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**ECONOMIC RESEARCH ON ELDERLY HEALTH AND IMPLICATIONS  
FOR ANALYSIS OF AGING CHINA**

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## ECONOMIC RESEARCH ON ELDERLY HEALTH AND IMPLICATIONS FOR ANALYSIS OF AGING

### CHINA

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# Economic Research on Elderly Health and Implications for Analysis of Aging China

**Abstract:** "Old while not affluent" situation, together with an unsustainable high investment rate and high dependency on foreign trade, spurs hot debates on the challenges of a fast-aging population and the exploitation of the second demographic dividend in today's China. Literature related to elderly health in countries other than China often starts with medical concepts and then dwells on economic issues, mainly focusing on socioeconomic, behavioral, and environmental factors and their effects on the health of the elderly. This article reviews economic research on these topics and then discusses possible implications for the economic analysis of aging China.

**Key Words:** Elderly health; interdisciplinary research; economic analysis

**JEL Classification:** H30 J14 I10

## 1. Introduction

The global economic recession since the subprime crisis in 2007 is having a negative impact on China's export-oriented economy. Meanwhile, low consumption — which is generally difficult to increase in the short term — and an unsustainably high investment rate has given rise to hot debates on whether the current slower growth is just a cyclical downturn that will end soon or a sign that China's growth miracle, dating from 1978, is coming to an end. The sixth census in 2010 further highlighted the seriousness of the fact that China's elderly are not necessarily affluent. Given this,

what can China expect for its rapidly aging population? What can we learn from the experiences, lessons, and policies of countries facing the challenge of a long period of slowed growth? These topics need to be discussed in detail, and urgently. Moreover, as the most-populous country in the world, China is different from other countries in its level of economic development, economic structure, and institutional environment. This must be kept in mind for research to help provide a practical solution to the challenges of China's growing elderly population, even when taking into consideration the experiences of nations around the world.

The process of aging in developed countries has negative effects on economic growth through the following mechanisms (Peterson, 1999; Faruqee, 2001): (i) health-care costs rise at an alarming rate, (ii) pension expenses expand rapidly, (iii) output declines due to serious shortage in the labor force, and (iv) investment lessens due to a fall in the savings rate. However, some scholars hold the view that aging does not necessarily result in slower growth, especially for China, where the demographic transition is just starting and the country may benefit from the so-called second demographic dividend through appropriate policies (Mason & Lee, 2006).

Among debates on whether aging means a "demographic dividend" or a "demographic deficit," we should study the trends and possible factors and economic effects of the health status of the elderly, and implement policies that address the situation. Thus, studies on elderly health have to become an important part of national strategies. The United States, the European Union, and Japan have focused a lot of attention on such studies and earmarked funds for relevant policies.

Elderly health was widely discussed by medical scientists and gerontologists before attracting the attention of a growing number of economists and sociologists.<sup>①</sup> Policy makers and researchers came to realize that demographic changes are affected by many socioeconomic factors and, in turn, influence socioeconomic development. Interdisciplinary research on elderly health has thus become one of the most popular research areas in the past 20 years.

In contrast, China's research on elderly health from a social standpoint is sparse, and seems to be exceedingly discordant with the "old while not affluence" situation. Biologists ignore the cross-effects of socioeconomic, behavioral, environmental, and genetic factors in laboratory studies, whereas social scientists are noticeably absent from influential national projects and as a result lack incentive to undertake in-depth studies in this area. In addition, most of the relevant articles published in international academic journals are based on developed countries; only a few address their developing counterparts, those on China being even scarcer. Here, we focus on China and review research on elderly health from an economic perspective.

## **2. How Do Economists Treat Elderly Health?**

Following the inherent characteristics of their academic frameworks, natural scientists mainly explore elderly health from the perspective of pathological mechanisms and possible therapeutic solutions. Economists, either having a macro or micro viewpoint, are habituated to undertaking "cost-benefit" analyses.<sup>②</sup> Most literature over the past

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<sup>①</sup> SSCI (1899–present) includes more than 700 articles on gerontology, and more than 600 on medicine — many more than those on other disciplines.

<sup>②</sup> In the SCI (1899–present) database, articles on elderly health number more than 2,200; in SSCI (1983–present), those on elderly health are about 2,000.

century reveals that economists consider the topic of elderly health either by directly studying the causality between factors that influence elderly health and their relevant effects (which include various aspects of elderly human capital, besides relevant behaviors, welfare, labor, and health-care services) or by indirectly evaluating pension policies, security systems, medical reforms, and the provision of quasi-public goods for the elderly, as well as the efficiency of care markets. Here we summarize the main conclusions from international economics research on elderly health in recent years.

## **2.1 Establishing Causality**

### **2.1.1 Factors Affecting Elderly Health**

Similar to physical capital, investment in human capital (or health) can provide a return on investment (that is, prolong a healthy life) (Grossman, 1972). However, investment in elderly health is different, in that its depreciation rate is higher than care for youth and middle-aged individuals. Inputs included in such a production function often differ, even if slightly, from the general health production model. For example, factors such as marriage, family, pension, and settlement patterns influence elderly health more than they do the health of younger people, whereas variables such as income, education, and nutrition intake are more important for young and middle-aged individuals.

As for the impact of marriage, there is evidence that spouses take care of each other, implying that marriage plays a positive role in promoting the health of the elderly (Gliksman *et al.*, 1995; Goldman *et al.*, 1995; Chen & Wei, 2009). When considering

the effects of family on elderly health, researchers often analyze the health of the elderly who live with other family members, and explore possible causal pathways of promoting their health and improving their quality of life (Hellström & Hallberg, 2001).

While some scholars argue against conclusions that marriage and/or family determine the state of elders' health, most agree that as the elderly gain care, social support, and solace by living together with spouses, children, siblings, and/or other family members, their health is undoubtedly influenced (Joung *et al.*, 1994). Subsequent research focuses on how pension and living modes closely related to marriage and/or family affect elderly health (Bansod, 2009). Several recent studies encompass classical empirical research on the relationship between the pension mode and elderly health in China. Gu *et al.* (2007) use survey data of Chinese citizens over 80 years old, and find that the mortality of the elderly living in nursing homes is 1.35 times higher than that of others. Chen & Short (2008), using the same data, find that mental conditions of the elderly living with their daughters are the best, whereas those living alone are the worst. Li *et al.* (2009) find that the health status of the elderly living with their spouses is the best, and the elderly living with their children is also not bad. Liu *et al.* (2011) conclude that elderly couples who are economically independent and living alone have the most obvious advantages in health and happiness, while those depending on their children or living alone in homes subsidized by the government are the worst.

Besides the aforementioned studies, which analyze immediate effects on elderly

health, there are other scholars considering the long-term perspective. Grimard *et al.* (2010), for example, use a panel of individuals aged 50 and above from the Mexican Health and Aging Survey and find that socioeconomic status at the age of 10 has a significant impact on individuals' health status when older, even when controlling for other factors such as education and income. Some other studies, such as that of Chaudhuri (2009), even argue that family planning policies may have long-term impacts on the health status of elder individuals (especially elder women).

### **2.1.2 Possible Effects of Elderly Health**

No one can deny that health conditions affect individuals' behaviors in the labor market — health is even more a consideration than income when deciding when to retire (McGarry, 2004; Au *et al.*, 2005; Iskhakov, 2010). Hence, the phenomenon of the labor participation rate decreasing with age could to some extent be explained by the fact that health conditions get worse as individuals grow older (Kalwij & Vermeulen, 2005). Meanwhile, the health status of the elderly could indirectly affect participation of other family members in the labor market, since elders **in China and many other Asian countries** are generally cared for by their children or relatives whose time and energy is spent on them. However, caring for the elderly could increase the satisfaction and happiness of these children or relatives — if an elder's health improves. Guided by cost-benefit analysis, economists simultaneously consider the elderly and their caregivers, in particular analyzing the trade-off between labor supply and care provision (White-Means, 1992). Some researchers find that caring for



the elderly significantly lowers the work time of the children, as well as their labor participation rates (Jiang & Zhao, 2009). Meanwhile, the needs of the elderly and services provided by families and professional institutions closely relate to the financial conditions of the caregivers and the health status of both the elderly and their caregivers (Gaymu *et al.*, 2007).

The health status of the elderly has short- and long-term effects on their wealth and thus affects their welfare (Lee & Kim, 2008). Due to the virtuous cycle of health and wealth, individuals' wealth has a remarkably positive correlation with health. Health leading to wealth (the health-cause hypothesis) and wealth leading to health (the wealth-cause hypothesis) compete as explanations; both could help us understand the short- and long-term effects of health on elderly welfare. But the close correlation between the two makes it difficult for scholars to clarify causality (Michaud & Soest, 2008).

Moreover, the health conditions of the elderly could also influence those of others, mainly family members. That is because healthy elderly dependents are a much lighter burden on the family members who care for them than unhealthy dependents, and are thus beneficial to caregivers' health conditions (Coe & Houtven, 2009).

Another important dimension of elderly health is the health service market for the older population; health determines this market by influencing both its supply and demand sides. The interactive effects of both sides not only closely relate to the market's equilibrium and development, but are also very important for the promotion of elderly well-being. Previous studies that take a supply-side perspective mainly

focus on suppliers and/or supply costs (Roberts, 2001; Kessler & Geppert, 2005; Chung *et al.*, 2007). These studies find that the varying needs of the elderly for social and health services lead to different relationships between suppliers and the elderly. It is essential to provide appropriate services through suitable medical plans and/or comprehensive social institutions, and these mechanisms could be critical for the supply side. Further, these studies evaluate the effects of competition on the cost of hospital services and the quality of care for the elderly. They indicate that introducing and ensuring competition in this market and proper management of elderly health services will result in better provisioning of these services. As for the demand side, some economists concentrate on the factors that influence demand for elderly health services (Lakdawalla & Philipson, 2002), while others discuss in detail demands for various modes of services. It is common among adult children to care for the elderly over extended periods. If this can substitute effectively for formal professional care, it could reduce medical expenses and ease the burden of elderly health. Bolin *et al.* (2008) find evidence for supporting this substitution, whereas Bonsang (2009), who uses the same data, concludes that though informal care by family members could substitute for professional services, it will not suffice once the physical disabilities of the elderly get more severe. Hence, scholars should take into consideration the independence and physical conditions of the elderly when evaluating family care and planning for supplementary formal care services (Olivius *et al.*, 1996).

## **2.2 Policy Evaluation**

Most governments seek to improve the elderly's health conditions by influencing the

quantity and methods of using health services, generally through allocating health resources and affecting the aged population's behaviors through various macro policies. Hence, economists concentrate on evaluating the effects of those policies. Relevant studies mainly focus on social insurance plans for the elderly (such as pension, medical insurance, long-term care insurance, etc.), family planning policies, and health care in an attempt to influence policy makers on subsequent reforms.

Pension and medical care schemes are thus traditional topics for studies on aging issues. There are many such studies from the past, and recently much meaningful research has emerged. Examples include research on the impact of pension plans on retirees and their adult and/or immature family members (Case & Menendez, 2007), the relationship between the elderly's health conditions and the contribution and benefits of pension systems (Echevarria & Iza, 2006), and the effects of pension on retirement age and longevity (Queisser, 2005). These studies range from singly discussing pension plans to comprehensively evaluating the effects of the whole social security system on the elderly and individuals.

The effectiveness of medical care policies has always been a priority for economists, leading to practical medical reforms in many countries. Research finds evidence that such plans either directly increase the utilization of medical care services (Pagán *et al.*, 2007; Chen *et al.*, 2007; Huang & Gan, 2010) or have structural effects, such as attracting the elderly to see a doctor rather than going to chemists for medicine when they are sick (Chang, 2009). But an increase in medical care services can lead to either an improvement in the elderly's health conditions (Huang & Gan, 2010), or

have no obvious impact at all (Chen *et al.*, 2007). Economists also pay attention to the indirect effects of medical insurance policies, such as those that influence retirement decisions (Rogowski & Karoly, 2000; Blau & Gilleskie, 2008).

Among various medical care policies, it is worth mentioning long-term care. This encompasses the activities of informal caregivers (family, friends, and/or neighbors) and/or professionals (from health and social services) to ensure a higher quality of life for the elderly so they enjoy the best possible degree of independence, autonomy, participation, and personal satisfaction and dignity.<sup>①</sup> This type of care usually takes place over long time frames, and many elderly lack the economic means to pay for it themselves. Hence, sustainable payment is the key for policies that address long-term care. Some countries have launched policies offering comprehensive long-term care for the elderly, including social care insurance or a mix of private, commercial insurance with social insurance. These actions serve as good examples for other countries (Geraedts *et al.*, 2000; Campbell & Ikegami, 2003). Long-term care insurance (LTCI) is as an essential part of such systems.<sup>②</sup> It first appeared in the United States in the 1970s, and was then introduced in France, Germany, the United Kingdom, Ireland, and other European countries; South Africa; and Asian countries. Studies that focus on LTCI address not only its motivation (Pestiean & Sato, 2008; Engelhardt & Greenhalgh-Stanley, 2010) but also the respective responsibilities of the government, society, and individuals to sustain the health of the elderly (Knapp *et al.*,

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<sup>①</sup> According to the definition of long-term care from the World Health Organization (WHO).

<sup>②</sup> Long-term care insurance is a kind of health insurance plan that offers compensation for those in need of long-term care because of aging, illness, and disability. It ensures that the aged population is provided with professional care, family care, and other related services.

1996; Boris & Klein, 2006; Feng *et al.*, 2012). Most research supports effective cooperation between formal and informal care suppliers to meet the rapidly increasing needs of the aging, though systems of mixed formal and informal caregivers working in rapidly aging societies pose several challenges.

Health-care systems also include various kinds of services and examinations. Many factors may significantly influence the sustainability of the entire system. Such factors include whether services are sufficient and/or suitable for various individuals (Rock *et al.*, 1996; MacIntyre *et al.*, 1999), whether services can be smoothly transitioned (Ritner & Kirk, 1995), whether examination results can be trusted (Bath *et al.*, 2000), and whether services are effective (Kodner, 2006; Manthorpe *et al.*, 2008). Related studies focus on the same aim — ensuring a just and effective system. Their suggestions include encouraging informal care services (such as those provided by the family) for the elderly, attracting more health-care volunteers, implementing prevention plans and promulgating guidelines for family care, serving the elderly efficiently (according to the extent of their independence and health conditions), overcoming the challenges in transmitting services, and so on. These suggestions provide the theoretical background for promoting social services. As for practical policies, scholars suggest that communities play a role in providing these services, and governments put more emphasis on informal care plans, pay more attention to preventive risks, and encourage volunteers.

### **2.3 Brief Comments on Methodology**

We first briefly summarize the characteristics of the methods used in the aforementioned studies. We find that economists mainly use quantitative methods, such as micro econometric approaches, to analyze relationships among different variables. In addition, they often establish models for theoretical simulation and prediction, together with empirical evaluation of data from pilot and random experiments. It is worth noting that these methods are often interactively used.

Economists mainly focus on factors affecting the health conditions of the elderly through effective allocation of scarce resources, either from the micro perspective of individual behaviors or from the macro consideration of service policies and health expenditure. Their goals are to control costs and increase benefits. Some articles directly consider elderly health from such perspectives; others traditionally discuss these issues using illustrative factors and/or the results of resource allocations, considering both supply and demand sides.

Since economics has obvious advantages in empirically revealing causality, identifying a causal relationship is an important aim. Economists pay special attention to the socioeconomic factors of individual characteristics. They analyze how factors (such as household income, family property, sources of income, generosity of pension and medical insurance, housing conditions, and previous working conditions) affect the health status of the elderly and to what extent, after controlling for genetic factors as well as macro- and microeconomic factors. In addition, some researchers specifically refer to relevant health providers such as medical institutions, public health agencies, pension service providers, elderly health service suppliers, and

management organizations and insurance companies. Such studies mainly focus on the relationships of these factors with the health status of the elderly and/or their family caregivers. In short, these analyses tend to find effective mechanisms and means to promote elderly health, including ways of ensuring sustainable investment and effective human resources and administration. Performance evaluation and information systems help lift the elderly from traditional, passive roles of being “disadvantaged” or “cared for” into active participants in social activities who fully benefit from the advantages of aging in the 21st century.

### **3. Implication for Economic Research on Aging China**

#### **3.1 Benefiting from the Results of Natural Science**

Every perspective plays an irreplaceable role in the study of elderly health. Biologists find pathological mechanisms to guide elderly behaviors, and to keep them from suffering geriatric diseases as far as possible. Sociologists describe the behaviors and social issues of the elderly through field investigations. Neuroscientists not only explore the knowledge levels of the elderly, but also study the impacts of dementia and other conditions. Economists provide precise suggestions for solving the problems that come with age.

Social science involves social phenomena, including explanations of various social issues and their law of development. Natural science, however, involves the physical forms, structures, and laws of nature. It has been proved that the more developed the natural science, the more important its connection to the social sciences — the

fundamental reason being that the development of science and technology would both create social problems that need to be addressed.

Elderly health necessarily involves the welfare of human beings, which greatly differs from general research on other living subjects. Human beings have not only natural characteristics but also social attributes. So, when it comes to studying them, scholars need a two-pronged perspective. Factors studied by natural scientists mostly are at the level of molecular and physical functions. Specifically, scientists investigate how certain molecules or organs will influence the bodily functions of the elderly through an analysis of basic pathological mechanisms. In short, they explore physical mechanisms having direct impact on human bodies. Social scientists, meanwhile, consider social issues in the abstract, looking at what external conditions or decisions might underlie these issues and/or the probability of their occurrence.

Economists focusing on elderly health could well benefit from the results of natural-science-related research. Economists hope to find an optimal allocation of resources, given certain assumptions — an allocation that can promote the actual value of resources while not creating the resources themselves. Natural science research, however, might recommend changes in personal preferences and thus promote elderly health through physical actions. For example, it might suggest improvements in the lifestyles of the elderly by adopting more scientific ways of exercising, eating, and sleeping. In doing so, natural scientists in effect create the resource of health. In fact, the creation of health resources for the elderly largely depends on natural science research.



### **3.2 The Establishment of Basic Data**

High-quality data will reflect the real needs of individuals, and thus contribute to implementing effective policies. Many countries have launched relevant health surveys and established comprehensive databases, including the Health and Retirement Study (HRS) in America (1992-), the English Longitudinal Study of Aging (ELSA) in England (2002-), the Survey of Health, Aging and Retirement in Europe (SHARE) in Europe (2004-), and the Japanese Study of Aging and Retirement (JSTAR) in Japan (2005-). In China, we have such important data in the National Health Survey of the Elderly Population, which was carried out in 22 provinces in 2000, and included more than 90 questions and over 180 subitems such as basic personal and family conditions of the elderly, socioeconomic background and family structures, self-rated health (SRH) and self-rated quality of life, psychological characteristics, cognition, lifestyle, daily activities, source of income, economic status, and access to timely treatment. In addition, the China Health and Retirement Longitudinal Survey (CHARLS), carried out by the National School of Development at Peking University every two or three years since 2011, aims at collecting data of typical Chinese residents aged over 45 — the sample size is about 10,000 households and 17,000 individuals.

Collecting data is the most important basic work for researchers, and is also the key for empirical analysis using econometric methods. For example, the Japanese scholars Seike and Yamada (2004) assume in their study that a decline in Japan's labor

participation rate is caused by changes in labor structure or personal behaviors (such as reduction of self-employment). According to this, any regulation on compulsive retirement age would significantly block the elderly from entering or staying in the labor market. As a conclusion, they propose abolishing such regulation. However, since there are insufficient data on individuals' retired status, working conditions, health status, and family details, it is very difficult to accurately analyze whether such a regulation could hinder the elderly's labor force participation, and then use this study for further policy implications. Recent literature on elderly health mainly focuses on the European countries and the United States, and benefits from the tremendous data on these countries. It is difficult to overemphasize the importance of establishing such large-scale, longitudinal, and multiregional individual databases.

### **3.3 Opportunities for Studying Aging China**

Compared to a rich body of research on the relationship between elderly health and economic factors in other countries, China has yet to catch up. The focus of Chinese scholars is clearly different from international scholars, and rarely includes topics such as the health services market, elderly cognition, or policy evaluation.

That said, the social phenomena of “” in aging China is a topic of several recent studies. Developed countries reached a per capita gross domestic product (GDP) of between \$5,000 and \$10,000 many years before their societies started aging. China's per capita GDP, meanwhile, only reached \$5,000 in 2011, when the problem of an aging population was already quite serious. Aging in developed countries is caused by a natural decline in births, which is the result of changes in lifestyles and social values.

In China, however, aging is a nonnatural historical process that was mainly caused by the strict implementation of a family planning policy that resulted in a rapid decline of fertility in a short period. Hence, China comes across as an aging but underdeveloped economy, with unorganized social security plans and an imperfect welfare system. This situation — getting old before getting rich — not only makes it difficult to meet the needs of the elderly, but also demands more efficient and sustainable pension and related social schemes.

Research on elderly health, either for discussions in other countries or for theoretical and/or practical debates in China, is necessary at this moment in time. Many problems will significantly affect the achievement and performance of pension and social security reforms in China. Alongside a traditional culture of caring for and respecting the elderly, China's harmonious society goal of looking after the elderly properly involves a significant challenge in the context of today's aging society. Associated questions include how to establish a sound pension and social security system in line with China's special conditions of economic development; how to improve elderly health with limited resources; how to enlarge the scope of related policies; how to enhance cooperation among various elements such as public financial investment, financial institutions, and insurance companies; and how to improve the health and life satisfaction of the elderly in China — paving the way for a healthy, positive aging society.

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