
Population Change and Regional Development in China: Insights Based on the 2000 Census

C. Cindy Fan¹

Abstract: The People's Republic of China conducted its fifth population census in November 2000. This paper draws from that census and recent data to examine national and regional demographic changes in China over the past two decades. Nationally, the impact of fertility decline on rates of population growth, age composition, and household size is investigated. Regional population trends include the rising population share of the eastern region as a result of population growth due to migration and in response to the widening economic gap between coastal and interior China. Demographic differentials between the eastern region and the rest of China (i.e., in proportion of working-age population, household size, sex ratio, and levels of urbanization and educational attainment) suggest that migration is playing an increasingly important role in shaping regional population distribution and that the acceleration of uneven regional development poses a major challenge to policy makers. *Journal of Economic Literature*, Classification Numbers: J11, J61, O15. 4 figures, 5 tables, 52 references.

INTRODUCTION

The size of China's population has for decades fascinated demographers and China observers. More recently, increased attention has been paid to China's birth control policy and rapid fertility decline. China still accounts for one-fifth of the world's population, but over the past several decades it has experienced profound demographic changes. Many of these changes have occurred at highly varied rates across different regions in the country and these differences reflect the persistence and acceleration of uneven regional development.

Drawing from the 2000 census and recent data, this paper seeks to provide an overview of recent demographic changes in China, examine regional differentials in these changes, and highlight implications of regional demographic differentials for uneven regional development. Recent research has documented that the economic gap among Chinese regions has widened. However, studies on China's regional development have primarily focused on economic data and indicators and rarely addressed the relationship between demographic changes and regional economic development. As economic reforms and liberalization take deeper root during China's transition, the relationship between economic development and population growth is expected to become stronger. Specifically, uneven regional development motivates interregional migration, which boosts the population growth of regions with high levels of economic development. The eastern coastal areas of China, in particular, are

¹Professor, Department of Geography, University of California, Los Angeles, 1255 Bunche Hall, Box 951524, Los Angeles, CA 90095-1524, and Co-editor, *Eurasian Geography and Economics*; email: fan@geog.ucla.edu. The author would like to thank Chase Langford for cartographic assistance, Wenfei Wang for research assistance, and two anonymous referees for comments on an earlier draft of the paper.

likely to have experienced significant population growth because of migration. In addition, their demographic characteristics are expected to differ from those in regions of slower economic growth. Both the economic disparity and demographic gap between the more developed regions and the less developed regions of China raise questions over whether the government's recent plan for inland development will be effective.

This paper's approach is primarily empirical. In the next section, I shall describe China's 2000 census and some of its unique features. It is followed by a section that examines national population changes between 1982 and 2000, including population growth, population density, age composition, household size, sex ratio, urbanization, and educational attainment. Then, I shall focus on regional differentials of the above changes, using in particular the three-economic-belts framework and also examining variations among provinces.

THE 2000 CENSUS

The 2000 census is China's fifth national census conducted since the founding of the People's Republic (PRC), following those in 1953, 1964, 1982, and 1990. This most recent census sets itself apart from the previous ones in the following aspects. First, it is the first census taken at a 10-year interval and as a result of the Chinese government's plan to adopt the practice of regular-interval censuses. Second, it is the first Chinese census that uses both a short form for basic information and a long form for detailed questions, including housing statistics. The long form was sent to a randomly selected 10 percent of the population. Its purpose is to collect information about people's living standards (National Headcount, 2000). Third, the government had made a tremendous effort to ensure citizens that census data would not be used to penalize individuals for violations,² including having more children than the birth control policy stipulates and residing in an area without proper registration³ (Birth, 2000; Headcount, 2000; Henan, 2000). All of the above reflects the government's desire to introduce standardized census practices such as those adopted in other, especially Western, countries. Finally, unlike the previous censuses that were taken in July, a month often hot and prone to flooding, the 2000 census was conducted during the first 10 days of November (National Headcount, 2000).

As in other countries, the census is a major undertaking and is designed with regard to cultural, political, and economic contexts. Compared with that in the United States, the Chinese census is more labor intensive and employs more restrictive criteria for inclusion. Census workers are required to visit every individual household to fill out the census form or to assist in its completion (National Headcount, 2000; Zhou, 2001). Given a large proportion of rural population with relatively low levels of education, this practice is to ensure that those unfamiliar with and unable to understand the questions are counted. In November 2000, six million census workers went from door to door to collect information (National Headcount, 2000; Quanquo Renkou, 2000). In the United States, census workers visit households only if the latter fail to mail back their census forms. Second, the Chinese census counts only individuals who have PRC citizenship and whose usual residence is in China. Non-citizens are not included, which reflects a long-standing ideology of homogeneity in the nation. By contrast, the U.S. census counts individuals whose usual residence is at the location of enumeration regardless of their citizenship (Zhou, 2001). Unlike in the United States, the

²This concern is widely believed to have contributed to an undercount in the recently conducted 2002 census in Russia. For details, see, for example, Myers (2002) and Walsh (2002)—*Ed.*, *EGE*.

³Under state regulations, migrants must register with their destination's local authority.

Table 1. Population Totals and Growth Rates Based on Past Censuses

	Population, mill. ^a		Average annual growth rate, pct.
1953	594.35		
		1953-1964	1.42
1964	694.58		
		1964-1982	2.07
1982	1008.18		
		1982-1990	1.47
1990	1133.68		
		1990-2000	1.10 ^b
2000	1265.83		

^aMainland total of the 31 provinces (including autonomous regions and centrally administered municipalities) and military personnel.

^bChina's Population Census Office reports an average annual growth rate of 1.07% based on the ten years and four months that separated the 1990 census (July 1) and the 2000 census (November 1). In this paper, for the sake of simplicity, I computed growth rates assuming that the censuses were conducted at the same time during the respective years.

proportion of non-citizens residing in China is very small. Therefore, the Chinese census is still an extremely useful source of data for understanding past and recent population changes in the nation. Finally, U.S. census data are freely available to the public (subject to confidentiality criteria), whereas the Chinese government exerts tight control over the release of detailed census data. As of June 2002, the only document available to the public was a 64-page report containing 22 tables of macro-level summary statistics (Population Census Office, 2001). The analysis of population changes and regional development in this paper is primarily based on this document.⁴

INDICATORS OF NATIONAL POPULATION CHANGE FROM 1982 TO 2000

In 2000, China's population reached 1.27 billion. Over the past several decades, the average annual growth rate was the highest between 1964 and 1982 (2.07 percent) and lowest between 1990 and 2000 (1.10 percent) (Table 1). Yearly growth rates exceeded 3 percent in the 1960s but have declined since the 1970s and have fallen below 1 percent in recent years (NBS, 2001b, p. 208). Demographers project that by the year 2020 China will achieve zero population growth (Di, 2001). The decline of the population growth rate is attributable to government-led birth control programs, including the "late marriage, increased parity, and few births" (*wan xi shao*) program since the early 1970s and the One-Child Policy since the late 1970s. For more than two decades, the Chinese government has stressed that large population is the greatest obstacle to the nation's economic growth and that birth control is central to the national plan for economic development (Ministry of Foreign Affairs, 2002).

⁴Unless otherwise indicated, the information in all of the tables appearing in this paper were compiled by the author from this source.

Since the adoption of the One-Child Policy, China has been severely criticized by Western countries and media. In response, the Chinese government has stressed the policy's flexibility and characterized it as merely a family planning approach. Zhang Weiqing, minister of the State Family Planning Commission, has argued that China's family planning policy should not be understood as a One-Child Policy because families in certain circumstances are permitted to have a second child⁵ and ethnic minorities are allowed to have more children (Nation Sticks, 2000). Despite these "exemptions," the overall effect of the policy is a rapid decline in population growth rate.

The decline in population growth is especially impressive given the large childbearing-age cohorts, a result of the 1950s and 1960s baby booms.⁶ Women in the childbearing ages (15–44) accounted for 46.27 percent of all women in 1982 and 51.58 percent of all women in 1990 (NBS, 1985, p. 198; 1991, pp. 44–46). This proportion declined somewhat as the 1950s baby boomers started to age, but still stood at close to 50 percent at the end of the 1990s. However, the effect of large childbearing-age cohorts is more than offset by the sharp decline in fertility. In the early 1960s, the total fertility rate—the average number of children per woman—was as high as 7.5 (Zha and Ji, 1987); currently that rate is about 1.8 (Di, 2001; Population Reference Bureau, 2001).

It is important to note that the population growth rate varies considerably between Han Chinese and ethnic minorities. The Chinese government officially recognizes 55 non-Han ethnic groups in China as "minority nationalities" (*shaoshu minzu*), who concentrate in "autonomous regions" and "autonomous counties" especially in the northern, northwestern, and southwestern margins of the country. Between 1982 and 1990, the average annual growth rate was 1.28 percent for Han Chinese and 3.80 percent for ethnic minorities; the rates were respectively 1.06 percent and 1.54 percent for the period 1990–2000. Accordingly, the proportion of ethnic minorities in the population increased from 6.68 percent in 1982 to 8.04 percent in 1990 and 8.41 percent in 2000 (Table 2). The discrepancies in growth rate between Han and ethnic minorities can be attributed in part to the latter's higher fertility, especially since the birth control policy is more relaxed among them. For example, in 1981, the total fertility rate of ethnic minorities was 4.24, while the national rate was 2.61 (Yao, 1995, pp. 6–7; Sun, 1996, p. 217). Since the 1980s, the fertility level of ethnic minorities has declined significantly, thus resulting in a smaller gap in Han-minorities growth rates during the 1990s. In addition to fertility, another factor contributing to the ethnic minorities' high growth rate during the 1980s was the government's renewed policy of granting them preferential treatment in education, job allocation, and birth control. Significant numbers of people were able to establish minority heritage and gain eligibility for these benefits (Sun, 1996, pp. 216–217; Fuller et al., 2002). Intermarriage has also increased, and the children of Han-minority parents tend to self-identify as ethnic minorities, again because of the preferential policy.

Declines in fertility have transformed the age structure of China's population. Figure 1 illustrates that in 1999, except for the 5–9 and 10–14 cohorts, who were mostly children of the 1960s baby boomers, the base of the age-sex pyramid had shrunk. The shrinking started with the cohort aged 20–24, who were born in the mid to late 1970s. Likewise, census data show that the proportion of the population below 15 years of age decreased from more than

⁵ For example, couples who both came from one-child families and rural families whose first child is a girl are allowed to have a second child.

⁶ Except for the period 1959–1961, when failure of the Great Leap Forward and the subsequent famine led to a sharp decline in fertility and increased mortality, the birth rate during the 1950s and 1960s stood at very high levels, exceeding 40 per thousand (Zha and Ji, 1987).

Table 2. Major Indicators of Population Composition, 1982-2000

Indicator	1982	1990	2000
Ethnicity			
Percentage of total population:			
Han	93.32	91.96	91.59
Minorities	6.68	8.04	8.41
Age composition, pct.			
0–14	33.59	27.69	22.89
15–64	61.50	66.74	70.15
65+	4.91	5.57	6.96
Average size of households (persons)	4.41	3.96	3.44
Sex ratio			
Total population	106.30	106.60	106.74
At birth ^a	108.50	111.30	116.86
Percentage of urban population			
Official ^b	20.60	26.23	36.09
Adjusted ^c	21.22	28.35	36.25
Educational attainment (pct. of population)			
Illiterate	22.81	15.88	6.72
Primary	35.24	37.06	35.70
Junior high	17.89	23.34	33.96
Senior high	6.78	8.04	11.15
University and above	0.62	1.42	3.61

^aSource: China Sees, 2002.

^bAs of July for 1982 and 1990 and November for 2000.

^cYear-end and adjusted, see Zhou and Ma (2003).

one-third in 1982 to 22.89 percent in 2000 (Table 2). In part due to fertility decline, and in part due to improvements in health and rising life expectancy, which was 69 for men and 73 for women in 2001 (Population Reference Bureau, 2001), the proportion of the 65+ population has increased over time and stood at almost 7 percent in 2000 (Yu, 2001). This trend is likely to continue and thus in the future China is expected to join many other countries in the world in having an aging population. In the meantime, the working-age cohort (15–64) has increased and accounted for more than 70 percent of the population. Accordingly, the dependency ratio remains small, although the composition of the “dependent” population is gradually shifting from the children to the elderly. This age composition is interpreted by Chinese demographers as an advantage for the economy. Academician Song Jian (2001) and renowned demographer Tian Xueyuan (Population Key, 2000) both have argued that China’s present age structure will bring about a “golden age” of economic development.

Fertility decline has resulted in a reduction of household size (Table 2). Demographers have argued that fertility decline was a more important factor than the desire for a nuclear-family (as opposed to extended-family) household in explaining the shrinkage in household size (Peng and Guo, 2000, p. 102). In 2000, the average number of persons per household was 3.44, down by one person from 1982.

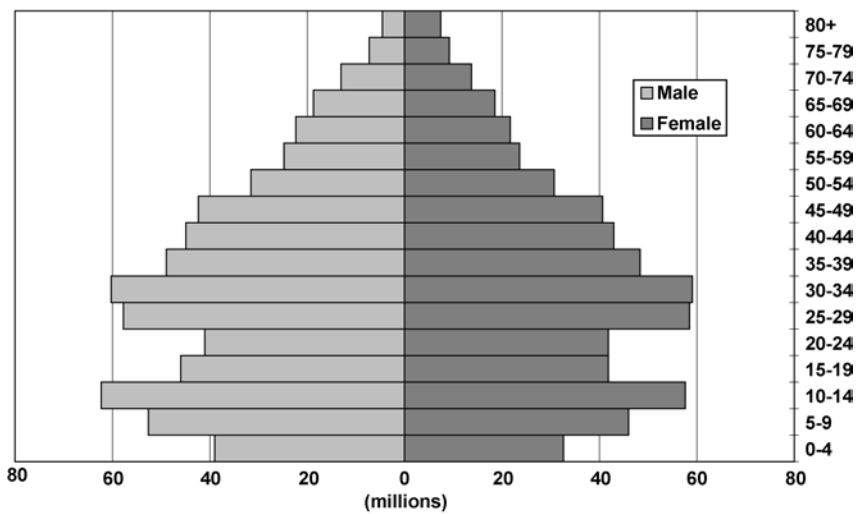


Fig. 1. Population of China by age and sex, 1999. *Source:* NBS (2000, pp. 4-6).

China's sex ratio (male:female) has been among the highest in the world, in part due to longstanding discrimination against women that negatively affected their quality of life, and more recently also due to an increase in the sex ratio at birth. For the population as a whole, the sex ratio in 2000 was 106.74, reflecting a slight increase from past censuses (Table 2). More alarming, however, is the increase in sex ratio at birth, from an already high level of 108.50 in 1982 to 116.86 in 2000. The China News Service (CNS) in Beijing recently reported that the high sex ratio at birth was primarily a rural phenomenon and that the sex ratio of the second and third born was as high as, respectively, 151.9 and 159.4 (China Sees, 2002). The report does not elaborate the reasons for these skewed ratios, but it does comment that imbalance between the sexes has adverse effects on individuals in matrimonial age groups. Other observers warn that the marriage squeeze—the number of men seeking wives significantly outnumbers women in similar ages—will lead to severe social problems (e.g., *With Women*, 2002). Most scholars point to sex-selective abortion, girl infanticide, and neglect and underreporting of girls as reasons for the “missing girls” (e.g., Xu and Ye, 1992; Li and Lavelly, 1995; Riley, 1996; *With Women*, 2002). It is widely believed that the draconian One-Child Policy and the household responsibility system that emphasized family farming further reinforced the preference for boys, especially among parents in the countryside, which exacerbated the skewness of the sex ratio.

In 2000, the level of urbanization in China was 36.09 percent (Table 2). According to previous censuses, the level was respectively 20.60 percent in 1982 and 26.23 percent in 1990. These statistics suggest that China has been urbanizing at a steady pace. However, the measurement of urbanization in China is a constant source of debate. Numerous papers and books have been written on this issue (e.g., Chan, 1994; Ma and Cui, 1987; Zhang and Zhao, 1998). A forthcoming paper by Zhou and Ma (2003) summarizes succinctly the difficulties in measuring and interpreting the level of urbanization in China. Specifically, the definition of urban population has changed many times and across censuses. In the 1982 census, urban population was defined as the total population found within the administrative boundaries of cities and towns. Since the 1980s, however, the criteria for establishing cities and towns have

been significantly relaxed and as a result the number of towns and cities increased dramatically. The 1982 definition of urban population would have produced a grossly inflated urbanization level of 53.21 percent for 1990. Accordingly, in the 1990 census, a second more restrictive set of criteria, focusing on population within city districts, city subdistricts, and towns' resident committees, yielded a more realistic level of 26.23 percent. In the 2000 census, additional criteria of population density, population size, and the extent of built-up areas were used, and an urbanization level of 36.09 percent (November 1) was reported (see also Yu, 2001). Yet no one set of criteria was used consecutively in two censuses, posing tremendous difficulties for comparison. In Zhou and Ma's view, the 2000 census's criteria are more realistic and desirable than previous criteria and should be applied backward to past years. In doing so, they arrived at adjusted year-end urbanization levels of 21.22 percent, 28.35 percent, and 36.25 percent, respectively, for 1982, 1990, and 2000.

The educational attainment of the Chinese population improved considerably between 1982 and 2000. The rate of illiteracy, in particular, dropped sharply from just under 23 percent to 6.72 percent. This improvement is attributable to the government's effort in promoting mandatory nine-year education and programs aiming at eradicating illiteracy (Duan, 2001; State Issues, 2001). In addition, the proportions of the population with junior high and senior high education also increased significantly, so that almost 49 percent of the population in 2000 had attained at least a junior-high level of education. Despite these improvements, the proportion of the university-educated population was still rather small, at less than 4 percent. By contrast, in 2000, over 32 percent of the U.S. population had at least some college education (U.S. Census Bureau, 2002). Clearly, the higher-education gap between China and more developed economies remains large.

POPULATION CHANGE AND REGIONAL DEVELOPMENT

The demographic changes in China vary quite considerably across the nation. Here, I use the "three economic belts" as a regionalization scheme to uncover some of these variations (Fig. 2). This scheme was formerly adopted in the Seventh Five-Year Plan (1986–1990), which promoted the notions of regional specialization and division of labor: the eastern, central, and western regions were designated respectively for export-oriented industrialization, agriculture/energy, and animal husbandry/mineral resources (The Seventh, 1986). A total of 12, 9, and 10 provinces⁷ constitute, respectively, the eastern, central, and western regions. Over time, this regionalization scheme has evolved into a convenient and revealing framework for examining regional differences in economic development, especially differences between coastal and inland regions. Many studies have found that the economic gap among the three belts accounted for the bulk of regional inequality in China (e.g., Fan, 1995; Wei, 2002).

Results from the 2000 census denote increased population concentration in the eastern region, which accounted for 42.36 percent of the nation's population (Table 3). The proportion of population in the central and western regions declined to 34.71 percent and 22.65 percent, respectively. As a result, population density in the eastern region (413.02 persons per sq. km) was almost eight times that of the western region and two-and-one-half times that of the central region. Figure 2 illustrates population density by province in 2000. Three of the four centrally administered municipalities—Beijing, Tianjin, and Shanghai—had the highest den-

⁷The 31 "provinces" (provincial-level units) in China include 22 regular provinces, 5 autonomous regions (Guangxi, Inner Mongolia, Ningxia, Tibet, and Xinjiang), and 4 centrally administered municipalities (Beijing, Tianjin, Shanghai, and Chongqing).

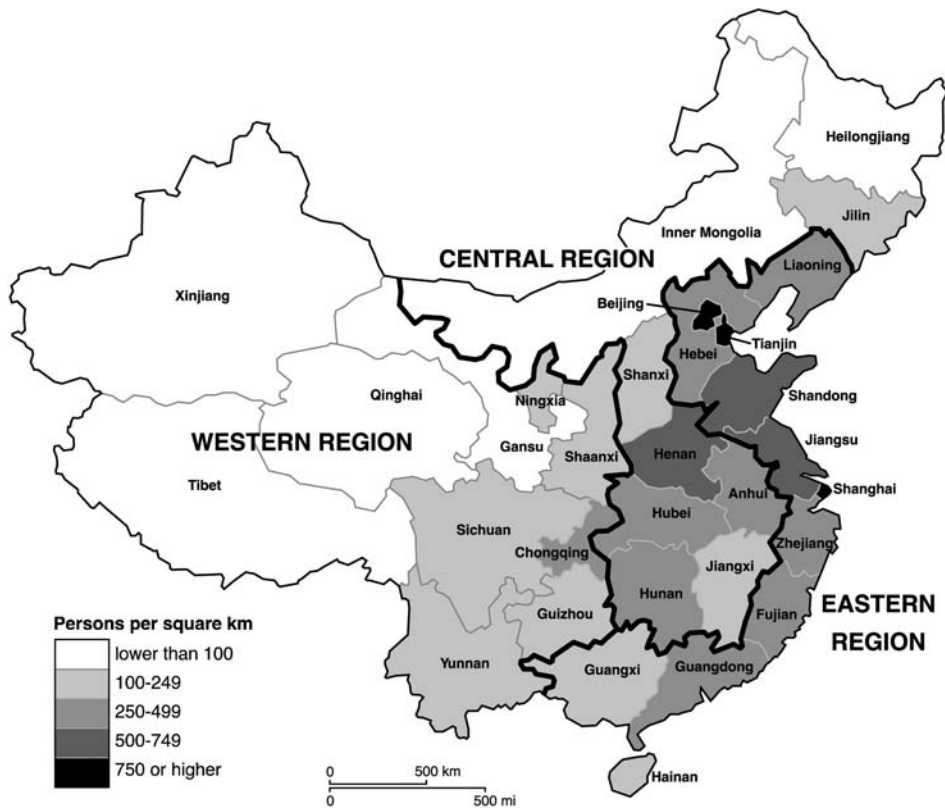


Fig. 2. Population density, 2000.

sities. They were followed by Shandong, Jiangsu, and Henan, which historically also have had large populations. Most of the other eastern-region provinces (Liaoning, Hebei, Zhejiang, Fujian, and Guangdong) and some central-region provinces (Anhui, Hubei, and Hunan) belonged to the next tier. Among central-region provinces, those in the north had especially low densities. Almost all western-region provinces, except Chongqing,⁸ were in the bottom two tiers. This pattern not only reflects the environmental inferiority of the northern and western parts of China, but also reinforces the utility of the three-economic-belts regionalization.

Uneven regional distribution of population in China is not a new phenomenon. Historically, the eastern region has always had the highest population density. However, recent censuses document that the regional gap in population growth has widened, further exacerbating the regional unevenness in population distribution. Between 1982 and 1990, the eastern region grew at an average annual rate of 1.57 percent, respectively 0.09 and 0.23 percentage points above the central and western regions (Table 3). During the 1990s, all three regions experienced slower growth, but the eastern region still grew at a rate of 1.36 percent, which was respectively 0.52 and 0.32 percentage points above the western and central regions. In the 1990s, the central region replaced the western region as the slowest-growing region.

⁸Chongqing was administratively separated from Sichuan and designated as the fourth centrally administered municipality in 1996.

Table 3. Regional Differences in Population, Population Density, and Growth, 1990-2000

	1990			2000		
	Eastern	Central	Western	Eastern	Central	Western
Population, mill.	468.08	404.12	258.31	536.22	439.40	286.66
Percentage of national total	41.29	35.65	22.79	42.36	34.71	22.65
Population density (persons/sq. km)	360.53	141.67	47.41	413.02	154.04	52.61
Average annual growth rate, pct. ^a	1.57	1.48	1.34	1.36	0.84	1.04

^aGrowth rate between the present census and last census.

Regional variations in population growth reflect both recent trends of regional development and Han-minority growth differentials. Table 4 and Figure 3 illustrate more specifically provincial variations in population and population growth. During the period 1982–1990, 6 of the 10 most rapidly growing provinces were in the eastern region, including Beijing and Guangdong; one was in the central region (Henan); and three were in the western region (Ningxia, Tibet, and Xinjiang). In the 1990s, 5 of the 10 most rapidly growing provinces were in the eastern region, the other 5 were in the western region, and none were in the central region. Natural increase in the provinces, which has increasingly converged in recent years (Yu, 2001), is not the primary reason for this pattern. In fact, natural increase in most eastern region provinces is relatively small. In 1999, Beijing’s natural increase was less than 0.1 percent and Shanghai’s was actually negative (NBS, 2001b, p. 214), but these centrally administered municipalities had some of the highest average annual population growth rates (respectively, 2.45 percent and 2.27 percent) in the 1990s. A recent article on Shanghai points out that a significant proportion of couples prefer not to have any children at all, reflecting changes in outlook as well as the rising cost of raising children in large cities (Shanghai’s Birth, 2001). As a result, Shanghai has an extremely low birth rate of 5.5 per thousand, which is even lower than that in most Western countries.

What emerges as an increasingly important factor of regional population growth is migration. Rapid economic growth in eastern-region provinces over the past two decades has exacerbated uneven regional development and reinforced the desire of selected population groups in inland provinces to migrate toward the east. In addition, since the 1980s, the government’s relaxation of migration control has made massive flows of migrants possible. The bulk of these migrants do not have permanent residence status at their destinations and are therefore referred to as “floating population.” Recent estimates of the size of the floating population are in the range of 110 to 140 million (Di, 2001), and estimates of interprovincial migrants in the late 1990s are in the range of 40 million (Yu, 2001). However, it is difficult to document migrants, especially those who live in temporary or makeshift homes and those who have not registered with local authorities. Indeed, scholars have identified the floating population as a major reason for the 1.81 percent undercount in the 2000 census (Di, 2001; Duan et al., 2001).

The 1990 census was the first Chinese census that included questions on migration. In that census, migrants were counted at the location of enumeration if they had left the place of registration⁹ for one year or longer. In the 2000 census, the time criterion was shortened to six months (Zhou and Ma, 2003). However, at the time of this paper’s writing, migration data

⁹In other words, if they had left the place where their household registration (*hukou*) is recorded.

Table 4. Provincial Distribution of Population, 1982–2000

Region/province	Population (thous.)			Pct. of total			Average annual growth rate			
							Pct.		Rank	
	1982	1990	2000	1982	1990	2000	1982-1990	1990-2000	1982-1990	1990-2000
Eastern	4,130	4,681	5,362	40.96	41.29	42.36	1.57	1.36		
Beijing	92	108	138	0.92	0.95	1.09	1.99	2.45	2	2
Tianjin	78	88	100	0.77	0.78	0.79	1.56	1.30	19	13
Hebei	530	611	674	5.26	5.39	5.33	1.77	0.99	9	19
Liaoning	357	395	424	3.54	3.48	3.35	1.24	0.71	26	25
Shanghai	119	133	167	1.18	1.18	1.32	1.47	2.27	22	4
Jiangsu	605	671	744	6.00	5.92	5.88	1.28	1.04	25	16
Zhejiang	389	415	468	3.86	3.66	3.69	0.80	1.21	31	14
Fujian	259	301	347	2.57	2.65	2.74	1.87	1.44	5	10
Shandong	744	844	908	7.38	7.44	7.17	1.57	0.73	18	24
Guangdong	536	628	864	5.32	5.54	6.83	1.98	3.19	3	1
Guangxi	364	423	449	3.61	3.73	3.55	1.86	0.61	6	29
Hainan	57	66	79	0.56	0.58	0.62	1.82	1.82	8	6
Central	3,589	4,041	4,394	35.60	35.65	34.71	1.48	0.84		
Shanxi	253	288	330	2.51	2.54	2.60	1.61	1.37	14	11
Inner Mongolia	193	215	238	1.91	1.89	1.88	1.35	1.02	24	17
Jilin	226	247	273	2.24	2.18	2.16	1.11	1.01	27	18
Heilongjiang	327	352	369	3.24	3.11	2.91	0.94	0.47	29	31
Anhui	497	562	599	4.93	4.96	4.73	1.54	0.63	20	27
Jiangxi	332	377	414	3.29	3.33	3.27	1.60	0.93	15	20
Henan	744	855	926	7.38	7.54	7.31	1.74	0.79	10	23
Hubei	478	540	603	4.74	4.76	4.76	1.52	1.11	21	15
Hunan	540	607	644	5.36	5.35	5.09	1.45	0.60	23	30
Western	2,321	2,583	2,867	23.02	22.79	22.65	1.34	1.04		
Chongqing	271	289	309	2.68	2.55	2.44	0.80	0.68	30	26
Sichuan	727	784	833	7.21	6.91	6.58	0.95	0.61	28	28
Guizhou	286	324	353	2.83	2.86	2.78	1.58	0.85	17	22
Yunnan	326	370	429	3.23	3.26	3.39	1.59	1.48	16	9
Tibet	19	22	26	0.19	0.19	0.21	1.90	1.75	4	7
Shaanxi	289	329	361	2.87	2.90	2.85	1.61	0.92	13	21
Gansu	196	224	256	1.94	1.97	2.02	1.67	1.36	12	12
Qinghai	39	45	52	0.39	0.39	0.41	1.68	1.50	11	8
Ningxia	39	47	56	0.39	0.41	0.44	2.23	1.87	1	5
Xinjiang	131	152	193	1.30	1.34	1.52	1.84	2.39	7	3

from the 2000 census had not been released to the public. Data from the 1990 census indicate that the predominant direction of interregional migration between 1985 and 1990 was from the central and western regions to the eastern region (Ding, 1994; Li, 1995; Fan, 1996). A recent report by the National Bureau of Statistics estimates that more than three quarters of

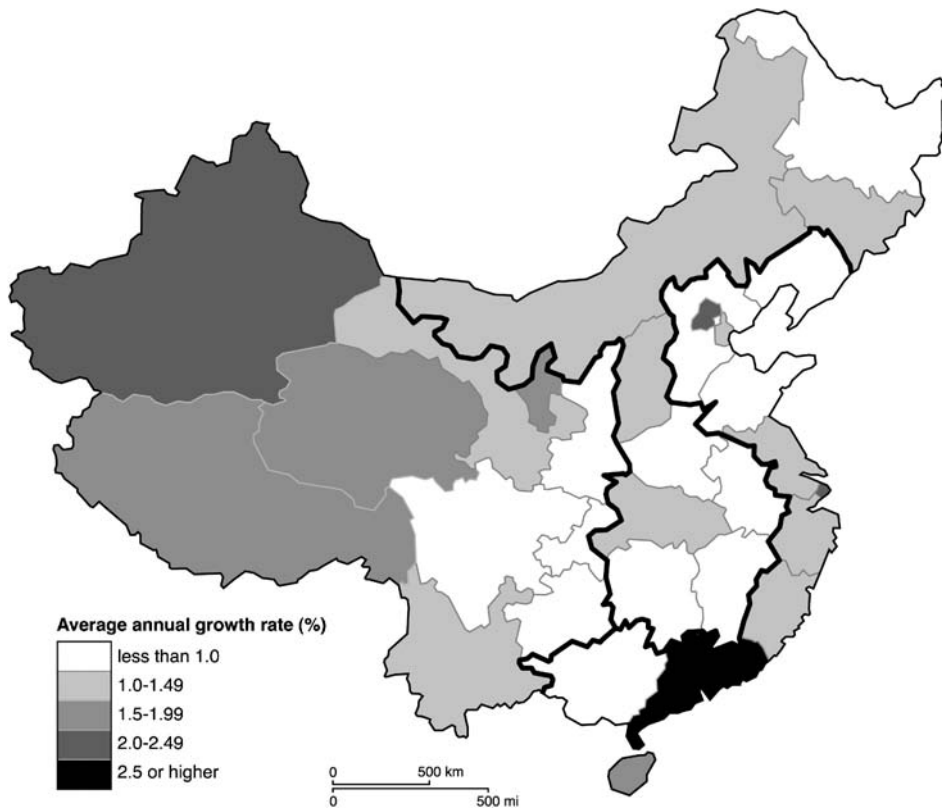


Fig. 3. Population growth, 1990–2000.

interprovincial migrants in the late 1990s moved to the eastern region (Yu, 2001). In the late 1980s, Guangdong was the most popular destination for interprovincial migrants (Fan, 1996). The province's remarkably high population growth rate (3.19 percent) during the 1990s—the highest among all provinces—suggests that it continued to receive large numbers of migrants, so much so that its rank in population size rose from sixth in 1982 to third in 2000, accounting for 6.83 percent of the nation's population (Table 4 and Fig. 3).

Beijing and Shanghai, two centrally administered municipalities that experienced very rapid economic growth in the 1990s, also recorded high rates of population growth. Since the 1990s, the Chinese government has made a tremendous effort to boost Shanghai's development (e.g., Cartier, 1995), in part to correct the perceived spatial imbalance between southern and eastern China as a result of Guangdong's skyrocketing economic growth. The "opening" of Pudong¹⁰ and the designation of Shanghai as the "dragonhead" of the Yangtze River, together with state investment in the Yangtze River Delta, were some of the policy instruments designed for achieving this objective. Not surprisingly, although Shanghai's population growth rate in the 1980s was near the national average (1.47 percent), in the 1990s it jumped to 2.27 percent, trailing only Guangdong, Beijing, and Xinjiang (Table 4 and Fig. 3).

¹⁰Pudong New Area lies in the east of the older built-up area of Shanghai and was designated as a development zone in 1990, in part to restore Shanghai's function as a national economic center.

Although not in the eastern region, Xinjiang has benefited from economic growth largely as a result of cross-border trade with the (formerly Soviet) Central Asian republics, which has attracted migrants from other provinces (Pannell and Ma, 1997; Loughlin and Pannell, 2001). The government's ongoing policy to develop the western region has also generated significant volumes of migration into Xinjiang. Most of the migrants to Xinjiang are Han, which in part accounted for the higher population growth of Han (3.11 percent in 1990–2000) than ethnic minorities (1.85 percent), mostly Uyghurs, in that region. However, many ethnic minorities in Xinjiang believe that the Han in-migrants are benefiting from the best economic opportunities, which has further reinforced existing perceptions of inequality and intensified ethnic tensions in the province (Loughlin and Pannell, 2001).

In order to ascertain the statistical relations between economic development and population growth, I computed correlation coefficients between provincial GDP per capita and population growth rate. The coefficient for GDP per capita in 1982 and population growth rate from 1982 to 1990 is near zero and not significant. On the contrary, the coefficient for GDP per capita in 1990 and population growth rate from 1990 to 2000 is positive (0.50) and significant. These results suggest that regional population growth is increasingly attributable to differentials in economic development and migration flows that respond to these differentials.

In addition to the effects of trade and migration, the proportion of ethnic minorities has also been a factor of population growth, especially in western-region provinces (East China, 2001). The proportion of ethnic minorities in the western region increased from 17.61 percent in 1990 to 18.98 percent in 2000, whereas the respective proportions in the eastern and central regions remained in the single digits (Table 5). Higher fertility among ethnic minorities has clearly contributed to relatively rapid population growth rates in Ningxia, Xinjiang, and Tibet (Table 4 and Fig. 3). Whereas most provinces experienced a decline in the rate of population growth between the 1980s and the 1990s, the growth rate of Beijing, Guangdong, Shanghai, Zhejiang, and Xinjiang increased, which further underscores the effects of economic development and ethnic minorities. In the case of Xinjiang, population growth is attributable to both development-led migration and higher fertility of ethnic minorities.

All three economic-belt regions followed the national trend in age composition, namely, declining proportion of those under 15, increasing proportion of the 15–64 group, and increasing proportion of those of age 65 and older (Table 5). The trend was accelerated in the eastern region, however, and accordingly it has become the “oldest” among the three regions. The relatively small proportion of the under-15 group in the eastern region (21.13 percent) was probably due to its higher level of urbanization (see below) and to relatively low fertility in large cities. This is consistent with regional differentials in the average size of households. While the average size of households declined in all three regions, it was the smallest in the eastern region (3.34 in 2000). The proportion of the 15–64 group was, however, the largest in the eastern region (71.22 percent in 2000), which is not surprising given that region's attractiveness to migrants and the concentration of migrants in young and working ages.

In both 1990 and 2000, the sex ratio was the highest in the western region and lowest in the eastern region (Table 5). During the 1990s, the ratio increased in the western and central regions but declined in the eastern region, further widening the gap among them. This gap probably reflects the more conservative outlook of China's inland areas, which are predominantly rural and where the tradition that gives preference to sons over daughters continues to be strong. Although data on the regional sex ratio at birth from the 2000 census are not yet available, it is reasonable to speculate that responses to the birth control policy were in part

Table 5. Regional Differences in Population Composition, 1990-2000

	1990			2000		
	Eastern	Central	Western	Eastern	Central	Western
Ethnicity						
Percentage of total population:						
Han	93.90	95.76	82.39	93.98	95.41	81.02
Minorities	6.10	4.24	17.61	6.02	4.59	18.98
Age composition, pct.						
0-14	26.93	28.54	27.73	21.13	23.63	25.29
15-64	66.91	66.23	67.22	71.22	69.81	68.39
65+	6.15	5.23	5.05	7.65	6.56	6.32
Average size of households (persons)	3.86	4.03	4.06	3.34	3.51	3.55
Sex ratio	105.05	106.53	107.13	104.73	107.19	108.12
Percentage of urban population ^a	30.53	24.95	20.44	44.60	33.50	27.66
Educational attainment (pct. of population)						
Illiterate	14.03	15.46	20.09	6.01	6.27	9.83
Primary	37.21	36.52	38.10	33.25	35.00	40.86
Junior high	24.76	24.16	19.30	36.20	36.11	26.55
Senior high	8.75	8.21	6.08	12.46	11.14	8.47
University and above	1.67	1.27	1.09	4.17	3.26	2.80

^aDifferent criteria were used in the 1990 census and 2000 census. See text for explanation.

responsible for increases in the sex ratio in the central and western regions. In the eastern region, especially in large cities, the desire for children and for sons is apparently less strong (Shanghai's Birth, 2001).

The eastern region has more cities and larger cities than the other two regions. In 1999, 300 of the 667 officially designated cities in China were in the eastern region, which also accounted for 18 of the 24 cities with more than one million people¹¹ (NBS, 2001a, p. 25). This is partially reflected in the regional differentials of urbanization level (Table 5). It is important to note that the urbanization levels reported here are based on census-specific criteria and are, strictly speaking, not comparable over time, as discussed earlier (Zhou and Ma, 2003). Nevertheless, adjustments for comparability are expected to be small, and therefore it is reasonable to conclude that all three regions experienced increased urbanization during the 1990s. Moreover, the eastern region was the most urbanized and its gap with the central and western regions increased further during that decade (Yu, 2001).

The level of educational attainment in all three regions improved between 1990 and 2000. In both years, the eastern region had the lowest rate of illiteracy and the highest proportions of junior high-educated population. As a whole, however, the differentials between the eastern region and the central region were relatively small, and the biggest gap was between them and the western region. In 2000, less than 40 percent of the population in the western region had an educational attainment at or above the junior high level. Figure 4 shows that

¹¹In Chinese statistics, the population size of cities refers to nonagricultural population and does not include the population that has rural/agricultural registration (*hukou*). If the latter were included, the number of large cities in the eastern region would have been even greater, because they are the major destinations of rural-urban migrants.

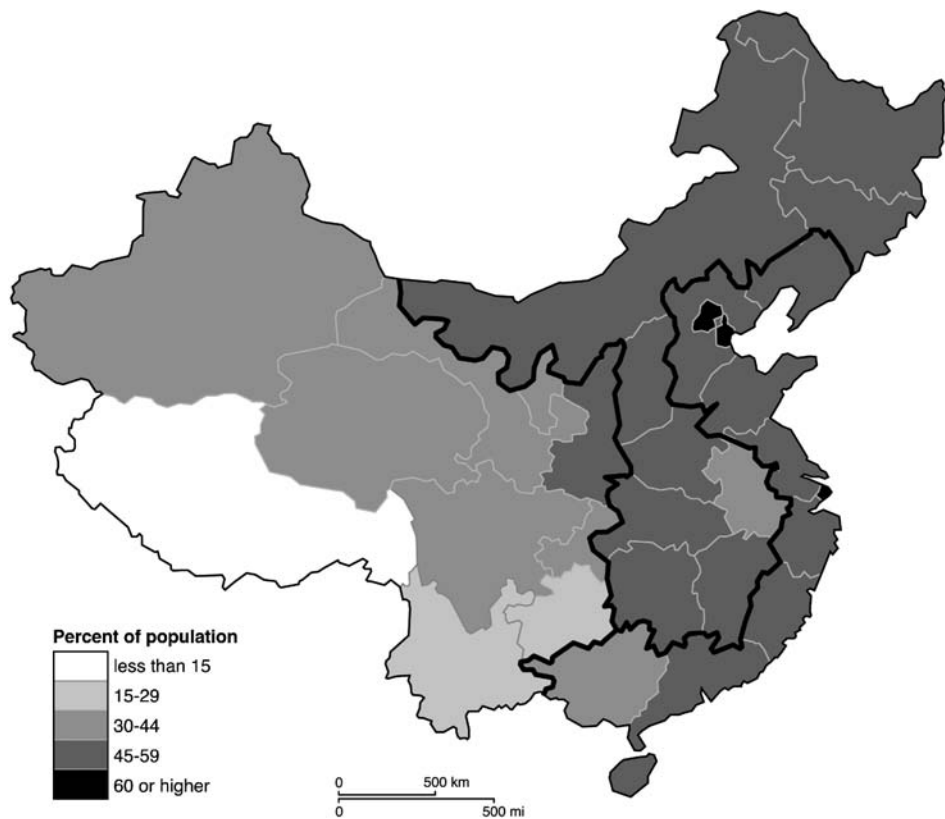


Fig. 4. Educational attainment of junior-high level or above, 2000.

Beijing, Tianjin, and Shanghai had the highest levels of educational attainment, and that the other eastern and central region provinces, except Anhui, shared similar levels of educational attainment. The western region clearly lagged behind the rest of the country. In 1999, the Chinese government formally adopted “western development”¹² (*xibu da kai fa*) as the theme of a campaign to address uneven regional development (Enze Wenshi, 2000). Yet the regional pattern of educational attainment seems to suggest that the relatively poor human resources in the western region will seriously impede the government’s effort. Given the low levels of educational attainment and high rates of out-migration in the western region, the prospect of western development is likely to hinge upon how well government-sponsored preferential policies and incentives can retain skilled labor and personnel and halt their migration to other regions (Tian, 2000).

SUMMARY AND CONCLUSION

Drawing upon the 2000 census and recent data, this paper has attempted to examine broad demographic changes in China and the implications of these changes for regional development, more specifically, uneven regional development. The 2000 census was

¹²It is also referred to as the “Open Up the West” or “Go West” campaign.

conducted using more standardized and refined criteria and definitions than previous censuses, and as such is very useful for understanding recent national and regional demographic and economic trends.

The census confirms that the national population growth rate continued to decline in the 1990s, a result of fertility decline and birth control policy. Han Chinese grew more slowly than did ethnic minorities. Fertility decline of the population has shrunk the base of the age-sex pyramid and produced three outcomes. First, smaller child cohorts accelerate the aging of the population; second, the dependency ratio remains small; and third, Chinese households have diminished in size. The large proportion of the working-age population appears to be a promising resource for national economic growth. The sex ratio, especially the sex ratio at birth, is skewed and attests to the long-standing patriarchal tradition and parents' responses to the One-Child Policy. China's level of urbanization has increased at a steady pace. At the same time, the latest measures of urbanization used in the 2000 census seem more appropriate than their predecessors, and have the potential to settle the debate on urbanization level once and for all. Finally, the Chinese population has improved its educational attainment, but the proportion of university-educated population is still relatively low.

Regional variation of demographic characteristics and changes indicate that the three-economic-belts framework remains an effective scheme for representing the most compelling regional differentials in China. The 2000 census shows that the regional unevenness of population distribution was further exacerbated as the gap in population growth rates widened among the three regions. The eastern region grew most rapidly and the central region most slowly. Regional differentials in natural increase do little to explain this gap. Instead, accelerated economic growth in the eastern region in general and in certain eastern-region provinces in particular, especially Guangdong, Beijing, and Shanghai, attracted large numbers of migrants who boosted their populations. Economic growth of Xinjiang and a high proportion of ethnic minorities also were conducive to population growth in the western region. The 1990s seemed to be the first decade in PRC history that offered very strong evidence of the positive relations between economic development and population growth and of the impacts of interregional migration on regional population growth. The heightened importance of economic development and migration to population change suggests that China's spatial economy is increasingly driven by a post-socialist and liberalized economic order.

In terms of age composition, sex ratio, household size, urbanization level, and educational attainment, the eastern region has set itself apart from inland regions. It has the oldest population and largest proportion of working-age population, smallest households, lowest sex ratio, and highest levels of urbanization and educational attainment. Having three of the centrally administered municipalities, rapidly growing provinces such as Guangdong, and most of China's large cities, much of the eastern region is increasingly taking on demographic profiles of more advanced economies, signifying accelerated changes in the society. These demographic characteristics are conducive to that region's continued high rate of economic growth. However, these changes are largely not shared by the central and western regions, suggesting that forces that reinforce uneven regional development continue unabated, despite the government's measures to reduce regional inequality. Given the poor human resources in the western region and its continued loss of skilled labor to other regions, barriers to the government's western development campaign are enormous, if not insurmountable.

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