As the world’s most populous country with the largest aging population and a rapidly growing economy, China is receiving increased attention from both the Chinese government and the governments of other countries that face low fertility and aging problems. This unprecedented shift of demographic structure has repercussions for many aspects of development including economic growth, social welfare, elder care, and other public welfare issues in China. Balancing population aging and economic growth requires innovative strategies and represents both challenges and opportunities for China.

Key Words: Global aging, Economic growth, Social security, Family planning policy, Public policy, Long-term care, Chronic diseases, Medical insurance, Elder care, Nursing home, Filial piety

“Here lies a sleeping giant, let her sleep, for when she wakes, she will shake the world.” The French Emperor Napoleon made this prediction 200 years ago for the world’s oldest civilization and most populous country—China. As China has modernized, its economy has expanded tenfold as measured in gross domestic product (GDP) because groundbreaking economic reforms began in 1978. It now stands as the second largest economic entity and the largest exporter in the world (International Monetary Fund, 2011). Napoleon’s words sound even more prescient regarding the economy of China in the early 21st century. However, what Napoleon could not foresee was that, when China awoke from a two-century long sleep, rapid population aging and economic growth would become the two most distinguishing characteristics. Managing the aging challenge and its...
impact on social structure and economic sustainability will become a priority in the next few decades.

This paper briefly reviews the history, current status, and future outlook of aging demographics in China and presents concurrent and emerging public policy challenges and opportunities in the fields of economics, social security, family support, and health services as a result of population aging. Current directions of research on aging and relevant research databases in China are also discussed.

Demography of Aging: Salient Growth and Dramatic Demographic Transition

As the largest developing country, the pattern of population aging in China is characterized by five unique features as follows:

1. Largest population, largest aging population

According to the National Bureau of Statistics of China (NBSC, 2011), total population in China reached 1.35 billion at the end of 2011, making China the most populous country on earth (one fifth of the world’s population). The peak of population growth will appear around the year 2032 when it is projected to reach 1.5 billion. In China, the number of people aged 60 years and older has risen to 185 million, or approximately 14% of the total population of China and 23% of the world’s older population (Kinsella & Velkoff, 2001). The United Nations (UN) estimates that the aging population will grow more than threefold and will account for one third of the national population in 2050, if not earlier. China will thus face the largest aging-society challenge of any country in the world (UN Department of Economic and Social Affairs [UNDESA], 2011).

2. Low fertility, high life expectancy, and the highest accelerating aging rate in the world

China’s national population census in 2010 showed an increase of 5.84% since the 2000 census (NBSC, 2011). The annual growth rate was 0.5% which is 0.6% lower than the annual growth rate of 1.07% registered between 1990 and 2000. People between the ages of 0 and 14 accounted for 16.6% of the total population, a 6.29% decline from the year 2000 (NBSC, 2011). However, the age group of 60 and above increased 2.93% from the 2000 census (NBSC, 2011). Starting at 40.8 years in the 1950s, Chinese life expectancy continuously increased from an average of 67.77 years in the 1980s to an estimated 74.84 years in the 2010s (NBSC, 2011). Currently, China is the only country in the world with an older population exceeding 100 million, and this number is increasing at a rate of 3.2% annually (UNDESA, 2007). The changes in age composition of the population clearly demonstrate a demographic shift of population aging (Figure 1). Although the share of the older population in Europe passed 10% in the 1930s, it will not exceed 30% until the 2030s, a century later. The same journey will be traversed by China in just a single generation (Howe & Jackson, 2012).

3. Family planning policy

A family planning policy, also called the “one-child policy,” was implemented in 1979 as a strategic solution to balance the rapidly growing population and to stimulate economic development. By restricting family size, China’s population growth rate and fertility rate dropped dramatically (Hesketh, Lu, & Xing, 2005). It is generally thought that the declining population growth contributed to a national economic surge and a higher standard of living. Two gradual yet inevitable consequences of this policy were population structure changes and an increasingly aging society.

4. Dramatic demographic transition

The dynamics of the age structure in China can be visualized as an evolving pyramid. The trajectory of the changes is shown in Figure 1 (UNDESA, 2011).

In 1950, the demographic structure appeared to be a perfect pyramid. Over the next 50 years, the base of the pyramid will shrink, whereas the middle and top of it became dispersed in the early 21st century. Between 2030 and 2050, the older population will constitute a larger proportion than youngsters and constrict the distribution of the pyramid. It is projected that the 60–64 age group will represent the largest share of population by 2050 (Banister, Bloom, & Rosenberg, 2010) and that by 2100 the population structure will look more like a lighthouse shape in which the aging groups (60+) might be the highest proportion ever. When an only child grows up and marries another only child, this couple is likely to take care of four parents and eight grandparents—without siblings with whom to share the responsibility.

5. Growing old before affluent

The evolving population pyramid not only suggests an enlarging aged population and a shrinking youthful population, but also denotes a decline in the working age population. The age dependence ratio—the
number of people not in the labor force (ages 0–14 and aged 65+) per the number of people in the labor force (age 15–64)—is projected to rise substantially in China, from 10 to 42 by 2050 (World Bank, 2011a). As most Chinese stop working at the age of 60, the demographic trend shown here raises considerable alarm about the sources of productive labor before China’s per capital income and level of industrialization reach the developed country standard.

Main Areas of Research on Aging

Longevity and antiaging research in China can be traced back to 219 BC in the Qin Dynasty, and antiaging research has never stopped throughout China’s history during which traditional Chinese medicine and lifestyle changes have been major foci. Contemporary research on aging in China spans a variety of disciplines including biological, sociological, psychological, and medical research as well as economics, finance, demographics, health services, public health policy, insurance, social security, social work, epidemiology, pharmacology, traditional Chinese medicine, nursing, health education, nutrition, antiaging, longevity, architecture, environment, culture, and legal studies. With the accelerating aging of the population, aging and gerontology research has received unprecedented attention from the government, public organizations, industries, universities, and the public.

Researchers in Aging Research

Most of the aging research in China is conducted in public institutes such as universities and government-funded agencies. The institutes that specialize in gerontology research include, but are not limited to, the Gerontological Society of China (GSC), founded in 1986; the China Research Center on Aging, founded in 1989; the Institute of Gerontology Research at Renmin University of China, founded in 1994; the Gerontology Research Center at Qsinghua University, founded in 2001, and the Institute of Gerontology at Beijing University, founded in 2003. In addition, a considerable proportion of aging research that is biologically, pharmaceutically, or medically oriented is conducted in stand-alone or university affiliated hospitals which include geriatric programs.

Government agencies are still the largest funders of aging research in China. Among the most notable are the National Natural Science Foundation.
of China, the Ministry of Science and Technology, the Ministry of Education, the Chinese Academy of Sciences, as well as the National Medical Science and Technique Foundation, and a large number of provincial funding programs and private foundation programs. In addition, government agencies and organizations, such as the China National Committee on Aging and the GSC also guide and participate in aging and elder care research.

Secondary Datasets for Aging Research

Secondary databases derived from surveys, especially longitudinal or cohort studies, are useful to understand a broad array of socio-economic, behavioral, and psychological issues associated with aging and the older people. The national secondary databases on aging include the Chinese Longitudinal Healthy Longevity Survey (CLHLS), the China Health, Aging and Retirement Longitudinal Study (CHARLS), the China Health and Nutrition Survey (CHNS), China National Sample Surveys on Disability, and Sample Survey on Aged Population in Urban or Rural China (SSAP). The designs, contents, and sources of these databases are listed in Table 1.

Public Policy Issues Regarding Aging in China

Aging was not a prominent public policy or public health issue until recent years when the proportion of the aged population reached the level that dramatically affects economic development and social welfare.

Elder Care Provided by Families

For centuries, the family and kin system has functioned as the most important source of social support in China. Familism is rooted in the core of Confucian culture and provides a strong normative legitimacy for intergenerational ties. Intergenerational reciprocity, such as father-goodness and children-filial piety, is one of the behavioral principles in family relationships which entail a complex series of duties of children to their parents, including, but not limited to co-residence, food provision, instrumental and financial assistance, and emotional support. Throughout China’s history, the emphasis on family has been very clear and it was the rationale for the government to essentially keep its hands off the family (Fowler, Gao, & Carlson, 2010). However, after the rise of Mao, the communist revolution tended to undermine the power of patriarchs in families, and the ensuing collectivization process and elimination of private property further reduced the economic motivation to maintain a large joint family (Davis & Harrell, 1993). In the wake of economic reform and industrialization in the last three decades, the motivation, time, and resources to care for aging parents and/or grandparents and the integrity of the traditional family structure are facing even more challenges (Guo, Aranda, & Silverstein, 2009). The “empty nest” family without any child nearby is becoming more prevalent with the graying of the population in China, particularly in rural areas, where urbanization is recognized as a way to pursue a better quality of life.

Elder Care Provided by Institutions

Elder care, traditionally provided at home by adult children, will become increasingly less feasible in the next few decades. Emerging in recent years, nursing homes (also called institutional elder homes) have been gaining acceptance by older people and their families as an alternative place to spend old age besides one’s residence in the community (Wu et al., 2012). At the end of 2010, the country’s nursing homes operated a total of 3.19 million beds, but the number of older people who were interested in a nursing home reached nearly 12 million, according to the National Committee on Aging (NCOA, 2012). In 2011, China’s State Council issued a 5-year strategic plan to create a social welfare system for seniors who will be able to receive nursing subsidies and more community-based elder care services.

Despite the rapid development of nursing homes, the gap between market demand and nursing home supply is still daunting. The shortage of beds, coexistence of waiting lists and low occupancy rates, staffing shortages, and lack of quality management standards are major issues in the management of nursing homes (Zhang et al., 2010). Unlike nursing homes in the United States which depend upon Medicaid and Medicare and private insurance for funding, nursing homes in China rely heavily on out-of-pocket payments of monthly fees (Wu et al., 2012). For some nursing homes, comparatively low salaries, long working hours, and emotional stress result in high staff turnover (NCOA, 2012). According to a nursing home study in Shandong Province in 2011, the highest occupancy rate was 100%, although the lowest was only 20% partially because of institutional needs.
<table>
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<th>Title (years)</th>
<th>Design</th>
<th>Contents and comparability</th>
<th>Notes</th>
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<tr>
<td>Chinese Longitudinal Healthy Longevity Survey (1998, 2000, 2002, 2005, and 2008–2009)</td>
<td>Longitudinal panel design with refresh samples Covers 22 of the 34 provinces in China Focused on the oldest old aged 80 and older in 1998 and 2002 surveys Includes those young elders aged 65–79 as a comparison from 2002 forward</td>
<td>Focused on healthy longevity (rather than on a specific disease or disorder) Demographic, socioeconomic, family, and behavioral risk factors for mortality and healthy longevity, health status, disability, care needs and costs, and end of life care</td>
<td>Microdata publicly available via <a href="http://www.geri.duke.edu/china_study/">www.geri.duke.edu/china_study/</a> Currently, all the four waves of data are publicly available. The four waves of data are also available on National Archive of Computerized Data on Aging (NACDA) site <a href="http://www.icpsr.umich.edu/icpsrweb/NACDA/studies/03891">http://www.icpsr.umich.edu/icpsrweb/NACDA/studies/03891</a> and Institute for Social Science Research Data Archives site: <a href="http://www.sscnet.ucla.edu/issr/da/da_catalog/da_catalog_titleRecord.php?studynumber=I3891V1">http://www.sscnet.ucla.edu/issr/da/da_catalog/da_catalog_titleRecord.php?studynumber=I3891V1</a> PIs: Yi, Z., Vaupel, J. M. Funded by the U.S. National Institute on Health (NIH)/National Institute on Aging (NIA), the United Nations Population Fund (UNFPA), the China Social Sciences Foundation, the Max Planck Institute for Demographic Research, China Natural Sciences Foundation, and the Hong Kong Research Grants Council (RGC)</td>
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<td>China Health Aging and Retirement Longitudinal Study (2008, 2011)</td>
<td>Aims to be a longitudinal panel data with national representative sample of Chinese aged 45 and older The baseline of the CHARLS pilot took place in two provinces (Hangzhou and Gansu) using multi-stage sampling methods</td>
<td>Demographics, family, health status and functioning, health care and insurance, work, retirement and pension, household and individual income, expenditure and assets, community, interviewer observation Comparable to Health and Retirement Study (HRS) in the United States, the Survey of Health, Aging, and Retirement in Europe in continental Europe, the English Longitudinal Study of Aging in the United Kingdom, and the Japanese Study of Aging and Retirement in Japan</td>
<td>Microdata publicly available via <a href="http://charls.ccer.edu.cn/charls/">http://charls.ccer.edu.cn/charls/</a> Currently, the 2008 pilot data are publicly available PIs: Zhao, Y., Lin, J. Y., Strauss, J, Park, A. Funded by the U.S. National Institute on Aging (NIA), World Bank, National Natural Science Foundation of China</td>
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<td>China Health and Nutrition Survey (1989, 1991, 1993, 1997, 2000, 2004, 2006, 2009, 2011)</td>
<td>Longitudinal panel design A multistage, random cluster process was used to draw the samples from nine provinces that vary substantially in geography, economic development, public resources, and health indicators</td>
<td>Demographics, family support, lifestyle, income, economic activities, health status, nutrition, physical examination, medical insurance, health service use, community</td>
<td>Microdata publicly available via <a href="http://www.cpc.unc.edu/projects/china/data">http://www.cpc.unc.edu/projects/china/data</a> Currently, data up to 2009 are publicly available PIs: Popkin, B., Zhai, F Funded by the U.S. National Institute of Health (NIH), the Carolina Population Center (CPC), the Ford Foundation, the National Science Foundation (NSF), the National Institute of Nutrition and Food Safety (INFS), and the Chinese Centers for Disease Control and Prevention (CCDC) Led by a group comprised 16 ministries and agencies including the National Bureau of Statistics, the Ministry of Civil Affairs, the Ministry of Health, and China Disabled Person Federation</td>
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<td>National Sample Survey on Disability (1987, 2006)</td>
<td>A stratified, multistage random clustering sample design was used to select from noninstitutional population in China</td>
<td>Demographic, employment, housing conditions, family, health status, community Focus on various types of disability (e.g., visual, hearing and speech, physical, intellectual, and mental disability)</td>
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<td>Sample Survey on Aged Population in Urban/Rural China (2000, 2006)</td>
<td>A stratified multistage sample design was used to select older adults aged 60 and older from 20 provinces in 2000 2006 survey sampled older adults in 20 provinces, but 6 of them were different from the 2000 survey Parts of the sample are followed-up cases</td>
<td>Demographics, income, housing conditions and household assets, daily life, family, caregiving, health status, health care access and cost, social service</td>
<td>PIs: China Research Center on Aging Founded by the China National Commission on Aging (CNCA) and the National Bureau of Statistics of China</td>
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variations in prices, quality of care, environments, and locations (Wu et al., 2012). Due to the fact that the nursing home industry in China is still in its infancy, quality management and evaluation systems have not become part of the requirements or standards of nursing home administration. The staffing and quality profiles vary considerably among facilities (Feng et al., 2011; Zhang et al., 2010). As nursing homes are jointly administered by the Ministry of Health, the Ministry of Civil Affairs, and the NCOA, coordination of these agencies in designing a performance evaluation system is critical. Additionally, most of the nursing home practitioners are untrained in geriatric medicine. Development of geriatric education and training for physicians and nurses will become an urgent priority for long-term care.

Family Planning Policy Relaxation

In light of the low fertility rate and rapid aging of the population, there is much debate about the possible relaxation of the one-child policy. The growing number of women from the rest of China giving birth in Hong Kong hospitals in the past few years to circumvent the one-child policy has created a heated discussion of the family planning policy (USA Today, 2012). In fact, China’s family planning policy is not a typical one-child policy anymore. It is reported that the Chinese government has adjusted its policies of family planning to include a series of exemptions while maintaining the low birth rate: (a) couples who are only children in their families can give birth to two children and (b) provinces, autonomous regions, and rural areas have specific lifting of policies. For example, in rural areas of most provinces, couples who have one girl can give birth to a second child (National Population and Family Planning Commission, 2012). It is estimated that these changes will significantly boost the total population and labor force by 2050.

Social Security and Medical Insurance Systems

As a developing country, the GDP per capita of China is still relatively low ($4,428 in 2007–2011; World Bank, 2011b). In recent decades, China has paid much attention to the improvement of its old-age pension and medical insurance systems and built the largest social welfare and safety net in its history. In 2010, 194 million urban employees (60% of urban employed workers) participated in Urban Employees Basic Pension Insurance and 63 million retirees benefited from the system (NBSC, 2011). In contrast, only eight million people (1% of the rural population) contributed to the Basic Rural Pension Insurance and five million were beneficiaries in 2008 (Banister et al., 2010). By the end of 2011, more than 60% of the counties were covered by the pension program (NBSC, 2011). The plan based on the government report released at the 11th National People’s Congress in March 2012 is to achieve full old-age pension coverage for rural residents and nonworking urban residents. In addition, by modernizing the rural cooperative medical insurance system and urban public health insurance developed in the 1970s, China has established Basic Medical Care Insurance for urban residents and New Rural Cooperative Medical Care Insurance for rural residents in recent years. By 2011, more than 430 million urban residents and more than 830 million rural residents had become beneficiaries, which represent 90% of the total population (China Daily, 2011b).

With the recent announcement of the investment of pension funds of Guangdong Province into the capital market as the nation’s first attempt at a program similar to the U.S. 401K pension savings program, discussions about the management of the $300 billion pension fund have soared (Reuters, 2012). Pension reform and phased retirement are all prudent considerations to address population aging and its resultant demographic shift.

Aging and Economic Growth

China’s rapid economic growth has resulted primarily from the economic reforms in the past three decades, but it has also been supported by a large, cheap, and productive labor force. There have been concerns that population aging may imperil or slow the pace of economic growth in China. This issue is important because China’s economy determines the country’s prosperity and has been a driver of world economic growth. Population aging may affect the economy through the following venues: (a) labor costs may rise while productivity hardly increases, (b) old-age insurance may bear a greater financial burden because the period of benefit payment will be prolonged and the number of pension beneficiaries will be increased, (c) cost of elder care and medical insurance will increase due to longevity and increased the prevalence of chronic diseases, and (d) international investment capital may flow to other countries whose prices, productivity and, therefore, returns are higher.
Implications for Other Countries

In the era of global aging, China is receiving unprecedented attention as its economy and population aging are accelerating simultaneously. How to allocate resources among competing needs of various priorities and balance the sustainability of economic growth and the moderation of population aging is an impressive challenge for an awakening giant.

China’s experiences may be useful to other countries in the following areas as low fertility and population aging become pronounced in developed countries, newly industrialized countries, and some Latin American countries. First, chronic diseases: China’s population aging has led to a rising tide of noncommunicable diseases (NCDs) and resultant disability. NCDs have become China’s major health threat and are associated with more than 8% of 10.3 million annual deaths and about 70% of its total disease burden (Lancet Editorial, 2011). One of the first strategies China implemented to prepare for the challenge to control and prevent chronic diseases was to stress disease prevention as a public health priority. In addition, the Chinese government emphasizes international collaborations with the World Health Organization and utilizes state-of-the-art technology and skills in its chronic disease control measures.

Second, aging education: To satisfy the growing need for scientific gerontological knowledge and methods, the Chinese government, research institutes, and media actively developed aging education and health promotion. For example, one popular TV program titled “Yangshen Tang” presents expert panels to disseminate scientific knowledge regarding aging mechanisms, chronic diseases, traditional Chinese medicine, lifestyles, mental health, and diet. These kinds of programs have been well received not only by older people and their families, but also by younger generations who seek ways to cope with work stress and improve overall health.

Third, culture: Filial piety and the spirit of Confucianism have been deeply rooted in the social norm and Chinese culture over the course of China’s history. The enactment of elder law, which is the Law on Protection of the Rights and Interests of the Older People, in 1996, puts a long-standing norm into a legal format. Last year, a draft amendment of China’s elder law revised the requirement that “adult children of older parents are required to visit their parents regularly and must care for their spiritual needs and cannot neglect or isolate them” (China Daily, 2011a). The traditional culture of filial piety is a great advantage for China and other aging countries as it legitimizes informal caregivers and strengthens family support. Certainly, China’s experiences or lessons could not simply be replicated in other countries as each country possesses its own culture, politics, and economic and social complexity.

Aging is a challenge most countries must face immediately or in the future whether they are developed or developing, large, or small. Bearing the largest aging population in the world, China is aware of its challenges and opportunities and has been proactively developing and seeking solutions to its rapid population aging. As a complex multifaceted process, the management of population aging requires wisdom and innovation.

As Napoleon also said, “Lead the ideas of your time and they will accompany and support you; fall behind them and they drag you along with them.” If China views population aging as an opportunity to advance its economy, this giant will create a useful model for the rest of the world.

References