

# China's Demographic Destiny and Its Economic Implications

POPULATION CHANGES WILL IMPACT CHINA'S LONG-TERM ECONOMIC GROWTH AND GLOBAL COMPETITIVENESS.

By Cliff Waldman



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China appears to be at the edge of an historic demographic transition, setting the country on a path to grow old before it becomes prosperous. This paper presents a detailed picture of the current population dynamic and analyzes the implications for economic prospects. The results indicate that China is not yet at the stage of development where population changes matter a great deal for economic growth. But when that time comes, perhaps in a decade or so, demographic changes will have a profound influence not only on economic growth but on China's global competitiveness.

Population dynamics in general and aging in particular have become global economic issues. At a Federal Reserve Bank of Kansas City symposium on global demographic change, a paper presented by Bloom and Canning (2004), two researchers from the Harvard School of Public Health, offered a number of daunting facts. The segment of the global population that is age 60-and-older is rising sharply both in percentage terms and absolute numbers, with the expectation that it will surpass one billion within two decades. Moreover, the population age 80 and over is projected to increase at an annual rate of 3.4 percent from 2000 to 2050, corresponding to an increase from one percent to four percent of the global population.

This aging phenomenon, it is believed, will be most rapid in Western Europe, the United States, and Japan. Virtually all of the projected increase in world population through 2050 will occur among today's lower- and middle-income countries. China, however, might be one important exception.

As the world's most populous country, whose rapid economic growth and stellar foreign direct investment have turned it into an emerging economic superpower, China appears to be at the edge of its own historic population transition. As noted in a recent paper published by the Center for Strategic and International Studies (CSIS) in Washington, DC (Jackson and Howe, 2004), the United Nations (UN) projects that the share of China's population

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age 60-and-over will rise to 28 percent by 2040 from 11 percent in 2004. As the authors point out, by 2040, assuming current demographic trends continue, there will be 397 million Chinese citizens who are in the 60 and older age cohort, more than the total current populations of France, Germany, Italy, Japan, and the United Kingdom, combined.

A number of authors have commented on the Chinese demographic transition as it relates to pension policy. The CSIS study, for example, points out that without pension reform, China will "soon have tens of millions of indigent elders who lack nearby families, pensions, and access to health care" (Jackson and Howe, 2004, p. 27). But the more fundamental question, one that should be considered before any analysis of the pension issue, is the impact of the demographic dynamic on long-term economic growth. The economic growth impact of population changes can dramatically affect pension policy and pension financial status. Further, given China's widening income distribution and bleak job market, the consequences of a structural, long-term slowdown in economic growth, should that occur, could be significant not only from an economic perspective but for its social and political consequences, as well.

This paper is part of an emerging literature on China's demographic transition, presenting a detailed picture of the current population dynamic and considering the implications for long-term economic growth. The next section reviews recent literature on the demographic-economic nexus and proposes a dynamic paradigm for analyzing the relationship.

The third section of the paper reviews recent demographic trends from three vantage points. First, I present data for a number of aggregate population variables in order to assess the general trend in population growth and age distribution, two variables that will be shown to have significant consequences for savings, labor supply, and economic development. Subsequently, I consider China's population dynamic on a regional level in order to assess the demographic influence on the *distribution* of labor supply, an important variable in China's labor market development that will be shown to be of consequence for the demographic-economic relationship. In the final part of this section, I focus on the population dynamic in a global context by comparing China to a sample of countries chosen for noteworthy comparative characteristics, such as geographic and/or economic proximities. This is done to assess the influence of population dynamics on China's global competitiveness, itself a key aspect of long-term economic growth.

In the fourth section, I consolidate the conclusions from the third section in order to assess China's broad

demographic direction. In the fifth section, I apply the paradigm proposed in the next section to offer conclusions regarding the economic implications of China's demographic path. The final section presents a brief overview of a number of policy issues that arise from the analysis.

## **The Relationship between Population Dynamics and Economic Growth**

### *Recent Research on the Demographic-Economic Growth Relationship*

Experts generally agree that the normal course of demographic transition is the path from the high fertility rate, high mortality rate profile that is normally seen in countries that are in the early or middle states of economic development to the low fertility rate, low mortality rate profile that is characteristic of industrialized nations. Many demographers view fertility rate declines and mortality rate declines as part of a unified dynamic. Kalemli-Ozcan (2002), among others, has concluded that fertility is positively impacted by high offspring mortality rates, a link that will be explored in the current study.

Other catalysts for fertility declines include growing levels of education and labor market opportunities for women, which reduce desired fertility as they are able to use their time for productive activities other than child rearing. Some experts, in fact, argue that demographic transitions have often been triggered by increasing returns from educational investment. They point to the significant increase in educational investment that has immediately preceded the fertility decline in most parts of the developed world.

The conceptual model that links demographic change to economic growth is in a state of transition. The long-held belief that there is little or no relationship between population dynamics and economic development is losing credence in recent literature. Long-term demographic trends are now thought to have pronounced impacts on economic growth through a number of channels. These include labor supply, savings behavior, and productivity changes. Darrat and Al-Yousif (1999) tested for the intertemporal relationship between population growth and economic development in a sample of 20 developing countries, which were chosen for their varied stages of economic development as well as their population densities and institutional architecture. The sample included China as well as India, Brazil, and Mexico. The authors asserted that the statistical methods used in previous studies were inadequate because they were inappropriate for capturing the potentially long-run nature of the relationship. They assert that such methods as Granger-causality and cointegration tests are the ones appropriate for the task. Using these tools, their results implied the presence of a

strong, long-run relationship between population growth and per-capita income growth. Interestingly, they found no significant *short-run* relationship between these variables.

In 14 of the 20 sample countries the authors found that causality flowed from population growth to economic development, for the most part with a positive sign. There were interesting exceptions, however. In Sri Lanka and Thailand population growth was shown to have a negative long-run impact on economic growth. Also, the results for China and India were particularly noteworthy. For these two countries, the authors found that economic growth impacts population growth with a negative sign. Apparently, the promotion of more rapid economic growth in the two most populous nations in the world is an important step towards curbing their population growth (Darrat and Al-Yousif, 1999, p. 310).

Barro (2003) and Kalemli-Ozcan studied the demographic issue in a more piecemeal fashion, producing results that appear somewhat contrary to those produced by Darrat and Al-Yousif. Barro reported the results for a number of regressions estimated over the periods 1965-1975, 1975-1985, and 1985-1995 that used per capita GDP as the endogenous variable. He sought to empirically identify the characteristics that make it likely that a country will experience high or low economic growth rates. To test the impact of the fertility rates, defined as total lifetime live births for a typical woman over her expected lifetime, he entered the fertility variable in logarithmic form for the dates 1960, 1970, and 1980. The estimated coefficient was found to be negative and significant, indicating that higher fertility is a negative for economic growth. He further found that life expectancy is positively related to economic development and postulated that this was due to its relationship with health and thus productivity.

Kalemli-Ozcan considered the impact of mortality rates on fertility, education, and economic growth. She showed that a mortality decline, working through the channels of education and fertility, promotes economic growth. She concludes that a reduction in child mortality creates incentives for reduced fertility and increased educational investment by parents as a result of the new confidence that parents have that offspring will survive into adulthood. As a result, population growth is slowed, and economic growth is accelerated.

Bloom and Canning (2004) further explore the mechanism by which population dynamics impact economic performance. They found that the ratio of the working age population to total population, as well as life expectancy, have positive and large impacts on economic growth. The authors hypothesized that the principal channels through

which these variables impact growth are labor supply, savings, and educational investments. Changes in the age composition of a population are likely to have impacts on aggregate labor supply. And since savings rates vary with age, changes in the age structure of the population will also impact aggregate savings rates. Finally, demography can impact educational investments through several mechanisms. Fertility and schooling, the authors argue, may be determined by a common set of factors that affect family decision making. By itself, a rise in life expectancy would increase the incentive to invest in education.

Cheng (2003) specifically assessed the economic implications of China's demographic changes with the use of a numerical general equilibrium simulation model. He found that lower fertility rates result in lower savings rates, reduced supply of labor, and thus lower productivity of capital—all of which are negative for long-term economic growth. His simulations revealed that the impact of demographic change on the growth rate of per-capita income is quite small.

### **An Evolutionary Paradigm of the Demographic-Economic Nexus**

As shown in the previous subsection, recent research has increasingly confirmed the existence of a relationship between demographic change and economic growth. But the direction of causality, the sign, and the magnitude of the relationship appear to remain contentious. Most likely, the character of the demographic-economic growth relationship is a function of the stage of economic development of a given country, as Darrat and Al-Yousif (1999, p. 311) suggest in their conclusions.

Clearly, even a simple conceptual model of this relationship must account for stages of development. In this section, I propose a four-stage conceptual model that is constructed from and extends current literature.

In the first stage, population growth is simply a consequence of weak economic growth and the circumstances that surround poverty. There is a scarcity of educational and labor market opportunities, particularly for women. Infant and child mortality are high due to unsanitary living conditions and the unavailability of state-of-the-art medical technology. Families' subjective probability assessment of offspring survival is low, and they do not see alternatives to child rearing in the form of educational and/or labor market opportunities. Further, due to the lack of adequate pension coverage in many poor and underdeveloped countries, children are seen as critical support systems for their parents' old age, both financially and in terms of general care. As a consequence, families are motivated to have relatively high numbers of children.



Cumulatively, these factors produce fertility rates that are well above the level that is needed for population replacement (normally, 2.1 births per woman over the average lifetime of a woman).

In the second stage, the economy is shocked onto a higher growth plane through a combination of factors that might include policy reforms, the dispersion of new technologies, and government changes. Rapid growth begins to correct some of the circumstances that created unnecessarily high fertility rates. Gradually, job market and educational opportunities become available. Infant and child mortality growth rates are stabilized with the availability of modern medical technology. Households become more confident of offspring survival, and women have life opportunities beyond child rearing. Thus, the demand for offspring declines at any given level of income. Rapid economic growth, through the channel of declining fertility, eventually moderates population growth.

In stage three, as markets develop and as the structure of a capitalist economy takes shape, the direction of causality begins to change—slowly. Generally speaking, population growth at this stage should begin to be a positive for economic growth provided that food, water, and natural resources are in necessary abundance.

But a number of obstacles weaken the demographic impact on economic growth during stage three, with the possibility of bidirectional causality or even population neutrality (i.e., no impact in either direction). For one thing, labor and capital markets tend to be highly imperfect in the early stages of development, muting their capacity to translate population change into economic change. Economic transition that results in structural layoffs, information inadequacies that prevent the unemployed from finding job openings, transportation or infrastructure bottlenecks that create physical impediments toward reemployment of the unemployed, and excessive discrimination (as was experienced by women in the 1980s and early 1990s in the Chinese job market) would all prevent increases in the working age population from contributing to economic output, regardless of short-term macroeconomic conditions.

Further, a banking system that is burdened with non-performing assets, generated in part by a lack of market-based criteria for allocating capital resources, would impede savings from being channeled to economically productive capital formation. To a large degree, this would mitigate the effect of an increase in savings that should, in theory, accompany an increase in the working age population.

In addition to these market imperfections, early to mid-stage economic development often tends to be geo-

graphically uneven, leaving regions of the transition country stuck in a “stage one” situation where economic growth is still unidirectionally impacting population growth.

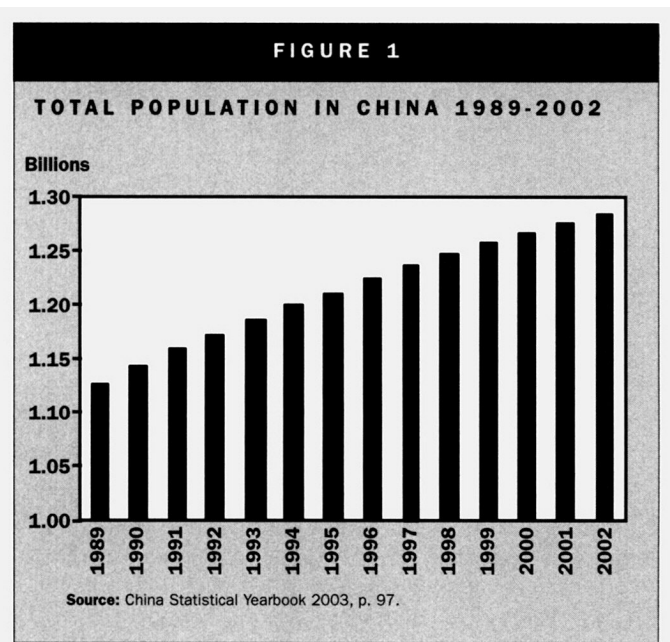
As labor and capital markets mature and as economic development becomes more geographically even, the economy enters the fourth stage, where there is a unidirectional and substantial relationship from demographic change to economic development. Changes in the fertility rate and in the pace of population growth at this point impact long-term economic growth. For countries with an abundance of life-sustaining resources, population growth positively impacts economic growth. For those nations with a scarcity of food, water, and other critical resources, however, the relationship is likely to be a negative one.

### China's Demographic Dynamic: Empirical Evidence

#### *Nationwide Demographic Trends*

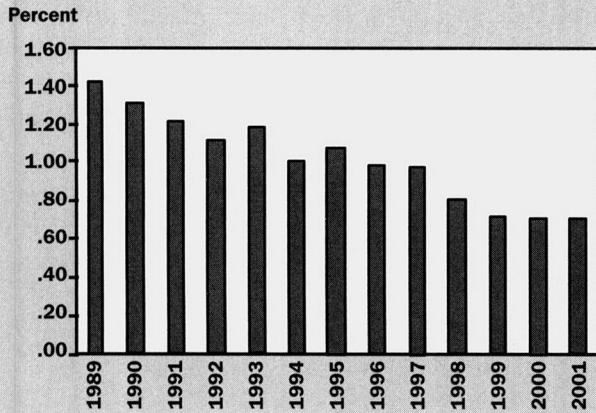
Figure 1 shows that between 1989 and 2002 China's population (accounting for about 20 percent of the total global population (World Bank, 2004) swelled from 1.13 billion to 1.29 billion as a result of a growth rate that, as shown in Figure 2, has slowed in an uneven manner through 2000 and leveled off thereafter.<sup>1</sup> Figure 3 dissects the population trend by showing the path of birth and death rates, measured as births and deaths per 1,000 population. As shown, the birth rate was on an uneven upward path between 1978 (the year that witnessed the beginning of significant economic

<sup>1</sup>The China population data used throughout this paper excludes Hong Kong and Macao, but includes military personnel of the Chinese People's Liberation Army.



**FIGURE 2**

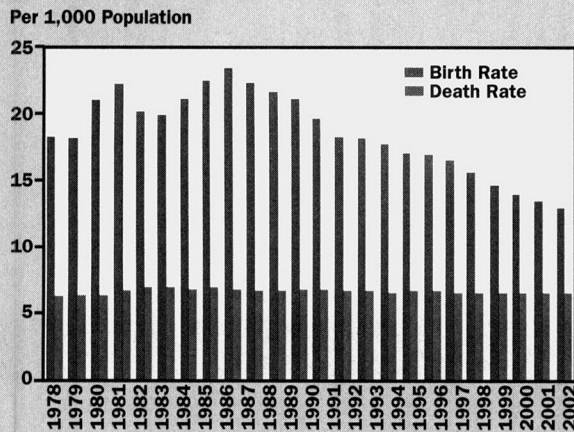
**ANNUAL POPULATION GROWTH IN CHINA, 1990 TO 2002**



Source: China Statistical Yearbook 2003, p. 97 and author's calculations.

**FIGURE 3**

**BIRTH RATES AND DEATH RATES IN CHINA 1978-2002**



Source: China Statistical Yearbook 2003, p. 97.

reforms) and 1987. Subsequently, the birth rate exhibited a relatively steady decline and was nearly cut in half by 2002. By contrast, the death rate has exhibited minimal volatility since reform, increasing from 6.25 (per 1,000 population) in 1978 to 6.86 in 1986. It subsequently declined, very modestly, to 6.41 in 2002, the lowest level since 1981.

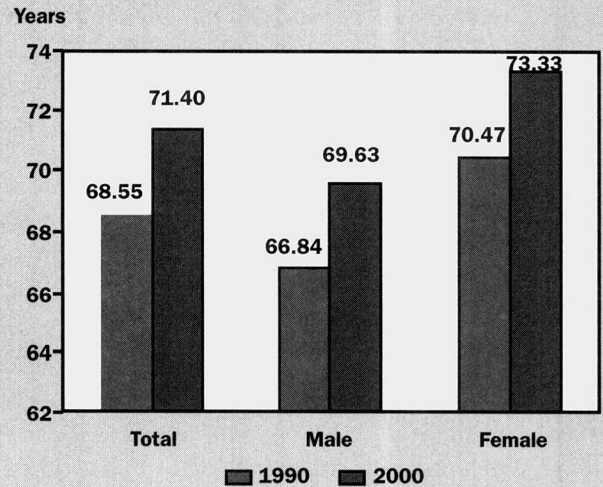
Figures 4 and 5 show the paths of life expectancy and the total fertility rate.<sup>2</sup> Over time, these variables influence the course of birth and death rates and thus the age balance in the population. As shown in Figure 4, life

<sup>2</sup>The total fertility rate is defined as the average number of children a

expectancy for the total population increased by 2.85 years between 1990 and 2000 to 71.4 years. The male life expectancy rate increased by 2.79 years to 69.63 years, while the significantly higher female life expectancy rate increased by 2.86 years to 73.33 years. Figure 5 shows

**FIGURE 4**

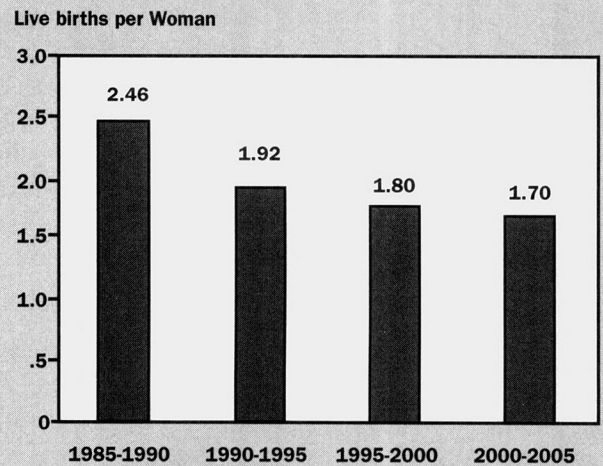
**LIFE EXPECTANCY IN CHINA BY POPULATION AND BY GENDER**



Source: China Statistical Yearbook 2003, p. 118.

**FIGURE 5**

**TOTAL FERTILITY RATE IN CHINA 1985-2005**

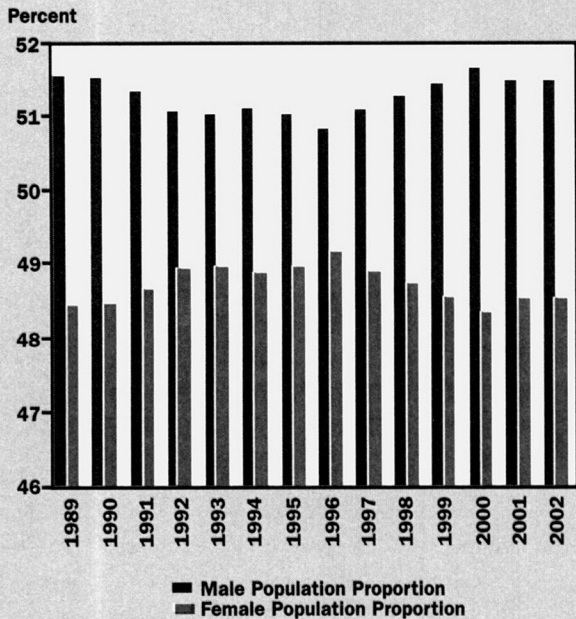


Source: United Nations, 2004.

hypothetical cohort of women would have if they were subject during their whole lives to the fertility rates of a given period and if they were not subject to mortality. It is expressed as live births per woman.

**FIGURE 6**

**GENDER DISTRIBUTION WITHIN THE CHINESE POPULATION, 1989-2002**



Source: China Statistical Yearbook 2003, p. 97.

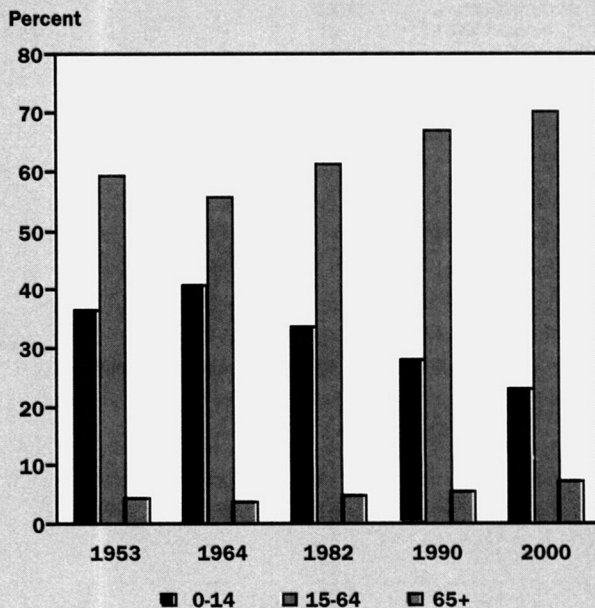
that the fertility rate steadily declined to an estimated 1.70 in the 2000-2005 period from 2.46 in the 1985-1990 period. As mentioned, a fertility rate of 2.1 is generally considered necessary to keep the population from falling.

Figures 6 through 8 illustrate the gender and age dynamic in the Chinese population. Figure 6 shows that the recent acceleration in female population growth, which began in 2001, has only modestly altered the gender proportions in the Chinese population. Between 2000 and 2002, the female population proportion rose from 48.37 to 48.53, while the male population proportion fell from 51.63 to 51.47, only modestly reversing the widening divergences that occurred between 1996 and 2000. As shown in Figure 7, declining fertility and birth rates have lowered the proportion of the population that is in the 0-14 age bracket. Between 1964 and 2000, the proportion of the population in this youngest age cohort was cut nearly in half (from 40.7 percent to 22.9 percent). Also shown is the steady growth (since 1964) in the proportion of the population that is 65 and older to nearly seven percent. While the critical 15-64 working age cohort climbed as a percent of the total population, its growth rate slowed during the 1990s.

Figure 8 offers further perspective on the path of the working age population, defined in this UN data source as the 15-59 age cohort. It declined in proportion to the total population between 1950 and 1975 and subsequently began to increase in the post-1978 reform years. But it has

**FIGURE 7**

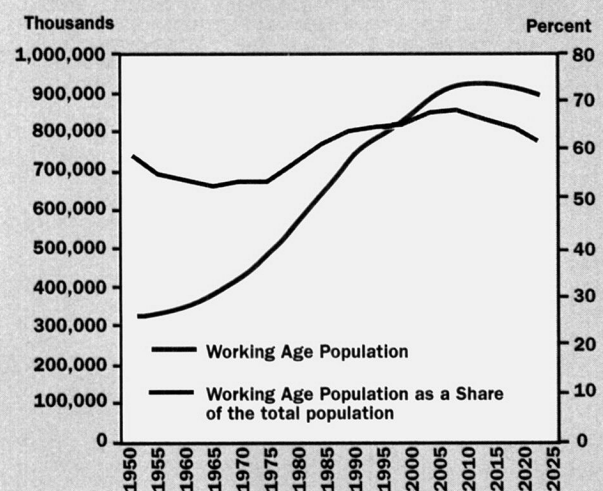
**AGE DISTRIBUTION WITHIN THE CHINESE POPULATION FOR SELECTED YEARS**



Source: China Statistical Yearbook 2003, p. 99.

**FIGURE 8**

**CHINA'S WORKING AGE POPULATION (15-59), NUMBER AND PERCENT OF TOTAL POPULATION, 1950-2025**



Source: United Nations, 2004

leveled off in growth throughout the 1990s. As shown, the United Nations projects that the working age population as a percent of the total population will fall after 2010 and the absolute level will decline after 2015.

Cumulatively, these national data point to slowing population growth, an increasing average lifespan, and an imminent decline in the working age population. I will discuss the economic significance of these observations below.

### Regional Distribution of Key Demographic Parameters

Since 1978, when broad economic reforms began, China has experienced a highly regionalized economic development pattern. This has been manifested in a number of ways. Aziz and Duenwald (2003) showed that the provincial income dynamic has been quite complex, amounting to a clustering of the provinces into relative income "clubs" of their own. Generally speaking, income per capita in the initially (i.e., pre-1978) poorer regions has been catching up with per capita income in the initially richer regions. But this overall tendency apparently masks interesting differences. For example, income per

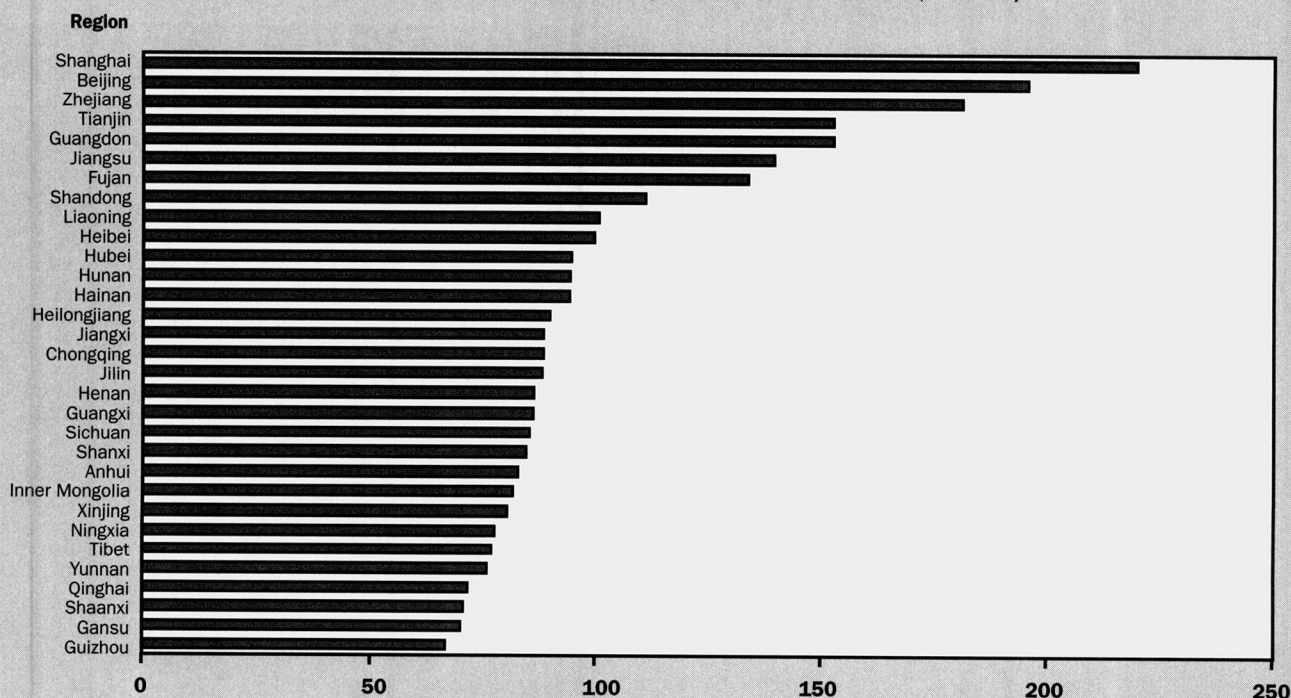
capita in the coastal regions appears to be growing relatively faster than the rest, including the initially richer regions. And many of the initially poorer regions, after improving their relative rankings in the 1980s, fell behind in the 1990s. Further, the initially richer regions have been quickly falling behind in the relative income ladder.

The decline of agriculture as a share of gross domestic product (GDP) and the confinement of the special enterprise zones to the eastern coastal areas has contributed to these regional disparities. Further, the segregation of the labor market in the urban areas that structurally limits rural migrant job opportunities and the layoffs that continue to result from the restructuring of the state-owned enterprises are among the factors that underlay the large regional wage disparities (Waldman, 2004).

Clearly, for the purposes of the current study, a regional analysis of population trends is needed to understand the influence of the demographic dynamic on the distribution of labor supply. This aspect of the population story has important implications for the development of the Chinese labor market and thus for the demographic-economic relationship, as outlined in the conceptual model presented above. For the reader's reference in this

FIGURE 9

#### WEIGHTED AVERAGE OF PER CAPITA ANNUAL INCOME IN URBAN AND RURAL HOUSEHOLDS AS A PERCENT OF THE NATIONAL AVERAGE (FOR EACH REGION, 2002)

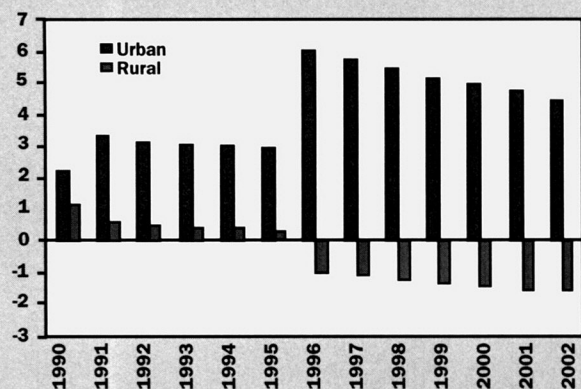


Note: The weights come from the latest national data on urban/rural population proportions.  
Source: China Statistical Yearbook 2003, p. 355 and 369, and author's calculations.

FIGURE 10

URBAN AND RURAL POPULATION GROWTH IN CHINA, 1990-2002

Annual Change (percent)

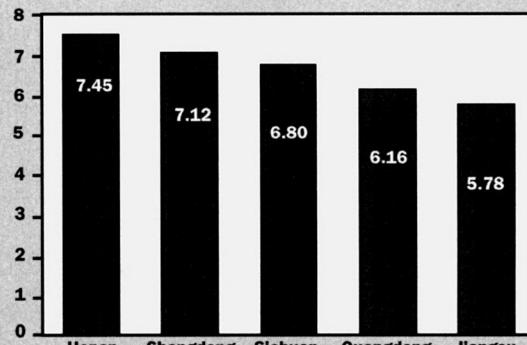


Source: China Statistical Yearbook 2003, p. 97 and author's calculations.

FIGURE 11

POPULATION PROPORTIONS ACCOUNTED FOR BY THE FIVE MOST POPULATED PROVINCES, 2002

Percent



Source: China Statistical Yearbook 2003, p. 98 and author's calculations.

section, I have included Figure 9, which illustrates a constructed income ranking of the 31 regions.

If China's recent regional population dynamic could be summed up in one word it would be "urbanization," dramatically illustrated in Figure 10.<sup>3</sup> The labor market-related migrations that have occurred since the late 1980s have made China's population growth an essentially urban phenomenon. After 1995, urban population growth, already strong, accelerated while rural population growth began an outright decline (whose pace increased consistently through and including 2002). So, while China's population remains more rural than urban (with a roughly 61 to 39 balance) the growth in the urban population proportion has been significant, from 26.2 percent in 1989 to nearly 39.1 percent in 2002.

Figures 11 and 12 begin to dissect this population dynamic by illustrating the regional configuration of key demographic parameters. (For the reader's reference, a map of China is shown as Figure 13.) Figure 11 shows that approximately 33 percent of the total population resides in five (of 31) regions. Three of them, Shandong, Guangdong, and Jiangsu are in the east coast areas that were heavily invested in as special economic zones in the

early years of economic reform and are among the wealthier provinces in China. Henan borders Shandong and, as shown in Figure 9, ranks 18th of 31 regions for income. Sichuan ranks 20th on the income scale and is located in the south-central part of China.

To illustrate the regional distribution of key demographic parameters that have contributed to this population concentration, Figure 12 shows the population standard deviation across the 31 regions as a percent of the national average for each parameter. As shown, the natural growth rate (which is the difference between the birth rate and the death rate) is very regionally concentrated, with the regional standard deviation accounting for 55 percent of the nationwide mean. The birth rate, as well as the youngest and oldest age cohorts, are also fairly regionally concentrated. But the working age cohort (defined here as 15-64) is fairly evenly distributed across the country.

Still another layer of detail is the regional rankings of individual population parameters.<sup>4</sup> Tibet and Qinghai, which are two of the poorest regions (ranking, as shown in Figure 9, 26th and 28th on the regional income scale), have the highest birth rates (at approximately 19 and 18 per 1,000, respectively), standing in remarkable contrast to that of Beijing and Shanghai, China's two wealthiest regions, which rank the lowest on the regional birth rate scale and on the fertility scale. Generally, higher birth rates appear to be in the poorer regions of the central and western part of China. However, the death rate is not nearly as regionally skewed, supporting the calculations

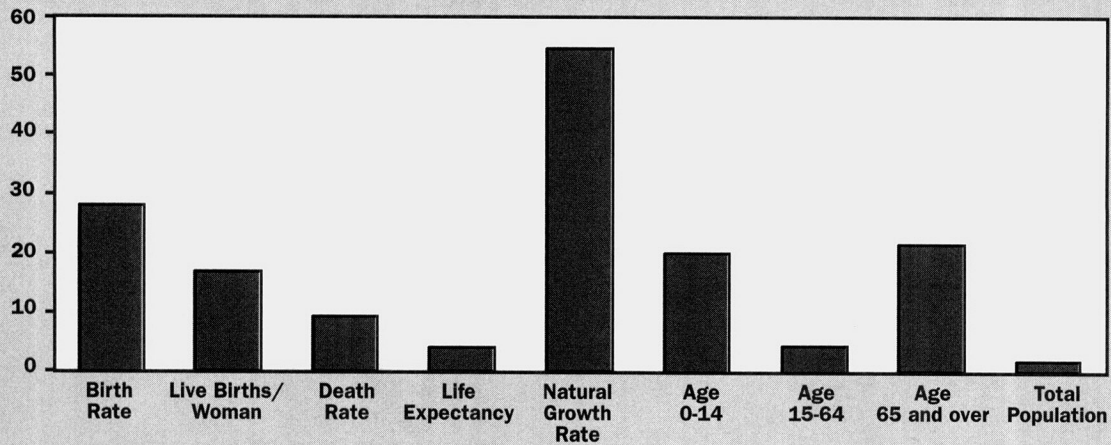
<sup>3</sup>Urbanization is a broad term, but has to be viewed, in large part, as a function of the data source. The *China Statistical Yearbook 2003*, (National Bureau of Statistics of China, 2003) from which the data for this section were taken, defines the urban population as people residing in "cities and towns," while rural population refers to population "other than the urban population." The Yearbook points out that statistics on the urban and rural populations over the years are compiled in line with the "regulations of statistical classification on urban and rural populations stipulated by the government, which were in effect at different times."

<sup>4</sup>Detailed data on these regional parameters can be obtained from the author at [cwaldman@mapi.net](mailto:cwaldman@mapi.net).



FIGURE 12

STANDARD DEVIATION OF KEY DEMOGRAPHIC PARAMETERS AMONG CHINESE PROVINCES



Source: China Statistical Yearbook 2003 and author's calculations.

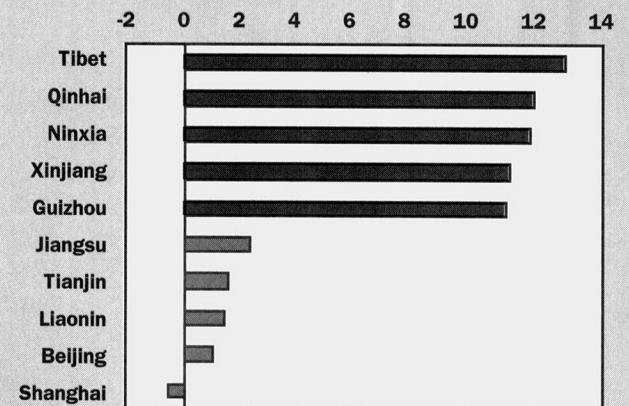
FIGURE 13

MAP OF CHINA  
LOCATIONS OF PROVINCES, AUTONOMOUS  
REGIONS AND MUNICIPALITIES



FIGURE 14

TOP AND BOTTOM FIVE PROVINCES BY  
NATURAL GROWTH RATE



Source: China Statistical Yearbook 2003, p. 98.

shown in Figure 12.

The large regional differences in birth rates partially underlay the dramatic differences in natural growth rates, shown in Figure 14. Tibet and Qinghai are among the largest sources of population “supply,” in large contrast to the wealthy provinces of Beijing and Shanghai, which effectively have zero population growth. These data give rise to (although by no means prove) the hypothesis that the natural growth rate of the population is inversely relat-

ed to wealth and provide some evidence that the poorer Chinese regions might be in the first “stage” of the paradigm described above. The absence of the benefits of economic development in these regions, such as labor market opportunities (particularly for women) and of mortality-depressing medical technologies, has created fear of offspring mortality and has given women little productive alternative to child rearing, thus keeping birth rates high.

Another important source of regional disparity is the ranking of the dependent (0-14), working age (15-64), and retirement (65 and over) age cohorts. Given the patterns of the birth and natural growth rates, it follows that the poorer regions

of the central and western part of the country would have the highest proportion of the youngest age cohort. Also, as expected, the regions with the highest proportion of working age citizens are generally those that are in and around the northeast "economic boom" areas. But this latter pattern has a number of interesting ambiguities. First, supporting the data from Figure 12, the differences between the top and bottom five regions are quite unremarkable, exemplified by a 12 percentage point gap between the top and the bottom region (Beijing and Guizhou). Secondly, the income pattern of the ranking is not smooth. The top five regions for proportion of working age citizens include Heilongjian and Jilin, which, as shown in Figure 9, rank 14th and 17th respectively for per-capita income; and the bottom five has Guangdong, which ranks fifth. It appears as if the distributional dynamic for the working age population is still very much in progress.

The regional pattern for the retirement population is much clearer and very much the opposite of the dependent (0-14) cohort. The eastern and wealthier regions have higher proportions of retirees in their populations, while the central, western, and generally poorer provinces are low in the regional retirement population ranking.

Rapid urbanization catalyzed by a redistribution of the younger populations from the poorer regions of the central and western part of China to the wealthier regions of the east appears to summarize China's regional demographic dynamic. But while this dynamic is clear for the youngest and oldest age cohorts (0-14 and 65 and over), the data are somewhat murkier for the working age (15-64) cohort. The economic implications of this emerging regional pattern will be discussed below

### China's Demographic Composition in a Comparative Context

As China's trade and financial linkages with the global economy grow, the demographic environment in key countries will have an impact on China's global competitiveness and long-term economic growth. Thus, I have selected six countries for comparison in this section. Two are already major players in the Asian theater—India and Japan. A third, Vietnam, shows signs of growing economic vitality and could very well be an important global manufacturing platform in the next decade. The United States and Germany provide an industrialized comparison (in addition to Japan) and Brazil was chosen for its increasing trade linkages with China.<sup>5</sup>

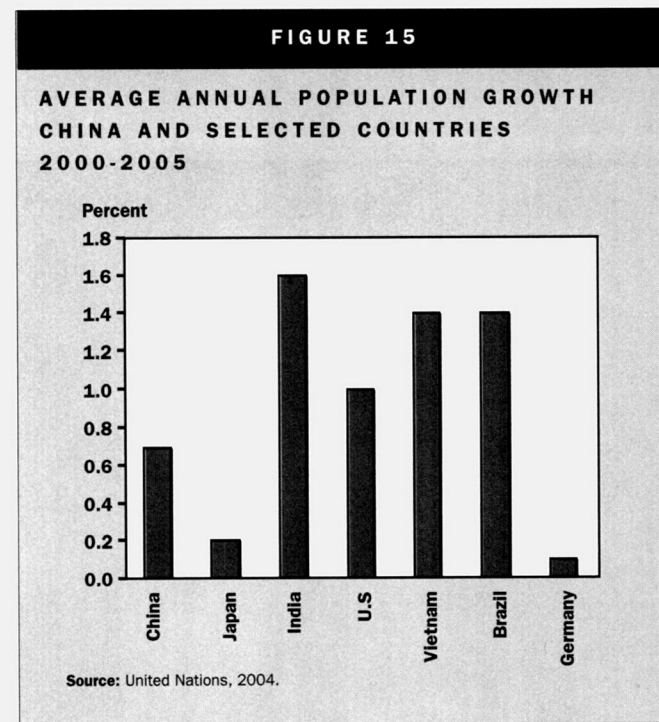
As shown in Figure 15, China's population growth rate is estimated to exceed only those of Japan and Germany between 2000 and 2005 among the selected countries.

<sup>5</sup>The source of all of the projections discussed in this section is the United Nations (2004). For analytical simplicity, a medium variant scenario was used for all projection data in this sample of countries.

India's population growth rate has been more than twice that of China's (1.6 percent on an average annual basis versus 0.7 percent). Figure 16 shows that, with the exception of the United States and Germany, net migration plays a very small role in the population dynamic of the sample countries. As expected, rich countries show net increases from migration, and poor ones show modest net losses. As shown, this pattern is expected to continue through 2010.

Figure 17 shows that China's rapid urbanization has kept it ahead of India and Vietnam in the proportion of its population that resides in urban areas. China, however, is far behind Japan, the United States, Germany, and Brazil in urbanization.

The nations in the sample exhibit declining birth rates since 2000. China's birth rate in the 2000-2005 period is estimated to be very close to that of the United States (13.6/1,000 population for China, versus 14.0 for the United States). Further, UN projections anticipate that China will have a lower birth rate in the 2005-2010 peri-



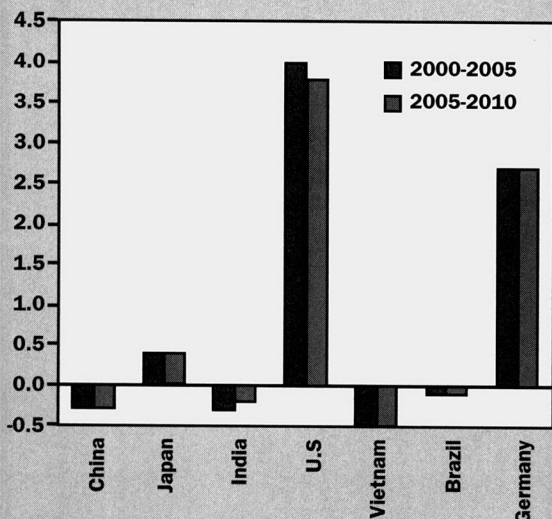
od (13.2/1,000 population) than is expected for the United States (13.9/1,000 population). The birth rates of India, Brazil and Vietnam are expected to remain much higher

With this method, the comparisons are not clouded by differing assumptions on the path of fertility, the one difference among the scenarios used in the UN population projections. (All of the projection variants from the UN population database share the same assumptions regarding mortality and international migration.) For a fuller explanation, the reader should visit <http://esa.un.org/unpp/index.asp?panel=4>.

FIGURE 16

NET MIGRATION RATE  
CHINA AND SELECTED COUNTRIES  
2000-2010

Migration per 1,000 Population

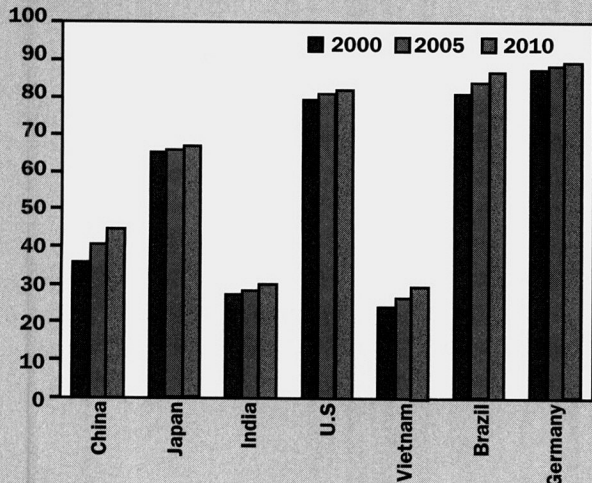


Source: United Nations, 2004.

FIGURE 17

DEGREE OF URBANIZATION  
CHINA AND SELECTED COUNTRIES  
2000-2010

Percent Urban



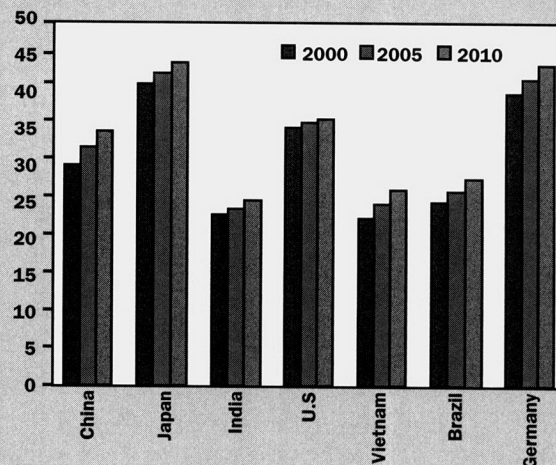
Source: United Nations, 2004.

than those of China and the developed countries. Indian fertility was the highest among the sample countries during the 2000-2005 period at 3.1 births per woman, well above the Chinese fertility rate of 1.7 births per woman. In

FIGURE 18

MEDIAN AGE  
CHINA AND SELECTED COUNTRIES  
2000-2010

Years



Source: United Nations, 2004.

fact, the UN is projecting that by 2030 India's population will exceed that of China and that by 2050 the difference will be more than 200 million. Japan and Germany experienced the lowest fertility rates of the seven countries in the sample during the 2000-2005 period, both countries with a remarkably low 1.3 live births per woman. The broad, cross-country pattern of fertility is expected to remain intact through 2010.

China, Vietnam, and Brazil, are estimated to have the lowest crude death rates of the sample countries between 2000 and 2005 and are expected to remain the lowest through 2010. While this is no doubt partially a consequence of their having much younger populations, the relationship between median age and the crude death rate is not always consistent. This is exemplified by India, which has the youngest population of the sample countries but nonetheless has a crude death rate that is higher than that of Japan, which has the oldest population of the sample.

There is little difference in the United Nations' estimates of life expectancy among the selected countries. All except India are expected to exceed 70 years in 2005, with Japan exceeding 80. In the period from 2005 to 2010 all seven countries are expected to show an improvement in life expectancy, although the ranking within the sample is not expected to change.

Figure 18 shows that the median age of all of the selected countries is expected to increase. As mentioned, Japan is the oldest country, with an estimated median age of 42.9 in 2005 that is projected to increase to 44.4 in

2010. The youngest country of the seven is India, with an estimated median age of 24.3 in 2005 that is expected to increase to 25.6 in 2010. As is the case with life expectancies, China's median age of 32.6 in 2005 is higher than that of India, Vietnam, and Brazil but lower than Japan, Germany, and the United States. Similar to those for life expectancy, the projections for 2010 do not anticipate any change in the alignment for median age.

The working age cohort (age 15-59) as a percent of the total population varies relatively little among the sample countries, falling within a range whose high is 67.7 percent for China in 2005 and whose low is 59.7 percent for Japan in 2005. In 2010, China's working age population proportion is expected to remain the highest of the sample, although its growth from 2005 is expected to be very modest in relation to its growth between 2000 and 2005. In fact, the UN projects that China will fall behind Vietnam in the proportion of its population in the 15-59 cohort in 2020. The UN further expects that China will fall behind India and Brazil in its working age population proportion in 2025.

### **Perspective on China's Demographic Path**

While China's one-child policy, which began in 1980, undoubtedly played a role in the dramatic, post-1987 decline in the birth rate, the introduction of flexibility and liberalization into the policy—as explained by England (2005)—may well have created a floor on the deceleration of population growth. But the aggregate population trend, per se is only one striking feature of the national data. There is the obvious foundation for the accelerated aging of the Chinese population created by increased life expectancy as well as declining fertility and birth rates.

The declining birth rate brought about by the one-child policy and the ancillary, fertility-depressing benefits of strong economic growth will level the growth of the working age population, as is becoming apparent in the data. And as the urbanization dynamic continues, a decline in the working age population may shift the supply/demand balance somewhat favorably for migrant workers competing in urban labor markets.

The country comparisons in and of themselves are illustrative of China's broad demographic evolution. Of the six other nations' data that are displayed in this paper, China's population growth rate exceeds only that of Japan and Germany, largely explained by the fact that its birth rate has been higher than only Japan and Germany. When considering both birth rate and life expectancy, it becomes apparent that China's aging situation is not as ominous as that facing Germany and Japan but is more difficult than that of India, Vietnam, or Brazil.

China's aging calculus as compared to the United States is mixed, in that it has a lower birth rate than the United States, but also a lower life expectancy. Finally, China is positioned to fall behind India, Vietnam, and Brazil in the proportion of its population in the working age cohort. On the whole, China appears stuck between the developing and industrialized nations in the sample in terms of the demographic dynamic, edging towards the population profile indicative of an advanced economy, but not there yet.

### **Economic Conclusions**

On balance, China is in the third stage of the paradigm laid out above. The policy reforms that began in the late 1970s have generated rapid economic growth. Although the broad labor market remains weak, characterized by continuing high levels of joblessness in many sectors, the returns to education in the labor market have accelerated and opportunities for workers with skills and/or education—particularly in the urban areas—have improved. Further, UN data highlight the much-improved situation with regard to infant mortality and mortality of children who are under the age of five, with the latter having declined from an average of 49 per 1,000 births in the 1995-2000 period to an estimated 41 in the 2000-2005 period. While the one-child policy has been a major factor underlying the declining fertility rate, these other factors associated with economic development have undoubtedly played a role.

But substantial imperfections in labor and capital markets are preventing a unidirectional and significant relation between demographics and economic growth at this point in China's economic evolution. In an earlier paper (Waldman, 2004), I described the bottlenecks in the Chinese labor market that are partially a leftover from the pre-1978 period and partially a consequence of the transition to a market system. China's hukou structure, which inhibits the free movement of labor between regions, along with widespread layoffs from restructuring state-owned enterprises, has created a great many regional bottlenecks in the Chinese labor market, as evidenced by regional wage differences that are simply too large to be fully explained by expected geographic differences in the cost of living. As a result of these bottlenecks, demographic changes that add to the labor supply are likely to exacerbate long-term unemployment in many regions, regardless of short-term regional and/or national economic conditions. Thus, increments to the labor pool will not have a positive impact on national economic growth and might very well have a negative impact.

In addition to labor force changes, demographics (as

discussed earlier) impact economic growth through the stock of savings. As the working-age population swells, savings rates normally increase. As aging shrinks the ratio of the working age population to the total population, savings rates normally decrease. But structural and policy-related difficulties in the Chinese banking system (such as continued state ownership of major banks and widespread corruption) have resulted in great weakness and inefficiency. Thus, increased savings do not necessarily get routed to productive, growth-generating investment projects.

As the evolutionary model laid out above implies, China is therefore not yet at the point where population dynamics are mattering a great deal to economic growth. And, in fact, since economic growth and development have been so uneven in the sense of favoring the eastern regions, there are many inland areas where a “first stage” analysis still applies, meaning that when stronger economic growth does come to the underdeveloped regions (which, for the most part, still have the highest fertility rates), it will influence household child-rearing decisions and thus further impact overall population growth. As explained above, some of the benefits of economic development, which include a decline in infant mortality along with increased opportunities for women to use their productive time for activities apart from child-rearing, create an incentive for families to have fewer children.

Over the next decade or so—if the path of rapid national economic development continues and if policies allow for the full maturation of labor and capital markets—China will be in the “fourth stage,” where population parameters have a unidirectional and substantial impact on economic growth. At that point, the most pressing demographic issue from national growth, regional development, and international competitiveness standpoints will be labor supply. Declining national labor supply, particularly for the urban areas, may very well be a short-term plus, given China’s pool of long-term unemployed and given the social costs of absorbing rural migrants into urban areas (in the form of such items as housing and medical services). But the impact of a dwindling labor supply reaches into other areas that Chinese policy makers need to consider. Most importantly, the dwindling supply of labor, all other things constant, will put upward pressure on wages. Skilled wage growth is already set for acceleration for a number of reasons (Waldman, 2004, p. 60).

Further, savings rates will likely decline as the aged population increases as a share of the total, since the working-age cohort tends to normally exhibit the greatest savings propensity. Potentially rising wages and declining

savings rates will create more of a consumer-led economy and should lessen China’s dependence on fixed asset investment as a source of economic growth. In a global context, declining savings rates and labor supply relative to competitors (such as India, which is a much younger country, whose labor force is on a growth path) will likely have an impact on capital flows and foreign direct investment, given the negative implications of a shrinking savings rate and shrinking labor pool for the formation and productivity of capital.

### **Policy Implications**

Many policy implications arise from demographically induced economic changes. Most spoken of in recent years is the financial pressure that arises from a growing proportion of the population in retirement ages. As mentioned in many studies and essays, China’s need to maintain strong economic growth to support a growing pool of pensioners is one of Beijing’s biggest challenges over the next few decades.

Clearly, the prospects of an aging population, slower economic growth, and a slowing supply of savings create the need for a fiscally sound pension system with wide coverage. And the global competitive pressures that will arise from slower economic growth and a somewhat less attractive environment for foreign direct investment will require that the pension system not be a major fiscal and economic drag.

England (2005) provides a description of China’s social security system, including recent reforms. Like many things in China, the social security system is quite different for urban and rural dwellers. There is no “pay-as-you-go” rural social security system. The system also does not cover non-agricultural workers in rural areas. Further, the urban system suffers from significant underfunding. England concludes that even without the prospect of rapid aging, China faces a challenge in funding its mostly unfunded urban pensions (a point augmented by the fact that the retirement populations have been settling in the urban areas).

Recently, the central government has enacted a number of reforms. These reforms included the creation of a two-tiered social security system that includes individual accounts to be funded by both the employer and the employee. This is a step in the right direction.

The downward path of the savings rate places additional pressure on China to reform its highly corrupt and inefficient banking system. In a broader sense—as a result of a smaller stock of savings relative to investment demand, diminished productivity of capital (from a shrinking labor pool), and higher wages—China will

become increasingly concerned over the next few decades about its overall competitiveness. This, in turn, might put pressure on environmental reforms, political reforms, and education as "competitiveness" suddenly becomes a policy issue. ■

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