlights the efficacy of reforms in overcoming obstacles and in exploiting advantages.

Modern industrial development commenced in Shanghai in the late nineteenth century, and the city has remained China's foremost industrial center. Shanghai's hinterland, which encompasses the lower Yangtze valley, is the richest in resources and one of the most densely populated regions of China. Tianjin, with its fine deepwater port, initially gained significance from its proximity to Beijing and the industrial cities of Liaoning Province. From being a transport hub, it has grown into a leading industrial center. Guangzhou's industrial presence is of a more recent vintage. An old administrative and trading center of the Pearl River delta region, Guangzhou acquired a modest manufacturing base in the 1960s and 1970s. However, the extraordinary acceleration of economic

Figure 1.1 Three Cities and Their Hinterlands, China

