

Dongsheng Chen

The Era of Longevity

Transformation of Aging, Health and
Wealth

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The Era of Longevity

“The book in front of us is a comprehensive solution proposed by Mr. Dongsheng Chen, a finance professional and founder of Taikang Insurance Group, to the problems of medical care, elderly care and funding in the Era of Longevity. I sincerely hope that it can attract more readers’ attention and drive people to think deeply about the problem of population aging.”

—Wu Jinglian, *Research Fellow at China’s Development Research Center of the State Council, Taikang Resident*

“*The Era of Longevity* by Dongsheng Chen is a great book that studies the relationship between population issues, economic development, and corporate business models. It integrates multidisciplinary, multi-industrial, and multi-professional research and thinking. Dongsheng Chen positioned his insurance and elderly care business from a broad perspective, which he called ‘business idealism’. In my opinion, this is what distinguishes him from other entrepreneurs and the secret of his ability to create business miracles.”

—Qian Liqun, *Professor at the Department of Chinese Language and Literature of Peking University, Taikang Resident*

“*The Era of Longevity* touches on the population aging or super-aging problem that everyone is familiar with. In fact, it is the great progress of extended human longevity that generates the problems of an aging society and a series of new challenges. Calling for attention, raising alarms, and even causing anxiety are all somewhat meaningful—after all, it is only possible to solve problems by confronting them head-on. However, it should be of lasting and profound significance to guide identification of the problems to solutions, discover and sort out the positive factors in the real-life environment, and explore how to integrate them into effective methods, countermeasures and strategies. This is where the value of this book lies, and why it is worth reading carefully.”

—Zhou Qiren, *Professor, National School of Development, Peking University*

“In the modern society of socialized mass production, China’s elderly care model is undergoing a historical change and will continue to shift from ‘relying on the family’ to ‘relying on society’. Looking ahead to the future, socialized eldercare is the trend of future eldercare development. Taikang, led by Dongsheng Chen, is a typical example. The elderly care Taikang provides offers individuals and families a new and certain choice when they face future uncertainties.”

—Cao Yuanzheng, *Chairman, BOC International Research*

“Dongsheng Chen has a good perception of changes in the business ecology, which is an important reason for his success. He is not only a successful entrepreneur but also a business thinker. The arrival of the Era of Longevity not only creates new business opportunities but also changes the economic, political, and cultural ecology of society. It is worth in-depth thinking by all entrepreneurs and decision makers. The innovative practice of Taikang described in the book is also inspiring to other companies.”

—Zhang Weiying, *Professor, School of Economics, Peking University*

“The challenges presented by the ageing of China’s population are vast and complex. In his book, Mr. Dongsheng Chen proposes innovative solutions to meet the needs of China’s ageing population that integrate economic, social, psychological and cultural considerations. The proposed solutions demonstrate the entrepreneurial spirits of Mr. Chen that promise to help China to transition to a new era of flourishing productivity and humanity. They also hold important lessons for other countries going through similar demographic transitions.”

—Winnie Yip, *Professor of the Practice of Global Health Policy and Economics, Harvard T.H. Chan School of Public Health and Director of China Health Partnership, Harvard University*

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Dongsheng Chen
Taikang Insurance Group
Beijing, China



ISBN 978-981-19-6783-2 ISBN 978-981-19-6784-9 (eBook)
<https://doi.org/10.1007/978-981-19-6784-9>

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The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

*To Realize the Great Ideal of Serving the People
by Means of a Market Economy*

Foreword by Wu Jinglian

China's Population Aging, Social Security, and the Exploration of Entrepreneurs

The book in front of us is a comprehensive solution proposed by Mr. Dongsheng Chen, a senior financial insider, founder, and leader of Taikang Insurance Group, for issues such as medical care, elderly care, and fund-raising faced by the era of longevity or an aging society. Here, I would like to introduce the background of China's economic and social development reflected in this book.

“Longevity” has always been an important persistent wish of Chinese people. In this regard, we have made great progress. Since the founding of the People's Republic of China, due to the significant improvement of people's living standards and health care, the average life expectancy of China's population has almost doubled (from approximately 40 years old to approximately 77 years old in 2020), which in general reflects China's social and economic development.

However, along with the decline in the fertility rate, the extension of life expectancy has also led to the increasing share of the elderly in the total population, that is, the trend of population aging. This has brought about problems such as increasing burdens on the healthcare system, a shortage of elderly care facilities and difficulties in raising medical care funds, which need the attention and positive response from the whole society.

Population aging is not only an inexorable law in the process of social and economic development but also a worldwide phenomenon. However, population aging in China is faster than that in other countries, so problems that need to be solved are more prominent. Due to the influence of factors such as the “one child” policy implemented from 1980 to 2015, China's fertility rate has decreased rapidly from a high level in the 1980s. As early as the beginning of the 1990s, the total fertility rate, that is, the number of children delivered per woman in her whole life, fell below the required replacement level of 2.1 to maintain the stability of the total population. In recent years, the total fertility rate has further dropped to a very low level of 1.3. As a result, China's population aging has gained momentum. At the

dawn of the twenty-first century, China surpassed the international standard of an aging society in which the population over 65 years old accounted for 7% and began its aging society. In 2020, this proportion rose further to 13.5%. This indicates that China will soon surpass the maximum threshold of 14% in an aging society and morph into an aged society.

In particular, it should be noted that advanced countries generally become aging societies after becoming high-income countries, so they have laid a relatively strong material foundation to meet the challenges of population aging. However, China entered an aging society when it was still economically at the middle-income level. This left us no choice but to face more and greater challenges brought by “getting old before getting rich”. Due to the huge gap between the rich and the poor, according to the data from the National Bureau of Statistics in 2020, while the national GDP per capita reached 10,000 USD, 40% of China’s households and the corresponding 610 million people had a per capita monthly income of only nearly 1000 CNY. Supporting and financing for the elderly in these families becomes a more prominent problem.

Against this backdrop, since the 18th CPC National Congress in 2013, the CPC Central Committee and the State Council have repeatedly put forward the requirements of proactively responding to population aging. In 2019, the CPC Central Committee and the State Council issued *The Medium- and Long-term Plan for Responding Proactively to Population Aging*. In 2020, the “national strategy for proactively responding to population aging” was put forward at the Fifth Plenary Session of the 19th CPC Central Committee. The CPC Central Committee and the State Council have aimed to “take responding to population aging as a major strategic task related to the overall situation at present and in the future for overall planning and systematic implementation”. Through the *Proposals for Formulating the 14th Five-Year Plan for National Economic and Social Development and the Long-Range Objectives through the Year 2035*, the active response to population aging has been taken as a national strategy.

According to the studies by people from different circles, to carry out the aforementioned national strategy, we should implement the CPC Central Committee’s arrangements, such as “reducing burdens on family reproduction, raising, and education”, bringing out the potential of fertility, promoting balanced population development, accelerating the reform of the registered residence (“Hukou”) system, breaking down the institutional barriers to the mobility of labor and other factors, increasing effective labor supply, improving income distribution, and increasing the share of labor income and labor remuneration to basically align residents’ income growth with economic growth and try to bridge the income gap. In addition, we should also be dedicated to the following targeted work for the aged population: (a) accelerate the sound establishment of a fair, unified, and sustainable multilevel social security system that covers all elderly people and has coordination between urban and rural areas; (b) strengthen the construction of home-based community elderly care facilities, develop home-based community elderly care services, improve the supply capacity and quality of elderly care, and provide more convenient, accessible, diversified, and multilevel elderly care services; and (c) develop the silver economy, promote the combination of medical care, health care, and nursing care,

and support the integrated development of the elderly care service industry and other industries, such as finance.

In the social security system, pension and health insurance have always been the center of attention. In 1993, the Third Plenary Session of the 14th CPC Central Committee creatively put forward a plan to establish a multilevel social security system focusing on pension and health insurance, which was implemented in the mid-1990s. After more than 20 years of efforts, the basic framework of this multilevel social security system has been built. Its initial operation has improved the welfare of urban and rural residents. However, this system is still incomplete and not sound.

In terms of pension system, China currently mainly relies on the public pension plan that is “the combination of social pooling and individual accounts”. Although this pension plan has wide coverage, its benefit level is insufficient. There are large gaps between urban and rural areas, different regions, and institutions with different ownerships. Social pooling is still at the provincial and municipal levels, and the “empty individual accounts” have created huge invisible liabilities. In addition, the pension plans of the enterprise annuity and individual voluntary insurance are still relatively immature. The “noneconomic pillars” such as family support, medical services, and housing, which require the wide application of social policies, have not been established. This requires the continuing improvements of a more equitable and sustainable social security system to diversify risks to the greatest extent to continuously enhance the well-being of the public.

In terms of health insurance, since the implementation of the employee health insurance system in 1998, China has established a health insurance system with basic health insurance as the mainstay, medical assistance as the lifeline, supplementary health insurance, commercial insurance, charity assistance, and other measures as important components. However, at present, the main providers of general medical services in China are still public hospitals that are highly dependent on the management from administrative agencies and the financial support from public budget allocation. On the one hand, public hospitals often do not have enough funding from government fiscal allocation due to their large scale, which impedes their full service function; on the other hand, a medical service market with orderly competition and standardized operation has not yet been established. This has become an important factor that leads to the serious social problem of medical service “availability” and “affordability” for the low-income class.

In addition, another important issue to be solved is the channels of pension funds financing for the aged population. Therefore, while promoting the reform of the pension system, we must establish and improve the health service system and financial service system for the elderly.

The author of this book puts forward a more in-depth understanding of the sore spot in this era of longevity, which is the higher demands from the longer than expected extension of life expectancy on individuals’ pension, health, and wealth management. However, China’s society at present does not have the ideal approach to relieving this kind of pressure. The main content of this book is that the author puts forward a set of solutions to resolve the pressure from the perspective of a life

insurance financier based on his own experience in operating Taikang Insurance and learning from his studies of foreign practices. He called this plan the “Taikang Plan”.

As seen from the name of the book *The Era of Longevity*, the whole set of solutions proposed by Taikang Plan is based on the author’s understanding of the social needs in the longevity era. The author believes that the longevity era will definitely create strong demands for health and fund-raising; in this way, the longevity era is also the era of health and wealth. In this case, financial institutions with the main businesses of gathering wealth and making profit should play an important role. Bearing in mind this idea, Taikang Insurance Group, on the one hand, helps the targeted population solve the problem of raising their own pension and medical expenses by providing life insurance, annuities, and various types of health insurance. On the other hand, it extends its insurance business, which originally belonged to the financial industry, to the field of real medical care and health services. After years of efforts, Taikang Group has preliminarily realized the ideal of “three closed loops” proposed by Mr. Dongsheng Chen in 2016, which are “longevity closed loop combining life insurance and pension services, health closed loop combining health insurance and medical services, and wealth closed loop combining long-term capital and asset management services”. In this way, a “Big Health Industry” with two systems of insurance payments and health care services supporting each other and the integration of the pension industry and financial industry has been established within the Group. Therefore, this book *The Era of Longevity* can also be seen as the history and experience of Taikang Insurance Group’s establishment of the “Big Health Industry”. The Taikang Plan started from the middle and high end services. Constrained by China’s actual economic structure and public income level, the pension demands of the majority of low-income and middle-income households with insufficient wealth accumulation still need concerted efforts from all sectors in the society. However, the exploration of the Taikang Plan on how to realize the combination of the pension insurance system and health and social care services is of enlightening significance for exploring ways to further solve the issue of population aging. It also has reference value for carrying out other types of experiments on the combination of health insurance and integrated health and social care support, such as the establishment of a home-based elderly care community and the reform of the “three linkages” of medicine, medical services, and medical insurance.

In addition, the discussion in this book also incorporates many controversial topics existing in the economic and sociological areas for many years, such as the fundamental mission of enterprises and the core spirit of entrepreneurship, the current situation and future trend of the Japanese economy and American economy, thoughts toward the fully privatized pension insurance model in Chile, the bookkeeping individual account system supported by fiscal funding in Europe and Japan, and so on. For these topics, this book has put forward its own perspectives. Although the opinions in this book may only represent the author’s own views, they provide thought-provoking materials and create opportunities for in-depth discussion.

Based on my views above, I sincerely hope this book can attract more readers' attention and lead to in-depth thinking of people who are concerned about the solution to the population aging.

This is my foreword for the book *The Era of Longevity*.

Beijing, China
July 2021

Wu Jinglian

Foreword by Qian Liquan

Dongsheng Chen's Commercial Idealism and His Thoughts on Elderly Care from My Understanding

Dongsheng Chen's book *The Era of Longevity* views on the future of mankind from the perspective of longevity, and health and wealth is a masterpiece on the relationship between population issues and economic development and enterprises' business models. This book integrates researches and thoughts from a wide range of disciplines, sectors, and study fields. As a layman, it is beyond me to make academic evaluation. However, I can express my feelings and thoughts provoked by this book as a scholar in liberal arts and as a member of the "Taikang residents" mentioned by Dongsheng Chen.

The first thing coming to my mind is my relationship with Taikang Group. I was among the first batch of residents to move into Yanyuan in 2015 after the "Taikang Community • Yanyuan" was put into operation for more than a month. Before that, my wife Cui Kexin and I almost checked all the nursing homes in Beijing, and finally, we chose Taikang. One of the most important reasons is that we admire the founders of Taikang Community to run the nursing community not only for profit but also as a "social undertaking". Moreover, when I first met Dongsheng Chen, I said to him that China's elderly care industry just took off. To make it mature with "Chinese characteristics", we must make painstaking efforts in the next decade. However, after reading Dongsheng Chen's own account in this book, I learned that he had the idea of entering the elderly care industry as early as 2007. In 2010, Taikang Community was officially established; in 2015, Yanyuan opened; in 2020, 22 cities were planned to operate Taikang Community, seven of which have already been put into operation with more than 4400 residents. Now, this monograph, which focuses on raising the theoretical levels according to Taikang's real practices, is published. This book basically depicts the general pattern of elderly care businesses with "Chinese characteristics", which took only 14 years to come into being. Taikang is determined to grow into a "towering tree" in the elderly care industry in China and beyond. All these developments are indeed a marvel. For myself, my wife's incurable disease

from 2018 to 2019 made me rethink about life. After my wife's passing away, I began to pay attention to the study of elderly care, which made me more closely related to Taikang's elderly care career. This is probably a kind of "fate".

Therefore, there are three aspects of thoughts and discussions of "empathy in my heart".

First

What touched me first was Dongsheng Chen's strategic mind and vision of "strategy is of supreme importance for an enterprise". He "positioned" his insurance and elderly care undertakings from a broadened horizon. Dongsheng Chen called it "commercial idealism", which is the opposite of "commercial opportunism". In my opinion, this is what distinguishes Dongsheng Chen from other entrepreneurs and the secret of his ability to create business miracles.

Moreover, this is by no means boasting or lip service. Dongsheng Chen is observing and thinking seriously to gain insight in advance and follow the dynamics. It should be said that Dongsheng Chen is quite sensitive to the grand proposition put forward by the era. He clearly points out that mankind is standing at the crossroads of the era. The issues and trends faced by China and the world in such a "post-epidemic era" are the concerns of many people who are keen on studying things, including me. It is valuable that Dongsheng Chen has made his own interpretation of this, which can be called "Dongsheng Chen's thesis". He said, "From the perspective of the span of a century, the changes of the era we face include three aspects: first, the great changes in globalization and the world landscape; second, the great changes of civilization form and in how people produce and live brought by the development goals of carbon emission peaking and neutralization; and finally, big changes in humanity themselves as a species brought by the era of longevity. These three aspects influence each other and will become the main forces that affect the future of the world."

In my opinion, the statement above is reasonable. It makes us face three major changes in the post-pandemic era: the great changes in politics, economy, and society; the great changes in the relationship between human and nature; and the great changes of human beings. I have said that this pandemic has revealed a ruthless reality that "the whole world is ill": All the current social systems, development models, and civilization forms have seen crisis, which inevitably will lead to great competition among various social systems, development modes, and civilization forms. The outbreak of the COVID-19 pandemic exposes the harsh reality that human beings have been retaliated against trying to "conquer nature" for a long time. The two threats of virus and climate are likely to become a huge shadow in the post-pandemic era. Great changes for human beings as a species are even more inevitable. The main characteristics of the "era of longevity" summarized by Dongsheng Chen are the two major changes for human beings: the decline in the fertility rate and the extension of life expectancy. Dongsheng Chen disagrees with the pessimistic attitude toward the changes in the future world and the new problems brought by them. Therefore,

he proposes to “examine the future from a futuristic perspective”, believing that mankind can address the challenges of the future.

This also shows Dongsheng Chen’s “commercial idealism”, which he values the most. What I want to point out is that such commercial idealism has distinctive characteristics of the times. I therefore note that Dongsheng Chen calls himself the core representative of “92 generation” entrepreneurs. These entrepreneurs grew up in the 1980s, a great era of ideological liberation. They were educated with enlightenment and were the backbone of China’s reform and opening up. In the early 1990s, they took the lead in making fortune in the business world. Their idealism has not only the spirit of the era of Chairman Mao but also the characteristics of the era of reform and opening up. This is the “entrepreneurship” emphasized by Dongsheng Chen, the nature of which is to “turn the ideal into reality”.

“To live is to change the world”; this is their basic belief. They reached “almost religious persistence and madness”. That’s why they have a strong sense of participation and responsibility to “lead” China’s social change. Therefore, behind his business behavior, Dongsheng Chen always has a strong sense of social care and self-consciousness to lead to social change. At the same time, he maintains a sound attitude, limits his behavior inside the business world, adheres to long-term efforts, and avoids unplanned actions. This shows a rare originality and maturity. This in itself constitutes a valuable tradition of emerging entrepreneurs in the 1980s and 1990s.

This naturally aroused my resonance as an intellectual who experienced the whole 1980s. I have always believed that an era of great social changes is in great need of the guidance of new idealism (including utopianism). The new equilibrium expected by Dongsheng Chen is also the idealized development trend of China and the world in the post-pandemic era I expected. However, my knowledge accumulated since the 1980s has not only made me have strong idealism but also formed a skeptical mindset. I am full of expectations and doubts about the future of China and the world in the historically great changes. In fact, Dongsheng Chen also knows this and has got himself well prepared. He therefore raised the issue of “gray rhinos” in the era of longevity. Are we fully prepared for all possibilities?

Second

Dongsheng Chen summarized his business thoughts as taking people as the start and the end. The core meanings of Taikang’s emblem and motto are “dedication to society” and “people-oriented”. Taikang Group has always adhered to the values of “respecting, caring for and praising life”. Dongsheng Chen claimed that his theory and practice of “the era of longevity era” are “a proposition about human beings”. Its essence is to focus on the sound development of human life. I can’t agree with this more—I have always taken Lu Xun’s thought of “the cultivation of person” as my basic belief. Maybe Dongsheng Chen and I have different sources that trigger our thoughts, but the care for humankind makes our thoughts similar. The greatest appeal

of this book is that Dongsheng Chen has expressed his observations, thoughts, and discussions on human beings between the lines, especially the elder people in the era of longevity. I read the book with relish and tried to summarize it into eight aspects.

The first is “productive aging”. Dongsheng Chen first reminds us that the extension of healthy life expectancy of the elderly in the era of longevity has led to changes in the breadth and depth of their lives. I have an in-depth understanding of this. In 2015, when I was 76, I came to Yanyuan. However, in 2021, when I was 82, I was at a prime time in terms of brain energy, physical conditions, and the ability to think, imagine, and create. My research and writing have prospered again in my twilight years. This was far beyond my expectation, so I cherished the energy I had and worked very hard. My story shows that the potential of the elderly in the era of longevity cannot be underestimated. We should be confident about the possibility of “productive aging” and create an enabling environment for it. “What should a centenarian look like?” Chen put forward this question, which invites imagination and is well worth thinking. Dongsheng Chen therefore found the special connotation, value, and significance of “productive aging” in the era of longevity. Such transformation and reconstruction have been happening against the backdrop of the development of new technology. The arrival of the era of the knowledge economy has highlighted even more the value of knowledge and intelligence. The advantages of the human capital of the elderly will play a significant role in the future.

The second is “learning while aging”. This means changes in reemployment for elderly individuals. They can not only give full play to their capability within the scope of their original professions but also explore new fields. This kind of reemployment after retraining has special significance and value for the development of elderly individuals. We know that people in childhood, adolescence, and youth tend to have many “dreams” and a variety of expectations for their own life. However, in adulthood, what they truly realize is only one aspect, and even they are likely to “do things that they do not expect”. In fact, everyone will have some kind of lifelong unachieved dreams. Retraining and reemployment in old age provide an opportunity to make up for those unrealized goals. Based on this, Dongsheng Chen proposed that in Taikang’s longevity community, each block must have “an open university that helps the elderly realize all the unfulfilled dreams of one’s youth”. Such a design is very considerate.

Third, “guaranteed health care while aging”. Based on his concern and consideration of the health problems of the elderly in the era of longevity, Dongsheng Chen proposed three concepts (or requirements) of elderly medicine in the longevity era, which is worth paying attention to. First, to ensure the health of elderly individuals, the health care of the elderly body must be comprehensive and shift from disease treatment to health maintenance of the full life cycle. This should become the basic principle and mode of elderly medicine in the longevity era. The second is the concept of “individualized medicine”, paying more attention to the “individualized” people and to the individual human life and making personalized treatment plans for patients. Third, elderly medical treatment and health services must be patient centered. This is an “active chronic disease management” with elderly patients and

their families actively participating in the process. In my opinion, these three principles are actually new characteristics and new trends of medical development in the future.

Fourth, “fun while aging”. In Dongsheng Chen’s opinion, in the era of longevity, with relatively well-off living standards, the basic needs of elderly people’s clothing, food, accommodation, and traveling have turned to higher-level needs such as entertainment, education, health care, and recuperation. There is not only consumption of goods but also spiritual consumption. The daily life of eating, drinking, entertainment, and dressing also involves food, clothing, entertainment, festival, and folk cultures. This means that elderly people will shift from passive “elderly care” to active “enjoying old age” and live the life of old age in a new way.

Fifth, Dongsheng Chen also put forward a major proposition, namely taking “the discovery of human nature” as the original purpose of elderly care. This is a subject that needs in-depth discussion. Recently, I have given a speech at the Alumni Reunion of Peking University in Yanyuan Garden, talking about the research of “learning for the elderly”. I put forward the question, “What are the characteristics of old age as the last stage of life?” I then gave four possible answers: “go back to childhood, go back to land and nature, go back to history, and care about the other world”. These four answers, in fact, are to pursue the eternity of life. Here, I want to take a step further. As Dongsheng Chen said, our generation, now in our seventies, eighties, and nineties, and members of “Taikang Residents Group”, is the first and second generation of builders of new China. The advantages of our generation are obvious. What are the weaknesses of our generation, and what else does our generation need to know in our old age? I pointed out in *The Three Points of Thoughts on Elderly Care in the Era of Longevity* that “we are all keen on fighting with fate, nature, others, and with ourselves endlessly, which makes the relationship between ourselves and others, the relationship between man and nature, and the relationship with the inner part of ourselves so tense that distorting our human nature and lives”. Thus, our life in old age has a goal: to restore human nature, sincerity, and true temperament; to achieve harmony with nature, with others, and with the inner selves; and to adjust and improve our human nature and lives. This is probably the unique part of elderly care in China.

Sixth, this also involves another important proposition put forward by Dongsheng Chen: A longevity society must be an aging-enabling society. The so-called aging-enabling society is suitable for the elderly to live and meet the needs of the life development of elderly individuals. This simple concept has rich content behind it, which is a very important concept in the elderly care industry and elderly care studies. The demand for the life development of the elderly mainly includes two aspects. The first is health. The physical and mental health of the elderly and the corresponding needs can be divided into three stages, which require corresponding elderly care management. The first stage is about physical and mental health and the ability to live by themselves. The task at this stage is to promote the change in old people’s life concepts and lifestyles. In the second stage, when old people cannot live all by themselves, their physical discomfort, pain, psychological loneliness, anxiety, and fear will reach a new level, requiring special care and one-on-one help. The third stage

is at the last phase of life, that is, the stage of soothing care and treatment. Its task is to reduce the physiological pain of the elderly and help the elderly gain a quality life throughout the whole stage. Second, in addition to health, Dongsheng Chen stressed that elderly care institutions should be built into the old people's "spiritual home". This is far from easy in real practice. I have mentioned previously that we must reflect on the mindset and human weakness of our generation taking shape in the era of endless struggles and make certain corrections and adjustments to them. This also involves the theory and practice of the old people's cultivation and psychology, and we should carry out further discussion and concrete practice.

Seventh, attention was given to "the elderly's family group". Dongsheng Chen stressed intergenerational reciprocity. This means care not only for the elderly but also for his family and clan. This also catches the key point: The family culture emphasizing elderly care and respect for the elderly is a major feature of Chinese traditional culture. When people reach old age, they are increasingly attached to the family and clan based on blood relations. Dongsheng Chen is characterized by his conversion of his cognition of the relationship between the individual life of the elderly and the family and clan groups into a business model, launching new products such as "Happiness Guide" and "Memorials". He then launched "The Young Happiness Guide", which guides parents to insure their children or grandparents to insure their grandchildren. In this way, Taikang's insurance and elderly care services cover the whole life process of a person and even his/her family and clan.

The last part discusses the issue of the "fairness of a longevity society". We should face a harsh reality when we discuss elderly care in the era of longevity: The biggest problem in the era of longevity is social differentiation. A large number of vulnerable old people are in extreme poverty materially and spiritually, and even middle-income families are also faced with the problem of insufficient fund reserves for elderly individuals. This is actually the biggest threat to the elderly's life and the greatest anxiety for them. The "new life" for the elderly that Taikang advocates is aimed at the middle classes. Such a "new life" has special significance and value, which represents the ideal future development direction of elderly life. However, it has its own limitations, which cannot be avoided. Dongsheng Chen also has his own understanding on this front. He established the Taikang Yicai Public Welfare Foundation in 2018 and put forward the requirements of targeted assistance and professional empowerment.

Third

What makes Dongsheng Chen "special" is that he is not only a pioneering entrepreneur but also has his own background and foundation of a scholar. He uses the mind, vision, and methods of a scholar and thinker to explore the path of enterprise innovation. Therefore, he also has a strong awareness of theoretical innovation. Such a combination of entrepreneurship and scholarship is rare among contemporary private entrepreneurs in China.

In the relative discussion of this book, Dongsheng Chen tells us the three stages of his life, among which “theoretical innovation” has been throughout the whole process of Dongsheng Chen’s insurance and elderly care businesses. This “*The Era of Longevity—Views on the Future of Mankind from the Perspective of Longevity, Health and Wealth*” is the concentrated embodiment of such theoretical innovation. This is also a new starting point of his theoretical innovation. In my opinion, after making great success in institutional and business model innovation and making progress in the industrial pattern of Taikang Community and its size, Dongsheng Chen will promote scientific and technological innovation and theoretical innovation to a more prominent position. In this book, Chen announced that in the next 3–5 years, Taikang will open 25–30 elderly care communities nationwide. I also expect the Taikang team to make new breakthroughs in theoretical innovation.

The key here is the establishment of a theoretical innovation team. In the Taikang Group, many professional personnel have been involved in research on the theory of longevity. I suggest that while expanding and improving the professional research team, we should also build up an amateur research team mainly composed of “Taikang residents”. As Dongsheng Chen said, Taikang residents are the actual owners of “Taikang Community’s longevity community and longevity economic experimental pilot”. Taikang residents have the right and ability to participate in the theoretical innovation of Taikang elderly care causes, and this is also a new opportunity for them to start new business again in their old age. In my speech at the Taikang alumni reunion of Peking University, I proposed “taking ‘elderly care study’ as our new cause”, which attracted many alumni’s interest. This may be a signal: to establish a team for elderly care theoretical innovation composed of both professional and amateur personnel. It has a good start already, and we need to build on it.

Beijing, China
July 2021

Qian Liqun

Foreword by William C. Hsiao

A nation passes a major milestone in its development when the average life span of its people reaches 85 years. With rapid economic growth and improvements in the environment, healthcare, education and social welfare programs, average Chinese citizens will live past 85 years old in the coming decade. Longevity, however, brings along tumultuous changes in demography, consumption and savings, social relationships, housing, health care and long-term care needs. These shifts exert critical pressures on the nation and necessitate government policies, private businesses, individual preferences and financial institutions and markets to transform themselves to meet this change.

China must make this transformation in a much more compressed process than other advanced nations. The United States and most European nations took nearly two centuries to increase their life expectancies from 35 to 80 years and to transform their markets and institutions accordingly. China will achieve similar longevity gains in less than fifty years. Furthermore, the previous One Child policy and current retirement age practices for government and state enterprise employees accelerated the rising dependency ratio between the retired and working population. Young working families face a double burden to support their retired parents and bear more children.

This book presents thoughtful and inspiring analyses and insights into the huge new opportunities and challenges that a nation faces because of increased longevity.

I met Mr. Chen Dongsheng about a decade ago. He impressed me immediately with his broad and penetrating analysis of the major transformation of the economic, social, and cultural conditions brought about by the aging of the Chinese people. He was particularly concerned with how China would be able to provide financial security and good health for old age. He spoke with me about how to achieve these goals for the individuals in the context of market and private business. Other Chinese government and business leaders and scholars had discussed with me their ideas on China's aging phenomena, but none had Chen's broad foresight.

The book gives a cogent argument for the importance of paying attention to the aging of the population. Mr. Chen analyzes the changes created by it, starting the intrinsic fact that good health is a prerequisite for a happy long life. Otherwise, we cannot participate in our desired physical and mental activities. In addition to good

health, we also need good income to support our daily living during retirement. These two fundamental prerequisites influence the individual's lifetime motivation, work and leisure, consumption and savings. In turn, these behaviors and actions drive our economic system. Ultimately, longevity affects individual and family decisions, alters government policies, and transforms business and markets.

Mr. Chen wrote this book to offer his vision of how to plan for the Era of Longevity. It presents two principal points. First, Chen sets the stage by providing evidence that China, along with other advanced economies, is aging and approaching what he terms the Era of Longevity when 25% of the population is 65 years or older and many live to 100 years old or beyond. He argues that to enjoy the benefits of longer lives, people need not only good health but also financial security after retirement. Savings invested properly can compound rapidly to fund retirement needs. Second, Chen evokes and challenges us to think of how a new ideal society would reorder its socioeconomic structures and businesses to take advantage of the opportunities created by the Era of Longevity. The book gives details on how such a society would employ advanced digital technology and the Internet to bring about this transformation more rapidly.

Mr. Chen's broad systemic thinking highlights two major challenges to longevity. The first is the interaction between healthcare financing and the delivery of healthcare. He asks how the design of health insurance plans can reform healthcare delivery to produce healthier lives as we age. The second is the interaction between the increasing need for savings over one's lifetime and the investment market. He asks how the financial market and investment institutions can be transformed to yield secure high investment income for savers. Using his expertise, Chen outlines how the financial markets and institutions must introduce new approaches and play new roles to serve the people in the Era of Longevity.

This book illustrates the creative and imaginative mind of the author. I offer one intriguing example. After empirically examining how longevity transforms the individual and family, government, and private business and the impacts produced, Mr. Chen wrote, "[the] Era of Longevity poses both opportunities and challenges." Chen argues that longevity opens an opportunity to produce a new economic boom period called the "third demographic dividend." He explains that as the population ages, there will be increasing demand for new models of preventive, primary and curative care to maintain our good health into older ages. This demand would attract new investment in research. This would engender discoveries and inventions in digital technology, AI, and robotics, which, in turn, could become the new mainstay of new economic enterprises and production. In short, the virtuous cycle engendered by the combination of longevity and new technological breakthroughs would bring about the "third demographic dividend."

I'd recommend that Mr. Chen puts his creative foresight to write a sequel to this book—addressing the issue of adequate retirement income security for all Chinese. While this book addresses the transformation of health care, housing, and retirement income security for more affluent Chinese retirees, the wellbeing of the remaining Chinese retirees is not addressed. Chen embraces the three-tiered model of social security that has been developed and adopted by most advanced nations. Many of the solutions he proposes are based on this three-tiered model and China's presumed

adoption of it, but the book does not explore the shortcomings of this model and how China may improve it.

The three-tiered system tries to address the need for retirement income security of all citizens in a nation irrespective of socioeconomic status, with shared responsibilities among the government, employers, and individuals. For the first tier, the government establishes a mandated “floor of income protection” for everyone with a tax revenue-financed social insurance system. The US Social Security system is an example of this policy. The second tier consists of supplementary pensions provided by employers. The third tier is for individuals to further supplement their own private savings. These three tiers are linked and interact with each other. The United States experience is instructive. It established its three-tiered system in the late 1930s. In the US, we found that eighty years of a growing economy and high employment catalyzed innovative and dynamic financial markets and private investment institutions to respond to the increased savings from tiers two and three. The high investment returns provided savers with generous returns and high living standards in retirement. However, most people who benefit from tier three are the most affluent top 20% of the population. We found that only half of the private sector workers were covered by employer-sponsored pensions (i.e., tier two). Meanwhile, most American workers are not earning sufficient wages to have much private savings at all. In fact, only approximately 60% of retired Americans can save enough to own their own homes. Upon retirement, middle- and low-income households mostly rely on the US Social Security pension (i.e., tier one) for living expenses. This outcome creates vast inequality in retirement income and living standards that causes social and political tension in the US and separates the elderly into communities segregated by the haves and the have-nots.

The experience and evidence of the United States and other affluent nations show that the three-tiered model has some serious deficiencies. Chen can craft imaginative and pragmatic improvements to the current model to give most Chinese retirees a reasonably comfortable life in the era of longevity. With his wise insights, China could leapfrog other advanced nations in how they treat and care for their retirees and elderly.

In short, this book informs us that the era of longevity of China will soon be upon us. Mr. Chen inspires us with its opportunities and challenges. He gives us his foresight and creative ideas as to how we need to take a systemic approach to transform our health care financing and delivery systems into an integrated one for the new era, as well as savings and investment for longer life and innovative living arrangements for retirement.

Cambridge, USA
August, 2022

William C. Hsiao

Preface

Establishing a New Understanding of the Era of Longevity

Only by standing at a height of 10,000 m to see the world and observing the world from the perspective of one hundred years can we have the vision and persistence, not deviate from reality, and gain an earlier and further view.

If the 250 thousand years history of mankind from the hunting-gathering era was condensed into one day, then in the first 23 h and 58 min and 30 s of that day, human beings would be in the long process of evolution from hunting-gathering civilization to agricultural civilization. There was no significant change in human living standards in general until 1800 A.D., when human life expectancy was not much different from that of the hunting-gathering era—basically 30–35 years old. However, in the last minute and a half of that day, with the emergence of the Industrial Revolution, mankind seemed to have opened the door of miracle. The Industrial Revolution lives up to its reputation as a “great revolution”. It has started the rapid development of human civilization in the past two and a half centuries. Technological progress has made mankind break through limits and created unprecedented prosperity. The progress of agricultural technology has enabled mankind to solve hunger problems on a large scale and continuously improve nutrition. The use of coal and oil has greatly improved the efficiency of human production and laid the foundation for the industrial system. The high-speed iteration and upgrading of computer and communication technology have been constantly changing human communication and lifestyle and have greatly reduced the costs of human production. Since the Industrial Revolution, human life expectancy has doubled. By 2019, the global life expectancy reached 72.6 years old, and the life expectancy in developed countries generally surpassed the threshold of 80 years old. The global population also increased from less than 1 billion in the early eighteenth century to 7.7 billion in 2019. Today, we are used to the bustling world until the COVID-19 pandemic wreaked havoc across the globe in 2020, triggering memories of the 1918 Flu Pandemic (also known as the Spanish Flu) that had been buried for more than a century. If we take this once-in-a-century pandemic as the beginning of the next day, we cannot help but ask the following

questions: Will prosperity after the Industrial Revolution continue to be in place tomorrow? Can the human beings who ride in this blue ark in the vast universe survive the era of resource scarcity and march toward endless growth?

In recent years, people of insight have actually felt that mankind is standing at the crossroads of our times. I think that from the perspective of the span of time and space over a hundred years, the changes of our times we are facing include three aspects. The first is the great change in globalization and the world landscape. The second is the great change in civilization form and production and lifestyle brought about by taking carbon peaking and carbon neutrality as development goals. The last is the great change of mankind as a species in the era of longevity. These three aspects influence each other and will become the main forces affecting the global future.

Globalization brought about by the market economy has profoundly changed the international landscape. In the more than 200 years after the Industrial Revolution, major countries in the world gradually moved toward the development model dominated by the market economy after experiencing modern wars and revolutions. In the past 30 years, globalization has become the theme. The nature of globalization is the global allocation and optimal utilization of various production factors. Due to the difficulty of cross-border labor flow, when multinational companies allocate their global factors, a large number of manufacturing jobs relocate to China and South-east Asian countries, which have cheap labor supply. However, the living conditions of local blue collar workers in developed countries have not improved significantly or have even moved backward. A series of anti-globalization phenomena, such as Donald Trump's taking power, Brexit, and Sino-US trade tensions, are the concrete reflection of this process. The political, economic, and social problems brought by globalization are the key variables that affect the current world landscape. These variables will gradually reach a new equilibrium after collision and adjustment.

Carbon peaking and carbon neutrality are the in-depth reflection on industrial civilization and a revolution of human production and lifestyle. Industrial civilization is based on fossil fuels, which bring about environmental problems such as climate warming. New energy technology is rebuilding this system. At the same time, with the application of 5G and artificial intelligence, all sectors of the society and economy will operate in a more efficient way and will change the structure of energy consumption. In the future, using clean new energy will greatly replace fossil fuel combustion in the energy supply, which brings limitless possibilities for a new technological revolution. After breaking through the shackles of energy consumption, the exploitation of the "rich data mine" will reach a new breakthrough, which will reshape the production process, reduce waste, and establish a more sustainable development pattern. Human society will enter the era of ecological civilization. In this process, the old industries will be replaced by the new industries. As the emergence of digital photography technology makes the traditional film industry disappear, similar stories will be seen in many industries in the future.

The advent of the era of longevity is closely related to the fate of mankind. What we call the "the era of longevity" refers to a social situation in which the proportion of the elderly population is very high when the population growth slows

down significantly (or even heads to the negative territory) and the age structure of the population converges to a “column-shape”. In such a state, the proportion of people aged 65 and above will exceed one-fourth of the population for a long time. At present, countries with middle-income and above in the world are generally in the era of longevity. According to the data of the seventh national census, China’s population aged 60 and above has exceeded the population aged 0 to 14, reaching 264 million, accounting for 18.7% of the total population. The age structure of China’s population is converging to the “column-shape”. Japan has already entered the era of longevity. The proportion of people aged 65 and above reached 28.7% in 2020, and negative population growth was first seen in 2005. The era of longevity has a new state of population balance, ending the explosive population growth of more than 200 years after the Industrial Revolution. In the era of longevity, it is likely that people’s life expectancy will increase steadily, while the total population will decline steadily. At present, the life expectancy of mankind increases by 2–3 years every decade. In approximately 30–50 years, a life expectancy of 100 years will be possible for everyone. Although life expectancy growth is what people are glad to see, when a country’s population starts to decline and the proportion of the elderly population is large, economic growth is bound to face challenges, and society will also bear great pressure on reallocation. In that case, the original development track must be changed accordingly.

The era of longevity is a topic about human beings. I think it is different from the big propositions related to the environment such as globalization. Human beings are the subjects of all economic supply and demand and other social phenomena. With the changes in population surge, balance, and recession, human beings’ socio-economic organizations will also be adjusted, transformed, and rebuilt. Unleashing the economic potential in the era of longevity and maintaining economic growth will become a major issue that all countries cannot avoid. “Economic growth can be predicted based on macro fundamentals in the short term, structure in the medium term and population in the long term”, this is an important understanding I have formed in many years of macroeconomic research, and it’s also a methodology that can be used to analyze the market. For a long time, Taikang Insurance Group, I founded, has been deeply engaged in the life insurance industry. In recent years, it has entered into the fields of health and social care and Big Health industry, which is why I can gain deeper insight into the changes in industrial structure caused by population aging.

In 2020, I summarized my preliminary thoughts and wrote the article *Theories and Countermeasures in the Era of Longevity*. The article was published in the journal *The World of Management*. Recently, when reading articles published at home and abroad and studying this problem, I have more understanding of the era of longevity. I collected these new understandings and presented them in this book. A concept highly related to this book is population aging. The United Nations divides the degree of aging by the proportion of the elderly aged 65 and above in the total population of a country or region. If the proportion is more than 7%, then the country or region is called an aging society. If the proportion exceeds 14%, then the country or region is called an aged society. When the proportion is more than 21%, that society is called

a super aged society. Since the 1860s, major industrialized countries such as France, Sweden, Britain, and Germany have successively become aging societies. According to the data of the seventh national census in 2020, China's population aged 65 and above accounts for 13.5%, which is close to the threshold of an aged society and makes population aging a hot topic. Aging is a phenomenon of population dynamics and the objective result of the development of many socioeconomic factors. However, it is often associated with negative meanings. People even use “silver tsunamis” to describe the destructive influences of population aging on the economy and society. In fact, when the elderly population grows to a certain level, the age structure will enter a relatively stable state. Social and economic organizations and factor allocation will gradually form a new equilibrium after adjustments and reconstruction. To summarize this understanding with a more precise and neutral concept, this book puts forward the concept of “the era of longevity”.

The term “the era of longevity” has been used in many situations in the past, but it has not been used systematically. At the end of 2019, the Documentary Channel of China Central Television (CCTV) was preparing to produce a documentary called “the era of longevity”, and its staff came to interview me. This was the first time that the expression “the era of longevity” came into my eyes at that moment. The director explained that they also spent a lot of time putting forward this creative title for the documentary. For me, this expression not only was creative but also helped me sort out my longtime thinking on this front. The concept of the era of longevity can inspire people to think out of the inherent framework confined by “population aging”. The advent of a new era will definitely rebuild the old era in all aspects. People need to proactively think about and envision the future in such a larger picture. I want to redefine this concept of the era of longevity.

Eliminate the Anxiety of Population Aging

Academia and think tanks around the world have performed much research on population issues, and the relevant research results are numerous. Since its birth, modern demography has experienced three main theoretical development stages. The mainstream view at the first stage is that Malthusian theory started at the end of the eighteenth century and developed until now, which holds that arable land and other resources in agricultural society impose restrictions on population growth. The well-known “Malthusian trap” means that the geometric growth of the population far exceeds the arithmetic growth of living resources, so this will lead to disaster. This obviously exaggerates the potential risk of population growth and ignores the possibilities of technological development. The main perspective at the second stage is the population exhaustion theory rising in the late twentieth century, which holds that population aging will negatively affect consumption, productivity, employment, and innovation and emphasizes the burden of feeding the elderly population. This is another extreme reaction of developed countries due to their lack of effective plans to deal with the impacts of population aging. The third stage is the broad

discussion on “active aging” in the last two decades. This stage continues to today. The research fields are gradually diversified and segmented. People have begun to think that population aging is the embodiment of progress in the fields of social and economic development, medical treatment, and public health, and advocating rational and objective acceptance of aging has gradually become the mainstream view.

At present, almost all developed countries in the world are facing the challenges of population aging. The reason why people are concerned about population aging is that it is difficult for them to clearly foresee and effectively deal with its significant influences on human society. Based on relevant theories, the challenges brought by population aging to society are mainly in the following five aspects.

First, population aging has led to a decline in labor supply and has impacted the organizational form of industrial production. Due to the declining birth rate, the young labor force will shrink for a long time, and factories and enterprises may face the unavailability of the labor force.

Second, population aging will have a great impact on social savings and capital. Traditional life cycle theory thinks that the elderly are mainly consumers. With the increasing proportion of elderly individuals, the consumption rate will rise, and the overall social savings rate will decline. This will be detrimental to capital accumulation and have a negative impact on economic growth. Another view is that when population aging becomes a common understanding in society, people will be more inclined to save money for preventive purposes, resulting in the contraction of the consumption market.

Third, the aging society inhibits social development and innovation. The learning and innovation ability, pioneering spirit, and entrepreneurship of the elderly are generally not as strong as those of the young. Aging will have an adverse impact on the improvement of labor productivity and social innovation.

Fourth, the social security system will be unsustainable, and the government’s finances will be stretched. At present, the current social insurance systems in many countries are formulated during periods of rapid population growth. With the deepening of population aging, social income gradually cannot cover expenditure. Foreign countries generally deal with the deficit problem by putting off retirement age, increasing the public’s pension contributions, reducing pension amounts, and increasing fiscal subsidies. However, it is increasingly impossible for people to rely on a basic social insurance system to cover the living costs of elderly individuals.

Fifth, population aging may lead to serious social differentiation. A considerable number of people and families will bear a huge burden, and it will be difficult for them to get out of this trouble.

Japan is currently the country with the deepest degree of population aging in the world, and the proportion of people over 65 years old exceeded 28% in 2020. The problems mentioned above have gradually appeared in Japanese society, which has sounded an alarm to countries all over the world, including China. In recent years, in regard to topics related to the growth of the elderly population, dark clouds will cast a shadow in people’s hearts. Just as people are unwilling to face the inevitable old age, they are also unwilling to accept the inevitable aging society. However, looking

back on history, the end of the previous era must also be the beginning of the later era. When most people's imagination is restrained by pessimism, we will also miss the first ray of sunshine cast through dark clouds in the era of longevity.

It seems to me that the challenge of population aging mentioned above is the second time that we have fallen into the Malthusian Trap. Only this time, the nature of the trap is not the limitation of external resources but some kind of self-limitation of human beings. Currently, a series of theoretical studies mainly focus on the phenomenon of population aging itself. They first assume that the basic operation mode of the economy and society remains unchanged and then carry out population aging research in isolation. It is like describing the industrial society in the agricultural era and "looking at the future from the past". The conclusion must be outdated and of little benefit to the future. When we "look at the future from the future", we will find that in human history, the church-led society finally adapted to the coexistence of science and belief, the farming-led society finally adapted to the joint participation of steam engines and workers in factories, and the world shrouded by infectious diseases finally worked together to beat the Black Death and smallpox. Countries afflicted by industrial pollution have also begun to put forward ambitious goals such as "carbon neutrality". The continuous progress and large-scale application of technology will become effective tools for people to continuously solve social contradictions. The adaptive ability of governments, enterprises, and individuals at the micro-level and the internal impulse to pursue harmonious development can make full use of these tools to promote technological, institutional, and cognitive innovation. We have every reason to believe that mankind can solve these challenges in the future.

The concept of the era of longevity is a new adaptive worldview. If aging is an eley of population decline, then the era of longevity has sounded the clarion call for people to actively pursue longevity, health, and prosperity under the trend of reaching a "new equilibrium" of population. The era of longevity will lead to a longevity economy. Under the interaction of new and old factors, we will gradually usher in a more harmonious and stable longevity society.

The Era of Longevity is a New Understanding of the Future of Human Society

The conceptual system represented by the era of longevity is a set of epistemology and world views that I have developed in the course of my long-term thinking about demographic change and its impact as well as my deep involvement in the Big Health industry over the past decade. This conceptual system is based on the future population and society form from a perspective of forward-looking and active adaptation and absorbs the cognitive changes brought by the development of science and technology. Karl Marx once said, "Philosophers have only interpreted the world in various ways. The point, however, is to change it." I believe this new cognition has

the potential to guide us to transform this society from our respective perspectives and make the future of mankind better.

What is the difference between the era of longevity and previous human society? This book believes that the era of longevity has five characteristics: The mortality rate has decreased to a low level, the life expectancy has been prolonged, the fertility rate has decreased to a low level, the age structure of the population is columnar, and the proportion of the population aged 65 and above has been more than one quarter for a long time. At the same time, with the continuous development of science and technology, another important transformation of the human production mode is taking place. Therefore, the applicability of the conclusion from the analysis based on the industrial era will be greatly reduced in the future. In this context, it is necessary for us to systematically update the traditional understanding of population aging and deal with this problem more proactively.

The era of longevity will be a new normal of human society in the future. In the industrial era, population aging is alienated into a pessimistic phenomenon, while in the era of longevity, population aging can be taken with a more objective attitude, and the high proportion of the elderly population can be seen as a new normal of human society. Under this new normal, the yardstick of measuring the length of human life will change fundamentally, the traditional pattern of life—study, work, and then retirement—will be rewritten, and the boundary between the three stages will become blurred. The continuous extension of life expectancy will force people to face new forms of employment, health, and financial challenges. Therefore, we must replan and rearrange the whole process of life. At the same time, the economic, political, and cultural structures of the whole society also need to be adjusted accordingly, which will bring new opportunities to people. Specifically, the new cognitive framework of the longevity era has the following characteristics.

First, the era of longevity is not just about “longevity”. The era of longevity not only pays attention to the extension of human life but also to the internal relationship between longevity and health, wealth, and other topics, as well as a series of economic and social changes behind this population phenomenon. It should be noted that mankind is about to enter the longevity era and the data era at the same time. With the development of technology, the data era will bring new production factors as well as new production and organization modes. The longevity era needs to fully take advantage of the development achievements of the data era to change the traditional socioeconomic development modes and better meet the challenges.

Second, the era of longevity will “start” the era of health. In the era of longevity, the main diseases disturbing mankind will change from acute infectious diseases to chronic non-communicable diseases. The extension of life expectancy makes “long-term survival with disease” the norm. The traditional medical model with a focus on acute disease treatment will turn into the medical model with life cycle health management as its core. Health has become the first consideration and the most precious wealth of an individual’s attention, which will stimulate and unleash people’s demand for health care. The huge health care demand will promote the rapid development of the Big Health industry, which is expected to become the cornerstone

industry of China's economy in the future and bring the upgrading and transformation of industrial structure. The pharmaceutical industry, healthcare services, and health insurance are the core industries in the Big Health industry.

Third, the era of longevity "calls for" the era of wealth. The extension of life expectancy in the era of longevity will make people pay more attention to wealth accumulation and financing. The financing of elderly care and health care needs to consider the whole life cycle, which will lead to a strong demand for wealth management. The huge demand will also bring the supply-side reform of wealth management. As the capital market matures, individual investors will become more rational and more inclined to seek investment advice from professional wealth management institutions. They will also accumulate wealth through long-term compound interest and diversified allocation in their investment to reduce the risk of depleting their individual asset in the era of longevity.

Fourth, the era of longevity gives the elderly new social roles, which will also change the form of production and organization since the industrial era and bring about more possibilities for a longevity economy. Under the traditional understanding framework of population aging, some scholars have proposed that the elderly will boost the economy through consumption, but it is not enough to define the elderly only as consumers. Society must attach importance to the development of the human capital of the elderly and exploit the productive potential of elderly individuals. We are in a transition period driven by science and technology. The demand for manual labor continues to decrease. The Internet and 5G technology are restructuring production factors. Artificial intelligence and robots will completely liberate human capital. The value of the elderly will be recognized, positioned, and explored again, rather than staying in the stereotype position of the consumer of social resources. We should employ new ideas to enable the elderly to participate in the labor market in a more flexible way, such as imparting knowledge, skills, and experience, and let them create their own "the third demographic dividend".

The era of longevity is a major issue concerned with the future development of mankind. How to eliminate poverty and disease and make people's longing for a better life a reality in the era of longevity is what the country, society, and enterprises are thinking about. The era of longevity is also an era of health and wealth. It will not only profoundly transform the human society and economy but also inspire new solutions. Only when people from all walks of life have insights into the changes of human society in the era of longevity can they prepare for those changes in advance. The future of the era of longevity depends on the actions of all parties, including individuals, governments, and enterprises. Let us create a beautiful society collectively in which everyone can enjoy the gift of longevity!

Acknowledgments

Over the past years, I've traveled back and forth for numerous times between my thinking, putting my thinking to practice, and adjusting my theories based on the practical experience. *The Era of Longevity* is the work refined over and over in that process. Innovation, whether of business model or theoretical system, does not happen overnight. It must come from the collection of bits and pieces of learning, thinking, and practice. Hereby, I would like to thank my partners at Taikang especially, who have been there with me for more than 20 years. To some extent, this book is written for them.

The Era of Longevity spans multiple disciplines and industries. The mass of facts and conclusions in the book are cited and proposed from a multidisciplinary perspective. The intellectual support required by its completion was enormous. There are a dozen employees in Taikang's "Super Brain", which is our Strategic Development Department. They were deeply involved in the research and compilation of this book under my leadership. Their professional backgrounds cover multiple disciplines, such as economics, demography, public health, clinical medicine, and public policy. In the writing of this book, we worked together in depth, made careful verifications, and devoted a great deal of time and energy to providing necessary data, cases, and references. Their professional capability and diligence moved me deeply. The team is led by the head of the department, Dr. Li Mingqiang. The names of team members are Wang Shan, Zhu Ruohua, Dr. Cao Zhili, Chen Chong, Ma Xiaoxing, Ma Tunan, Ma Ying, Li Yuyu, Dr. Liu Zeyu, Dr. Mei Jing, Wang Mengzhen, Wang Ruobing, Xi Ziyao, Yin Tong, Yan Huan, and Dr. Sun Xuanxuan. Thank you all for your great contribution!

The second half of the book focuses on telling Taikang's 25 years of growth, which is a practical process of exploring the optimal solution to the Era of Longevity. When describing Taikang's entrepreneurial history and expounding its business model and logic, scenes of the past would often rush back to me. Those are the days and nights of hard work I spent with Taikang's start-up team for over 20 years. Taikang's start-up team includes those who traveled overseas with me on field trips: We visited elderly care communities, main executives, and colleagues in relevant administration. The team also includes the support groups who did not travel abroad with me at that time

but provided support to us from China and so many more Taikang people. Taikang is a genetically innovative enterprise. We started as a traditional life insurance company and developed into what we are today. Every time we entered into a new field, it was a whole new start-up business for us, and each success was the result of our team's collective wisdom and hard work. I want to thank everyone deeply. I cannot list all their names here, but without the efforts of each of them, Taikang would not have been where we are now, nor would it have been possible to put forward the theory of the Era of Longevity or launch the Taikang Plan. In addition, I would also like to thank Taikang's previous board members, who contributed their expertise to lead the direction of Taikang's development, ensuring that Taikang maintained a stable operation in rapid development while making continuous innovations.

Chapters 5–7 introduce a special group—the Taikang residents. The relationship between Taikang Community and Taikang residents is far more profound than those between ordinary enterprises and customers. It is safe to say that if there were no Taikang residents, there would be neither Taikang Community brand nor Taikang's achievements in exploring the elderly care revolution. I want to thank all Taikang residents for their understanding and trust over the years. They expressed their attitudes toward life with the most “fashionable” lifestyles, and they are the true owners of Taikang Community and Longevity Economy pilots. Thanks to them, and a special thanks to the protagonists who share their community experiences in this book. In addition, in the writing of this book, I made reference to *Everybody Talks in the Age of Longevity*, *Shenyuan Elders Talk About Life*, *Shenyuan Impressions* and *Shuyuan Story*, and other books written by Taikang residents. Their profound insights proposed in these books are immensely inspiring to me.

After the draft of this book was completed, we invited anonymous experts to review the academic part of the book to ensure that the academic content was professional and rigorous. Their inputs and suggestions were professional and pertinent, which greatly contributed to the finalization of the book. In addition, I would like to thank the internal reviewers Zhou Lisheng, Zhao Liwen, and Tian Xin. Colleagues involved in editing, proofreading, imaging, and data collection include Liu Tingjun, Qiu Jianwei, Liu Shuqin, Chen Ping, Chen Yilun, Chen Li, Ge Ming, Xiao Xinhui, Tao Junqing, Chen Mo, He Rui, Wang Chao, etc. My thanks also go to Miao Li, Wu Zhonggang, Gu Angsheng, Lv Jiatai, and related departments of Taikang for their support during the publication of this book. My sincere thanks to them again.

Finally, I would like to take this opportunity to express my gratitude to CITIC Press Group, especially Ms. Shen Jiale, chief planner of this book, and editors Xu Lina and Fu Yingyue. This is my second time working with CITIC Press Group, and I would like to thank the colleagues from all departments of the publisher for their hard work in proofreading, typesetting, and design. Some of the words and expressions in the book were selected and determined through repeated discussions and deliberations. I was deeply impressed by and grateful for their pursuit of excellence and for that I want to pay my tribute.

Thanks again to everyone who contributed to the writing and publishing of this book!

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About the Author

Dongsheng Chen born in Tianmen, Hubei Province, China, in 1957, Dongsheng Chen holds a Ph.D. in economics from Wuhan University and is Founder of China Guardian Auctions and Taikang Life Insurance. He is currently Chairman and CEO of Taikang Insurance Group. After graduating from Wuhan University in 1983, he successively engaged in research work in China's Ministry of Foreign Trade and Economic Cooperation and the Development Research Center of the State Council. The enterprise evaluation and ranking campaign he initiated, *China's 500 largest enterprises*, was the first of its kind in China. In 1993, he took the lead in establishing China Guardian International Auction Co., Ltd., a joint-stock auction house in line with international standards. In 1996, he founded Taikang Life Insurance Co., Ltd., which was reorganized into Taikang Insurance Group Co., Ltd. in 2016 and has been ranked among the Fortune Global 500 since 2018.

Dongsheng Chen is a representative of the "1992 School" entrepreneurs. He was awarded as one of the "100 Outstanding Private Entrepreneurs in the 40 Years of Reform and Opening Up" and "The Fifth National Outstanding Builders of Socialism with Chinese Characteristics for Nonpublic Economic Persons". In 2020, he was commended as one of the "Advanced Individuals in the Private Economy of the National Fight against the COVID-19 Epidemic". He served as Chairman of Yabuli China Entrepreneurs Forum, Chairman of the Chushang Federation of Hubei Province, Chairman of the Wuhan University Alumni Entrepreneurs Association, etc. He also serves as Doctoral Tutor at the Economics and Management School of Wuhan University and the Dong Fureng Institute of Economic and Social Development.

Chapter 1

Longevity Era and Centenary Life



In the past 30 years, I have visited many countries and regions in the world and noticed that there are huge differences in the age structure of the population and its evolution process between different places. What impresses me most is a presentation I saw about demographic change during my visit to Helios, Germany's largest private medical care group, in 2016. A set of pictures depicts the evolution process of the European population age structure: it began as a pyramid and then gradually changed into a column with the same proportion of the population of all ages, and the population no longer increased significantly. This made me feel a lot. Through reverse thinking, I suddenly realized that the columnar age structure of the population is very common in developed societies, and it is almost impossible to return to the pyramid structure.

In fact, looking back in history, mankind was in an equilibrium state of extremely slow population growth for more than 100 thousand years. Only in the past 300 years has the process of industrialization and urbanization been underway. Science and technology have developed rapidly, the economy has continued to prosper, and the population has increased very fast. However, looking ahead, the population surge in the past 300 years was only a very short and special period. The huge momentum of population growth is declining rapidly. In the twenty-first century, the global population is likely to peak, and then human society will enter a new equilibrium state in which the population will no longer grow or even decline slowly for a long time. When the new population equilibrium comes, what will happen in the world?

In the past, people were keen to discuss the difficulties brought by overpopulation, but now there are more discussions about how to face the problems of population aging and population decline. Some people often take the increase in the elderly population as a bad thing and look at the phenomenon caused by population death and the decline in the fertility rate negatively. In fact, we should realize that the pyramid structure of the population is not the normal development of human society, and the deepening aging society is also only a stage of the change in population age structure. The change in the population age structure is essentially the result of the joint action of the two core driving forces of mortality and fertility. Only

when we have a full understanding of the basic characteristics of the new population equilibrium in the era of longevity can we gain deeper insights into future economic and social changes.

1.1 In the Era of Longevity, Population Growth and Structure Have Reached a New Equilibrium

The World is Aging Rapidly and the Population Will Peak Ahead of Time

According to the UN *World Population Prospects 2019*, the average life expectancy of the world population in 2019 reached 72.6 years, an increase of 8.4 years since 1990. Among high-income countries, life expectancy in Japan has reached 84.6 years. China, as an above-average middle-income country, has a life expectancy of 77.3 years. It is estimated that the average life expectancy of the global population is expected to reach 77.1 years in 2050. By then, the proportion of people aged 65 and above will have reached 15.9%. At the same time, the growth rate of the elderly aged 80 and above will exceed that of the young elderly, and the population of those elderly people will reach 426 million by 2050, three times the number in 2019.

The median age of the population¹ is similar to the “center of gravity” of the population age structure, through which we can simply see the speed and degree of population aging. In the middle and late twentieth century, the whole world was getting older, but the speed of each country was very different (see Table 1.1). A slight comparison will show that compared with European and American countries, the aged population of East Asian countries is growing faster, and the change in population age structure is more drastic. In 1960, the median age of the UK population reached 35.6 years. In 2020, 60 years later, it only increased slowly by 4.9 years. During the same period, the median age of the population in the US increased by 8.6 years, while in Japan, the number jumped by 23 years, close to half a hundred. In China, the growth of the number was not small either, increasing by 17.1 years.

With population aging, countries and regions, such as Germany, Japan, and Russia, have seen negative population growth. Although the total global population is still increasing, the growth momentum has declined significantly. The fertility rate of an increasing number of countries is beginning to be lower than the replacement level² of keeping the population unchanged; that is, the average number of children delivered by a woman is less than 2.1. When the number of global births is less than the number of deaths, the world population will stop growing. Since the long-term trend of death rate decline is relatively stable, the global population peak basically depends on the rate of decline in the fertility rate in the future.

¹ The median age of population refers to the middle age of the entire population in order of age.

² The replacement level is the level at which women in a given country or region have exactly the same number of children as the number of their spouses and themselves, usually defined as 2.1 children per woman, taking into account causes such as newborn deaths. Below the replacement level, the population decreases. Above the replacement level, the population increases.

Table 1.1 Different countries' life expectancies and median age of population at different times

	Life expectancy		Median age of population	
	1960	2019	1960	2019
World	52.5	72.6	22.6	30.9
The United Kingdom	71.1	81.2	35.6	40.5
The United States	69.7	78.8	29.7	38.3
Japan	67.7	84.6	25.4	48.4
China	57	77.3	21.3	38.4

Source The UN World Population Prospects 2019 database, The Statistical Bulletin for China's Health Care Development in 2019 released by National Health Commission of China, World Bank, Our World in Data database, U.S. Centers for Disease Control and Prevention, and National Bureau of Statistics of China

Note The life expectancy of China's population in 1960 is the number of 1957 released by the National Bureau of Statistics of China

Some scholars believe that negative global population growth will come very soon. According to the research of the University of Washington, the global population will reach a peak of 9.7 billion in 2064, and then the negative growth will begin. By the end of the twenty-first century, the global population will fall below 9 billion. The UN's prediction based on the medium fertility rate assumption is relatively optimistic. It is believed that the world population will stop growing when it reaches 10.9 billion in 2100. The difference in population prediction between the two mainly lies in the different expectations of the future fertility rate.

China has always been the most populous country in the world. According to the data of the Seventh National Population Census, China's total population was 1.41 billion in 2020, which continued to grow. However, the number of births has decreased to 12 million, 2.6 million less than the number forecasted by the National Bureau of Statistics in 2019. According to this estimation, China's newly born population is likely to fall to approximately 10 million within a few years, which will be almost the same as the deaths in the same period. At that time, China's population will reach its peak and will not increase afterwards. In the past, many scholars proposed that China's population would peak between 2025 and 2030. Now, it seems that the peak is likely to be advanced.

Negative population growth will lead to a series of socioeconomic consequences. Darrell Bricker put forward in the book *Empty Planet* that due to the sharp decline of the population, mankind is likely to face an empty planet in the future. It is not natural resources that will be exhausted, but human beings. Will this almost sci-fi imagination truly become a reality? Fortunately, even if the population starts to decline, halving it will take quite a long time. Mankind is good at learning and adapting. In the foreseeable future, we can learn from the experience of Japan and other pioneering countries in the era of longevity to better meet the challenges brought by changes in population. The fourth chapter of this book will conduct an in-depth analysis of Japan's society and economy.

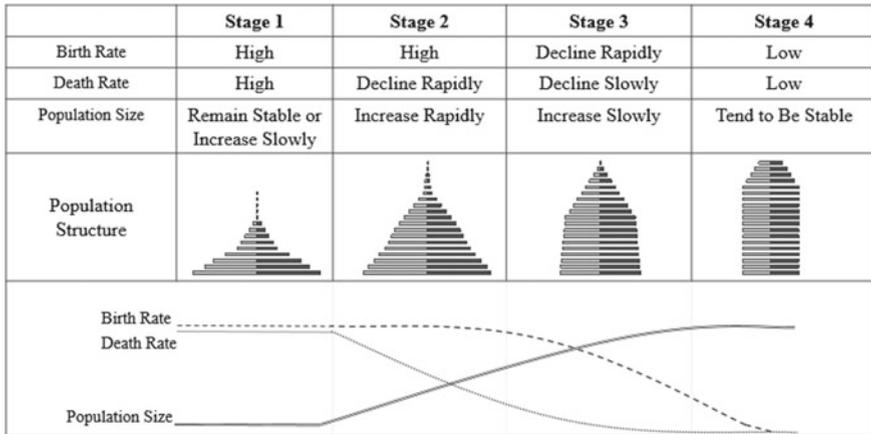


Fig. 1.1 Four stages of population transition. *Source* Our world in data database, collated by the author

Population Age Structure Morphing from Pyramid to Column

Behind the population size and age structure is the change in the death rate and fertility rate. Human society is undergoing a transition from high mortality and high fertility to low mortality and low fertility.³

The phenomenon of population “aging” and “decline” described above is the result of this transition. The “demographic transition theory”, first proposed by the US demographer Warren Thompson in 1929 and later evolved over a long period of time, is the most classic description of this transition.

Under classic population transition theory, the evolution process of the population age structure is divided into four stages (see Fig. 1.1). The first stage is characterized by a high death rate and high birth rate, with the population staying unchanged in size or experiencing extremely slow growth. The second stage shows that the death rate begins to decline, while the birth rate remains high, so the population increases rapidly. In the third stage, while the death rate remains low, the birth rate begins to decline, and population growth slows down. The fourth stage is characterized by a low death rate and low birth rate, and the population size tends to be stable.

Based on the changes in the death rate and birth rate in the above four stages, the historical phases of human development corresponding to each stage can be roughly matched.

The first stage corresponds to the hunting-gathering era and the agricultural society. The death rate of infants and adolescents was high, and the population growth was extremely slow.

³ The death rate here is the crude death rate, which is the average number of deaths per 1000 people in a given period of time (usually within a year) in a country or region. The birth rate is the crude birth rate, which is the average number of births per thousand people in a given period of time (usually within a year) in a country or region.

The second stage corresponds to the early industrial era, which was characterized by high population growth. The pyramid shape of the population age structure is widely known. The most representative examples are China and India after World War II. While the death rate decreased rapidly, the birth rate remained high, so the population grew rapidly. The total population of the two countries successively exceeded 1 billion.

The third stage corresponds to the middle and late industrial era. At this time, the death rate dropped to a low level, and the birth rate also began to decline rapidly, resulting in a narrowed base of the population pyramid. In fact, the vast majority of countries with a high level of industrialization in the world have already gone through the third stage, while some newly industrialized countries are now in this stage.

The fourth stage is the period of low death rate and low birth rate. At this time, the base of the population age structure narrows faster, changing from a typical pyramid to a column. The population of all age groups tends to be the same. A sign of the columnar transformation of the population age structure is that the proportion of the elderly population catches up with the proportion of the youth population. At present, many mature industrialized countries are in or about to be in the fourth stage, such as the UK and Germany.

We believe that the longevity era is actually an extension of the fourth stage under traditional population transition theory and that there will be a new equilibrium state of population transition in the era. Now, it is difficult to draw a precise conclusion on what the population age structure will be like at that time. Although the trend of the death rate is generally clear, it is difficult to predict the trend of the birth rate, especially the pace of the changes. Due to the continuous extension of human life, the center of the column structure will move upward. If the birth rate continues to be significantly lower than the replacement level for a long time, the total population will decrease, and the base of the column structure will narrow further. Then, the population age structure becomes the shape of an inverted trapezoid.

By comparing the changes in the population age structure in the UK, the US, Japan and China in the past 100 years, we can more directly sense the differences in their population age composition in the past, at present and in the future.

In Europe, where the Industrial Revolution first took place, the death rate and the birth rate were also the first to change. The population transition in the UK from the third stage to the fourth stage began at the eve of the Second World War. In 1950, the bottom of the age structure of the UK population was obviously rectangular. In 2020, the column took shape. By 2050, with the further extension of life expectancy and the continuous increase in the proportion of elderly individuals, the age structure of the population in the UK will be in the shape of a slim column, and the population size will be basically stable (see Fig. 1.2).

The US has a more open immigration policy and a higher birth rate, so its population is slightly younger than that of the UK. At present, the population of the United States is still growing, but the growth rate is declining significantly. According to the results of the 2020 U.S. Census, the U.S. population growth rate dropped to 7.4% between 2010 and 2020, which is second only to the historical low during the 10 years after the Great Depression from 1930 to 1940. By 2050, the columnar shape



Fig. 1.2 Comparison of the age structure of the UK population in different periods. *Source* The UN world population prospects 2019 database

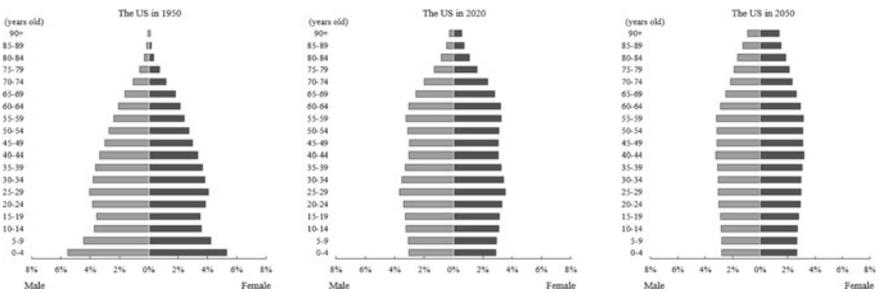


Fig. 1.3 Comparison of the age structure of the US population in different periods. *Source* The UN world population prospects 2019 database

of the age structure of the U.S. population will also become more pronounced (see Fig. 1.3).

Unlike the UK and the US, which were among the first countries to begin industrialization, Japan has almost completed the demographic transition from the second stage to the fourth stage in a very short time. It can be seen that the age structure of Japan’s population in 1950 was a typical pyramid. After a short baby boom after World War II, its birth rate began to decline sharply. Japan entered a stage of population decline after its population peaked in 2008. In 2020, the age structure of Japan’s population was even worse than a columnar structure. In 2050, the age structure will be an obvious inverted trapezoid (see Fig. 1.4).

After the founding of the People’s Republic of China, against the background of encouraging more births, China has maintained a high birth rate for nearly two decades. In the 1950s and 1960s, China ushered in two waves of baby booms with an average annual number of new births of more than 20 million, and many families had five to six children. In the 1970s, China’s birth rate began to decline rapidly. In 1980, total fertility rate, that is, the average number of children delivered per woman during childbearing age, fell to less than 3. With the introduction of the strict family planning policy in the 1980s, China’s total fertility rate further declined. Nevertheless, from 1981 to 1997, the first two waves of baby boomers entered their

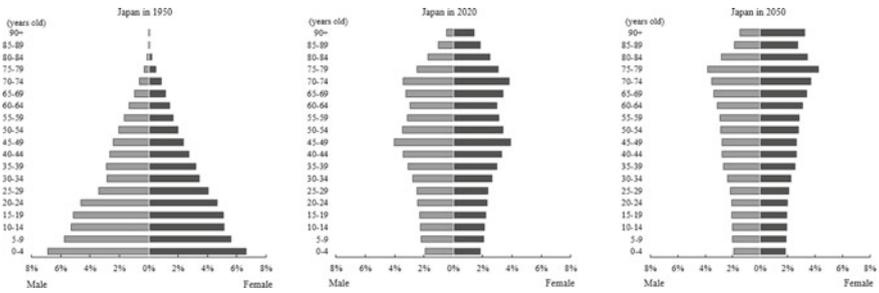


Fig. 1.4 Comparison of the age structure of the Japanese population in different periods. *Source* The UN world population prospects 2019 database

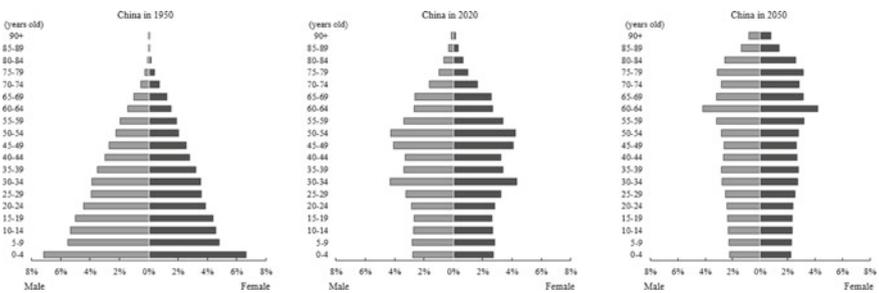


Fig. 1.5 Comparison of China’s population age structure in different periods. *Source* The UN world population prospects 2019 database

reproductive age, which still brought the third peak of new births. After more than two decades, even if the universal two-child policy was introduced in 2015, there were no large-scale baby booms. According to the prediction of the UN, the age structure of China’s population will become a columnar shape in 2050. However, the results of the Seventh National Census show that the number of total new births per woman in China fell to 1.3 in 2020, which was lower than the alarming level of the so-called low fertility trap⁴ internationally. In the long run, China’s population age structure is likely to be more similar to that of Japan (see Fig. 1.5).

The population age structure’s morphing from pyramid to column will have a profound impact on all aspects of society. In the process of this transition, the huge newborn population at the bottom of the pyramid will gradually become the main force of social production and consumption over time. When these people enter middle age to buy houses, the real estate industry will boom. When these people enter old age, the elderly care and health care industries will usher in huge development opportunities. However, when the waves of population tide recedes and the population

⁴ The low fertility trap was first proposed in 2005 by Wolfgang Lutz, an Austrian academic, and others, and has since been widely used. The core idea is that once a country or region’s total fertility rate falls below 1.5, it becomes very difficult to rebound above it.

age structure becomes a column, the industries that rise with the population tide need to be adjusted, and some industries will even decline.

In the process of population age structure morphing into a column, the most noteworthy is the end of the third stage of population transition. At this time, the birth rate decreased rapidly, resulting in a decline in the proportion of minor dependents. As baby boomers enter the working age, the whole society is in the stage of the most abundant labor force, and the working population accounts for the majority of the total population. The increase in labor supply and the promotion of the savings rate will create unique development opportunities for economic growth from the perspectives of both human resources and capital. In economics, this kind of economic growth is called the demographic dividend⁵ because the number and proportion of the working age population grow faster than those of other age groups.

China is undoubtedly a global model for making full use of the demographic dividend. In the 1990s, the total dependency ratio of China's population, that is, the ratio of the elderly and young population who need to be supported to the working age population, fell below 50%. China thus began its demographic dividend period. With the rapid development of urbanization, a large number of laborers in rural areas continued to flow into urban areas, forming a special group of migrant workers. According to the 2020 Migrant Workers Monitoring Survey Report issued by the National Bureau of Statistics, the number of migrant workers in China reached its peak in 2019, approaching 300 million. As China has a tradition of reuniting with family members on New Year's Eve, this huge group of people would choose to go back home in the run-up to the Spring Festival, forming a Spring Festival transportation that can be called "a rare global population flow". With the growth of the working population, increasing access to education for all has improved human capital. The improvement of medical treatment and public health conditions has improved the health capital of the labor force, and the enabling environment brought by the reform and opening-up policy has unleashed the demographic dividend. China's economy has continued to grow at a high speed and has maintained its obvious advantages in the process of globalization. However, this dividend brought by the population size has always been only a temporary phenomenon in the process of population transition. We cannot help but asking, is the demographic dividend temporary? After the huge working age population retires, will the demographic dividend become a demographic liability? In the last section of this chapter, we will continue to discuss this issue.

A Society in Which the Elderly Account for a Quarter

In the era of longevity, the proportion of the elderly population will exceed one quarter of the total population for a long time. According to the data of the United Nations, both developed countries in Europe and the United States, emerging developed countries in Asia such as Japan and South Korea, and developing countries such

⁵ It is generally believed that the period when the total dependency ratio of population is less than 50% is the demographic dividend period.

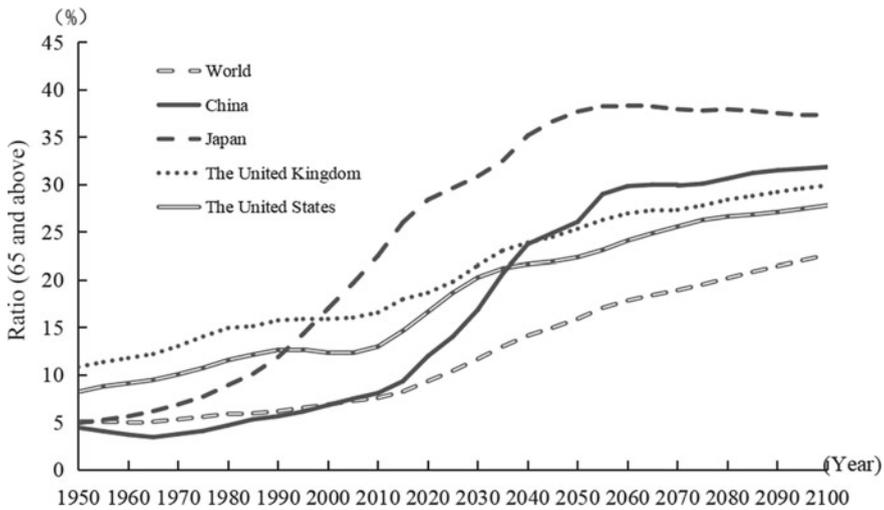


Fig. 1.6 Trends in the proportion of people aged 65 and above in different countries. *Source* The UN world population prospects 2019 database

as China, despite their different population transition paces and stages, the proportion of elderly individuals aged 65 and above will exceed 25% by the middle of the twenty-first century and will remain at that level for a long time (see Fig. 1.6).

The emergence of this high proportion mainly depends on two factors: on the one hand, the decline in the death rate will increase the elderly population; on the other hand, the low birth rate will lead to a decrease in the proportion of young people. A noteworthy phenomenon is that the decline in birth rate is closely related to the increase in the proportion of the elderly population. As American scholar John Weeks pointed out in the classic textbook *Population: An Introduction to Concepts and Issues*, the decline in death rate will inevitably increase the number of elderly individuals, while the proportion of elderly individuals aged 65 and above will rise significantly only on the premise of the decline in birth rate.

Due to its huge population, China has always been the country with the largest population of the old in the world. However, in the past, the proportion of the old population was not as high as it is now and did not attract much social attention. Today, the number and proportion of China's elderly population are growing rapidly. The results of the Seventh National Census show that in 2020, China's population aged 65 and above reached 191 million, accounting for 13.5%, and China soon became an aged society. *China Development Report 2020—Population Aging: China's Development Trend and Policy Options* released by the China Development Research Foundation predicted that China's population aged 65 and above would reach 310 million in 2035, accounting for 22.3%, and 380 million in 2050, accounting for 27.9%. It is worth noting that from the census data, we will usher in the aged society faster than previously predicted.

With the improvement of the overall health condition of the public and the continuous extension of the human life span, society has further divided the traditionally called elderly people. People between 65 and 79 are now commonly referred to as the young elderly, who remain in good physical and mental condition. People aged 80 and above are called the older elderly, and their demand for life care and medical treatment will increase significantly. According to the UN, in 2020, the older elderly in Japan accounted for 32% of the total elderly population, that is, one-third of the elderly population. In the US and the UK, older elderly individuals also account for approximately 25% of the overall elderly population.

At present, the growth of China's aged population is dominated by the growth of the young elderly, and the growth rate of the older elderly is slightly slower than the overall population aging. However, by approximately 2030, the older elderly will become the fastest growing group of the elderly population. With the generation born in the 1950s and 1960s entering the older elderly group, the older elderly will become increasingly prominent in the future population age structure. According to the *China Development Report 2020—Population Aging: China's Development Trend and Policy Options*, in 2010, China's population aged 80 and above was less than 20 million, but this number reached approximately 30 million in 2020. Moving forward, the growth rate of the older elderly population will be faster. It is expected that by 2033, this number will double to more than 60 million, and its proportion will exceed one-fifth of the elderly population. After that, the proportion of the older elderly will continue to rise rapidly and become the fastest growing group in the whole elderly population. In a society with more than a quarter of the elderly population and a high proportion of the older elderly, the economic fabrics of the whole society need to be adjusted, transformed and rebuilt. Otherwise, the burden of health care, family care and finance will not only overwhelm individuals and families but also make government finance unsustainable. This requires individuals, governments and enterprises to work together to find solutions.

Can Cities Usher in New Prosperity?

Industrialization is the main driving force of urbanization. The outbreak of the Industrial Revolution in the 1760s promoted the flow of population and urbanization. Prosperous large cities and super city groups emerged. Today, more than 80% of people in high-income countries live in cities. In above-average middle-income countries, this proportion is also 50% to 80%. The results of the Seventh National Census show that the urbanization rate of China's population is accelerating. In 2020, the urbanization rate of permanent residents reached 63.9%, added by more than 14% points to that of 2010. This number is still on the rise. In addition, we have also seen the trend of further concentration of China's population to large and medium-sized cities, especially to the urban agglomeration in the southeast.

Urban prosperity is not static. With societal development, the progress of industry and the transfer of emerging technologies, the urban population structure will also change. Because the population is concentrated in employment and employment is concentrated with the population, the population structure can be the barometer of urban development. In the middle and late twentieth century, European and American

developed countries and Japan completed industrialization one after another and entered the post-industrialization era. The employed population in New York, London and other mega-cities has been reorganized into high-tech economic industries, which has made the economy maintain sustained prosperity and the population structure still relatively young. According to census data from Japan in 2015, the continuous net inflow of the population made the proportion of the working age population aged 15–64 in the Tokyo metropolitan area reach 66%, which was significantly higher than the national average. Accordingly, the proportion of the elderly population in Tokyo was significantly lower than the national average.

However, other former manufacturing centers have fallen behind. From industrial boom to decline, the once glorious metropolises were reduced to the “rust belt”. Pittsburgh in the mid-nineteenth century was known as the Steel City of the US. As long as a young newcomer found a job in a factory there, he could buy a house before getting 30. However, in the 1970s, the economic depression in the US led to the decline of domestic demand, coupled with more international competition from overseas, Pittsburgh’s steel industry began to have overcapacity and the urban economy declined. At its prime time in the 1950s, Pittsburgh’s population once peaked of 680,000. However, in 1990, its population was only 370,000, down by nearly 50%. In particular, young people left the city one after another, resulting in Pittsburgh becoming the second oldest city in the US in the early twenty-first century. Therefore, Pittsburgh has adopted a series of revitalization plans for industrial transformation. Now Pittsburgh has changed from a Steel City to a city characterized by high-tech R&D. Over the past 10 years, the growth rate of Pittsburgh’s elderly population has slowed down significantly, and the rate has been less than half of the average of the US during the same period. In the future, the proportion of Pittsburgh’s elderly population is expected to decrease further.

In fact, China’s three northeastern provinces are facing challenges similar to the “rust belt”. The results of the Seventh National Census show that the permanent resident population of the three northeastern provinces is 98.51 million, a decrease of 11.01 million since 2010. Harbin has also become the only provincial capital city with a population decrease in the past 10 years. The decline in the birth rate and the outflow of the young labor force have exacerbated the population aging in the three northeastern provinces. The proportion of the elderly population has reached 16.4%, higher than the national average.

Are towns where the elderly gather doomed to decline? Of course not. The Villages in Florida, the US, is a town built for active elderly care. What we have seen is evidence of prosperity. Driven by commercial real estate, The Village has established a super large-scale elderly care community in three counties within an area of more than 100 km², attracting more than 100,000 retirees from all over the country to live and forming a booming community. We will introduce the situation there in detail in Chap. 5.

1.2 Why is Centenary Life Becoming Increasingly Common?

In 2020, COVID-19 ravaged the world, and millions of people lost their lives. The world was clouded by the shadow of the virus. We live in today's modern society and feel strange to diseases with high infectivity and mortality. This time, however, COVID-19 has made us realize once again the destructive power of infectious diseases and the fragility of life.

In the long history of human beings, in addition to acute infectious diseases, hunger, war and natural disasters have seriously affected human survival. Most people did not make it to adolescence, and the life span was not nearly as long as now. Since the Industrial Revolution, with the rapid development of society and the continuous progress of science and technology, those once life-threatening "monsters" have gradually been under control by human beings. Today, centenary life is no longer so rare.

At the beginning of the Industrial Revolution, people's life expectancy was less than 30 years old. In the twenty-first century, the life expectancy of the global population has exceeded 70 years. The UN World Population Prospects 2019 report points out that the life expectancy of the global population is expected to reach 77.1 years in 2050. In fact, the growth of life expectancy of the global population is unbalanced. The average life expectancy of the population of middle- and high-income OECD (Organization for Economic Co-operation and Development) countries reached 80.7 years in 2017. In 2020, the years left for people who have just reached the age of 65 in these countries was close to 20 years, that is, their life expectancy would be close to 85 years. In their book *The 100-Year Life: Living and Working in an Age of Longevity*, Lynda Gratton and Andrew Scott note that millennials in developed countries such as the US, the UK and Japan will have a more than 50% chance of reaching 100 years old. According to the current trend of life expectancy growth, this is by all means possible.

Getting Out of the Malthusian Trap

As observed by Malthus, a British demographer at that time, before the outbreak of the Industrial Revolution, mankind failed to eliminate the constraints of natural resources and the environment, although agricultural civilization promoted the slow growth of the population. Life expectancy did not improve significantly over ten thousand years in history. In the era of hunting and gathering, human beings had no fixed place to live. The harsh living environment makes human mortality extremely high and life expectancy extremely low, with an average of only approximately 20 years old. The population scale was seriously restricted by the external living environment. By the year 10,000 BC, the global population still had not exceeded 4 million.

Approximately 8000 BC, mankind entered the agricultural society and gradually mastered the skills of using natural resources through intensive production. The development of agriculture and animal husbandry has improved the productivity of making food and gradually enhanced the stability of the food supply. At the

same time, people's living conditions, living standards and social environment have been improved accordingly. Human mortality has decreased to some extent, life expectancy has increased slightly, and the population has expanded slowly. By 1750, on the eve of the industrial revolution, the global population had reached 750 million, but the average life expectancy was still hovering at approximately 30 years old.

Compared with the hunting and gathering era, agricultural production has increased the food supply, but famine still occurred frequently, with infectious diseases being more prevalent in densely populated cities and towns. For example, the Black Death, which broke out in the fourteenth century, swept across Europe for more than 200 years and did not dissipate until the mid-seventeenth century. The plague not only caused the loss of almost half of the European population and a high death toll of 75 million but also had a profound impact on the politics, economy and culture of the whole society.

In the late agricultural society, i.e., before the industrial era, the European population grew rapidly and began to overwhelm the carrying capacity of nature. In 1798, Malthus, a British scholar, put forward in his book *An Essay on the Principle of Population* that the population increased geometrically, while food production increased arithmetically. Once the population grew faster than the food supply capacity, the surplus population would be eliminated by war, famine and plague, which would eventually stagnate the population growth. Malthus observed the dilemma of human development in agricultural society, but from today's perspective, he did not have insight into the productivity change that industrial civilization would bring about.

The industrial revolution in the mid-eighteenth century helped the population growth break through the carrying capacity limit of agricultural society's resources and led to an unprecedented explosive growth of the global population (see Fig. 1.7). With the change in productivity, the history of human civilization has also turned a new page. The decline in human mortality in industrial society came from improvements in living standards and nutrition. Industrial civilization liberated and developed productive forces, which greatly strengthened the food supply and its stability. With increased calorie and nutrition intake, the human ability to resist disease risks was improved.

Based on early demographic information, Western scholars found that from 1750 to 1900, the life expectancy of British people increased from 37 to 48 years old, while French life expectancy increased from 26 to 46 years old. Thomas McKeown, a British scholar, noted that the decline in mortality in Britain in the nineteenth century was due to the improvement of economic and social conditions, the most important of which was the improvement of food. Robert W. Fogel, the American Nobel Laureate in economics, has also conducted in-depth research on this phenomenon. He found that the increase in food per capita brought about by the industrial revolution was the most important factor in the significant extension of human life expectancy during this period.

The Dawn of Science Drove Away the Haze of Death

In the nineteenth century, urbanization in Europe and the US accelerated population aggregation. However, along with the prosperity of cities, a series of city

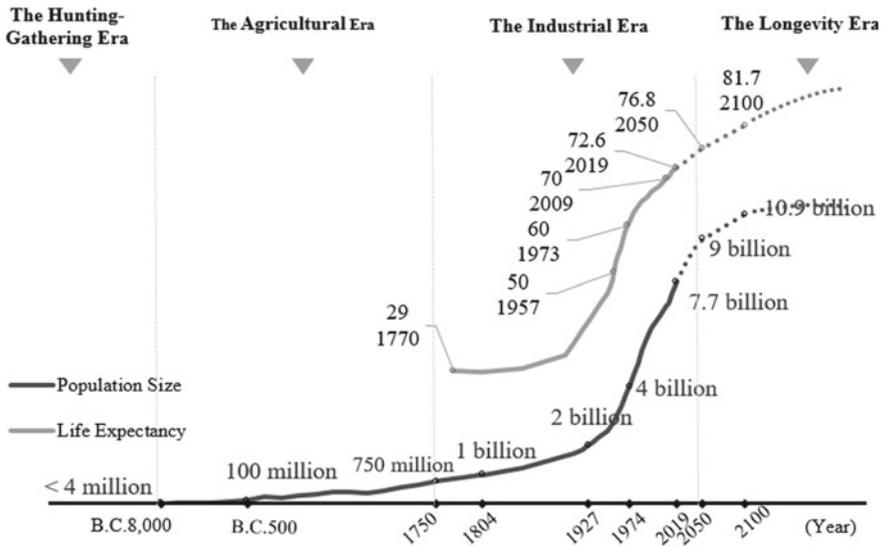


Fig. 1.7 Explosive population growth brought about by industrial civilization. *Source* Our world in data database, the UN world population prospects 2019 database, World Bank, population: an introduction to concepts and issues (John Weeks, the 11th Edition), collated by the authors

problems emerged. As cities witnessed more frequent and intensive outbreaks of infectious diseases, the mortality rate in large cities was once higher than that in rural areas. This phenomenon was called the “urban penalty”. In the mid- and late nineteenth century, with the development of science and technology and the popularization of the concept of public health, people began to gradually master the prevention and control of infectious diseases. John Snow, a British doctor, was one of the pioneers in public health. In the nineteenth century, cholera, which was highly infectious and lethal, occurred many times all over the world. People once had divergent opinions on its causes. It was not until 1854 that John Snow drew a map based on the local cholera epidemic in London and traced the spread of the disease. He found that the source of transmission was located in a public water source polluted by sewage, which scientifically proved that cholera was transmitted through drinking water. When Dr. Snow persuaded the local government to shut down the water source, the cholera epidemic disappeared. Public health does not only entail reducing the mortality rate through medical treatment. In this classic case of cholera, Dr. Snow in fact used statistical methods to determine the cause and then intervened to block the spread of the epidemic.

A study conducted by David Cutler of Harvard University shows that from 1900 to 1940, due to the effective control of infectious diseases transmitted through water and air, the overall mortality rate in the U.S. decreased by 40%, and the life expectancy of Americans extended from 47 to 63 years old. The wide application of water purification, filtration and chlorination systems, which are seemingly simple, has

played a vital role. The problem of higher mortality rates in urban areas in the past disappeared during this period.

In agricultural society, people once believed that disease was related to morality or religion. With the advent of the industrial revolution, people began to recognize and approach disease and death in a more scientific and rational way. In the twentieth century, with the popularization of the concept of public health, the field of modern medicine also developed rapidly. On the one hand, diagnosis and surgery have been continuously improved. On the other hand, the research, development and application of drugs have developed rapidly. Before the 1940s, there was nothing humans could do about bacterial infection. In 1928, the British doctor Alexander Fleming found that penicillin had an antibacterial effect. As the Second World War broke out later, a large number of wounded people were in urgent need of anti-infection treatment. Penicillin was thus industrialized and mass produced. This saved a huge amount of lives and drew the curtain of human resistance to infectious diseases.

Bacteria and viruses are the two main categories in the microbial community. In the twentieth century, people have gradually mastered the prevention and treatment of bacterial diseases, and viral infectious diseases have subsequently become the primary diseases threatening human society. To date, effective treatments for many viral diseases are lacking. The 1918 Flu Pandemic (also known as the Spanish Flu) caused 500 million to 1 billion infections and 50 million to 100 million deaths. Today, seasonal flu, seemingly ordinary, still causes 3 million to 5 million severe cases and 290,000 to 650,000 deaths every year. AIDS, which is well known by people, was discovered in the early 1980s. By 2019, there were approximately 1.7 million new HIV infections worldwide and 690,000 deaths from AIDS-related diseases. In 2020, the COVID-19 pandemic broke out worldwide. As of the end of May 2021, 170 million people were infected, and millions had died.

Fortunately, humankind's ability to cope with infectious diseases has been greatly enhanced from the inability to do anything in the early days. Smallpox has plagued humans for at least 3000 years. In 1796, Edward Jenner, the British doctor and "the father of immunity", successfully inoculated the smallpox slurry of a female worker suffering from bovine smallpox on a boy; then, in 1980, the World Health Organization announced that smallpox had been completely eliminated. From 1796 to 1980, humankind spent 184 years fighting smallpox. When facing the COVID-19 pandemic in 2020, the vaccine development rate around the globe was unprecedented. Scientists have developed a variety of COVID-19 vaccines in only one year. It is worth noting that China's experience has also proven that nonmedical approaches such as social mobilization, digitization and Internet technology can also play important or even decisive roles in disease prevention and treatment.

Currently, the relationship between medical and technological development and the decline in mortality has become increasingly closer. Cardiovascular diseases, cancer, AIDS and other diseases are gradually turning from fatal to controllable chronic. From the perspective of the development of global health, the threat of death from infectious diseases is diminishing. In contrast, chronic diseases have become the main threat to human health. The treatment of chronic diseases has begun to play an important role in improving life expectancy. A study conducted by the Maryaline

Catillon of Harvard University pointed out that the decline in mortality rate in the U.S. since the 1950s was largely due to the reduction in the mortality rate from heart disease and stroke. From 1950 to 2016, American life expectancy increased by 11 years. More than half of the increase can be attributed to the improvement in the survival rate of people aged 65 years old and above. Cancer, once considered fatal, is gradually becoming chronic. The treatment of tumors has developed from traditional radiotherapy and chemotherapy to targeted therapy. Traditional chemotherapy drugs are similar to nuclear bombs, which remove normal body cells and cancer cells at the same time. Targeted drugs are similar to precision guided missiles, which can identify cancer cells and launch precise attacks to reduce damage to the body. Currently, the research and development of new cancer drugs are also seeking breakthroughs in biological immunotherapy. These kinds of drugs can mobilize the immune system and effectively inhibit cancer cells. It is believed that the day will soon come when people will remove cancer from the list of “incurable” diseases.

Can Human Life Be Extended Indefinitely in the Future?

Life expectancy is closely related to the mortality rates of all age groups. In short, life expectancy is the age that a person born is now expected to live in the future calculated based on the death rate of all age groups. The most important factor affecting life expectancy is the death rate of infants and elderly individuals. The extension of life expectancy is different from that of individual lifespan. There may be centenarians around us occasionally, but this does not represent the overall life expectancy of mankind.

Globally, human life expectancy has increased continuously and significantly since World War II. On the one hand, this is due to the reduction in the mortality rate in developing countries, especially for infants and young children. On the other hand, it is also because of the decline in the mortality rate among elderly individuals. The research published by the Global Burden of Disease (GBD) in the well-known medical journal *The Lancet* shows that from 1950 to 2017, the global life expectancy climbed from 48.1 to 70.5 years old for men and from 52.9 to 75.6 years old for women. In the past 70 years, for both men and women, life expectancy has increased by more than 3 years every 10 years. Looking from the current trend, human life expectancy will increase by 2–3 years old every 10 years. Another study published in *The Lancet* by The Institute for Health Metrics and Evaluation (IHME) of the University of Washington predicts that in 2040, the life expectancy of men and women worldwide will be 4.4 years higher than that in 2016. At that time, 59 countries will have a life expectancy of more than 80 years, nearly one-third of the 195 countries and territories covered by the study. When the People’s Republic of China was founded in 1949, the life expectancy of Chinese people was only 35 years old. However, it had reached 77.3 years old by 2019. A study by the University of Washington in the U.S. predicts that the life expectancy of Chinese people will reach 81.9 years old in 2040, which means an increase of approximately 2.5 years old every 10 years in the next 20 years. Perhaps 30–50 years later, the life expectancy of Chinese people can exceed 90 years old, in which case an increasing number of people will live a centenary life.

However, under the general trend of the continuing extension of human life expectancy, the life expectancy growth in some countries and regions has temporarily stagnated or even declined in a certain period of time. The reasons are thought-provoking. We can see that due to the social unrest caused by the collapse of the Soviet Union, from 1989 to 1994, the life expectancy of Russian men decreased from 64.2 to 57.6 years old. This was a decrease of 6.6 years in only five years, which was equivalent to a retrogression of 40 years. In southern Africa, due to the epidemic of AIDS, life expectancy has been hovering at approximately 50 years old. Some countries have been even below 40 years old. In recent years, life expectancy in the U.S. and Britain has also fluctuated or even decreased slightly. The reasons behind these phenomena are social problems such as drug abuse, alcoholism and suicide among young people. The COVID-19 pandemic in 2020 also caused fluctuations in life expectancy. According to Eurostat (The Statistical Office of the European Union), the life expectancy of 22 EU Member States has declined. The US CDC report shows that the life expectancy of Americans in 2020 was 1.5 years lower than that in 2019. Nevertheless, with the progress of science and technology and the development of society, we have every reason to believe that the fluctuations of life expectancy are only small twists and turns in human history, and the life expectancy of human beings will still grow sustainably in the long term.

As for whether there is a ceiling for human life expectancy, no conclusion can be made at present. Currently, scientists' research on the causes of aging has been divided into molecular biology, such as the wear of telomeres at the top of chromosomes, gene damage caused by genomic instability, environmental factors that change the expression of genes, and harmful protein accumulation. Currently, the scientific community is far from reaching a consensus on the mystery of aging. It is believed that more research findings will renew people's understanding in the future, and more technological breakthroughs will constantly refresh the limit of life expectancy. From historical experience, the ability of mankind to overcome the threat of death is still improving. The development of knowledge, science and technology will contribute to the continuous extension of human lives.

Extension of Life Expectancy is a Global Development Goal

Human beings have generally eliminated the death threats caused by hunger and acute infectious diseases. In developed countries and some middle- and high-income countries, chronic noncommunicable diseases such as cancer have gradually become the primary cause of death. However, in Sub-Saharan Africa and some other economically underdeveloped areas, infectious diseases such as malaria are still one of the main causes of death. The differences in death rate and life expectancy between countries and regions are still of great concern.

In the 1970s, the American demographer Samuel Preston proposed the famous Preston Curve after studying the relationship between life expectancy and per capita GDP (gross domestic product) in various countries in the world (see Fig. 1.8). It reveals that during the same period, countries with higher levels of economic development generally have longer life expectancy, while poor countries are often accompanied by shorter life expectancy. In countries with a per capita income of less than

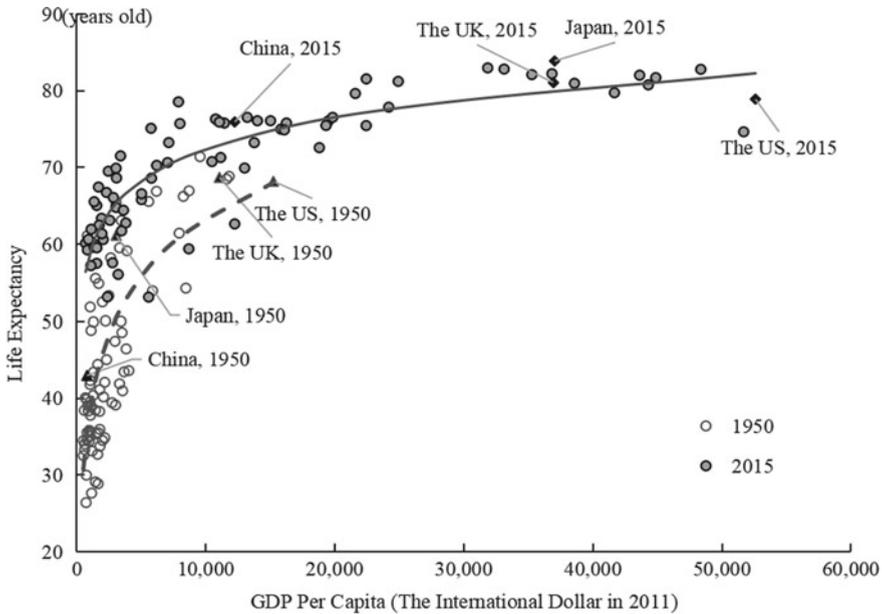


Fig. 1.8 Preston curves in 1950 and 2015. *Source* Our world in data database, collated by the author. *Note* The international dollar is generally a hypothetical unit of currency that has the same purchasing power as the U.S. dollar at a given time

10,000 USD, infectious diseases are generally the leading cause of death. In countries with a per capita income of more than 10,000 USD, chronic noncommunicable diseases have replaced communicable diseases as the main cause of death.

Although there is a correlation between income and life expectancy, income is not the only determinant of life expectancy. At the beginning of the founding of the People's Republic of China, China's per capita GDP was much lower than that of the developed countries at that time. However, since its founding, the People's Republic of China not only basically solved the food security problem for the people but also quickly promoted a national health care campaign. A series of primary preventive and health care measures were implemented. China, with a lower GDP per capita, has achieved a much longer life expectancy than other countries at the same economic level, making it an outlier on the Preston curve.

It is not difficult to find from the curve that when per capita GDP is low, its growth is highly correlated with the enhancement of life expectancy. A small increase in GDP per capita leads to a significant extension in life expectancy. This is because hunger and infectious diseases are the main causes of the high death rate in low-income countries. When per capita GDP passes a certain threshold, the neonatal mortality rate decreases greatly, the death of the population mainly comes from elderly individuals, and chronic diseases become the main cause of death. Therefore, economic development has a weaker impact on life expectancy.

After World War II, developed countries continued to provide more assistance to underdeveloped regions such as Sub-Saharan Africa. In addition to economic assistance, a large number of public health organizations and projects have also found their way to these regions to help local residents eliminate all kinds of death threats. In September 2000, at the UN Millennium Summit, world leaders agreed on the “Millennium Development Goals”, which include reducing child mortality, improving maternal health, and combating HIV/AIDS, malaria and other diseases. A study by the University of Maryland in the US shows that from 1960 to 2000, public health infrastructure, immunization, vaccination and special disease prevention and control became important factors driving the decline of mortality in developing countries. Mature medical knowledge and technology have spread in Africa, Latin America, Southeast Asia and other regions, reducing the difference in life expectancy around the world. At present, global health is a hot topic in the international community. After improving its comprehensive national strength and rapidly becoming an important power in the world, China will pay more attention to and invest in this field.

1.3 Unexpected Low Fertility Trap

The death rate has been falling all the way, and human life expectancy has been breaking through the ceiling. Does this mean that the population may increase explosively and bring many social problems? On the eve of the Industrial Revolution, Malthus worried that the population would grow too fast and exceed the carrying capacity of food. In the 1970s, the Club of Rome proposed that mankind would face major crises such as population explosion, food crises, resource consumption and environmental pollution. Obviously, their views were based on the premise of sustained population growth. However, the current challenge facing the world is not too many people but the decline in population caused by the decline in fertility.

Low fertility rates became a global trend in the 1970s. Fertility rates are falling not only in developed countries but also in low-income countries. In demography, the total fertility rate is often used to measure the fertility level, which refers to the average number of children delivered by each woman during her childbearing age (15–49 years old). The UN data show that in the past few decades, the global total fertility rate has decreased from 3.2 in 1990 to 2.5 in 2019. Some countries with ultralow fertility, such as Singapore, have even reached 1.1, which means halving the population of each generation. Based on the medium fertility level assumption, the UN predicts that the global total fertility rate will fall to 2.2 in 2050. However, based on the current trend, the fertility level is likely to be much lower in the future. What is keeping fertility rates so low and even lower? Are all countries in the world experiencing such a decline in fertility? Can this trend be reversed?

Children is Seen as “Liabilities”, not “Assets”

There are many factors affecting the willingness to have children, which can be roughly divided into biological factors and social factors. Generally, biological factors are the influencing factors of the human body itself, including heredity and hormones. Social factors are external factors, including economic development, education, customs and culture. With the deepening of industrialization and urbanization, social factors have increasingly become the key to affecting fertility.

In agricultural society, family is the core unit of production. People are the most important productive resource, and children are the source of labor and livelihood security. The more children there are, the greater the family will thrive. Under the living environment of high mortality in the past, a high fertility rate has become a necessity for maintaining social development. In an agricultural society, having children is an investment for the family. Children aged 5–6 can help the family undertake simple labor production, and they can participate in agricultural production after the age of 10. A thriving population means there is plenty of labor in families, so people have an incentive to have more children, especially boys.

With the advent of industrial society, living conditions, sanitation and medical technology improved, and child mortality significantly reduced, which freed people from being forced to bear children to have an heir. When infant and child mortality rates fall, so does the desire to have more children. More attention has been given to striking a balance between the quantity and quality of child-rearing and to strengthening the education and cultivation of children. As the division of labor in industrial society is gradually refined and the degree of specialization is increasing, the time for children to receive education from birth to work is increasing. The longer the education, the higher the cost of education, the older the age of the workforce, and the greater the financial pressure on the family. On the one hand, the cost of improving the quality of child raising is increasing. On the other hand, the opportunity cost of parents to have children is also increasing—the time spent on child-raising could have been used to make more income or enjoy scarce leisure time. All this has prompted a shift in the economic role of children in the family from “assets” to “liabilities”. Some families find that their investment in their children makes it difficult to have returns, making them less willing to have children.

In modern family fertility decision-making process, women have a louder voice than before. With the significant enhancement of women’s education level and labor participation rate, women’s status in the family is also constantly improving, and the hidden cost of women bearing children is increasing. These change women’s attitudes toward childbearing to some extent and correspondingly delay their marriage and childbearing age. The role of women in bearing children, carrying on offspring and taking care of the family is changing.

In addition, with the rapid spread of cheap and convenient birth control medication and contraceptive tools around the world in the 1960s, effective birth control became easier and more available. The mastery of contraceptive knowledge and the popularization of contraceptive tools have separated sexual behavior from fertility, and the decoupling of sex and fertility has also promoted changes in people’s minds.

Therefore, low fertility has become an economic, social and cultural phenomenon and the inevitable result of industrialization and urbanization.

Global Trend of Fertility Decline

In both developed and developing countries, fertility will decline with socioeconomic development, but the length of the declining period varies from country to country. Most developed countries were the first to complete industrialization and urbanization, and their total fertility rates have long since fallen below the replacement level. In the 1960s, economic improvement in many developing countries ushered in industrialization and urbanization, leading to a rapid decline in fertility rates. According to the UN data, low fertility rates have become a global trend. In 2019, half of the world's population lived in countries and regions with a total fertility rate below 2.1, and the number of births worldwide is expected to decrease year by year after 2045.

Here, we briefly review the changes in fertility rates in the UK, the US, Japan and China (see Fig. 1.9). At the beginning of the nineteenth century, British families were highly fertile, with an average of five to six children. However, as more people moved to cities and worked in factories, low wages at the beginning of jobs and limited living conditions forced them to generally delay marriage and childbearing. By the late nineteenth century, British people's living conditions improved, child mortality dropped, and upper-class families began to pursue a higher quality of life and actively reduce the number of children. This concept soon spread to the middle and lower classes of society. People recognized the benefits of low fertility. As a result, by the 1930s, Britain's total fertility rate had fallen below the replacement level. When World War II ended, the UK also had a brief fertility revival, after which its total fertility rate remained roughly at 1.7–1.8. Since 2010, the fertility rate has been falling again. The number was below 1.7 in 2019.

In the US, similar to the UK, fertility fell as industrial civilization infiltrated the south after the end of the civil war in the nineteenth century, reaching near replacement levels in the 1930s. The total fertility rate soared to a high of 3.6 in 1957 after the 18-year baby boom that followed the end of World War II. This wave of high fertility rates in the US lasted mostly until the mid-to-late 1960s, when it began to decline. In 2020, the total fertility rate in the US fell to 1.63. Although the overall fertility level of the US is slightly higher than that of most European countries, the fertility level of different groups in the US actually varies greatly. The relatively high fertility level of the US is mainly due to the high fertility rate of new immigrants and ethnic minorities, as well as the increase in out-of-wedlock births.

Unlike developed countries such as the UK and the US, Japan experienced a brief post World War II baby boom and a rapid decline in fertility. Its total fertility rate fell from 4.5 in 1947 to 2.0 in 1957 and had fallen to a low level of less than 1.5 by the early 1990s. According to the latest data from Japan's Ministry of Health, Labor and Welfare (similar to a combination of China's Ministry of Human Resources and Social Security and the National Health Commission), Japan's total fertility rate was 1.34 in 2020. Japan has been struggling for nearly three decades, but it is still unable to get itself out of the low fertility trap.

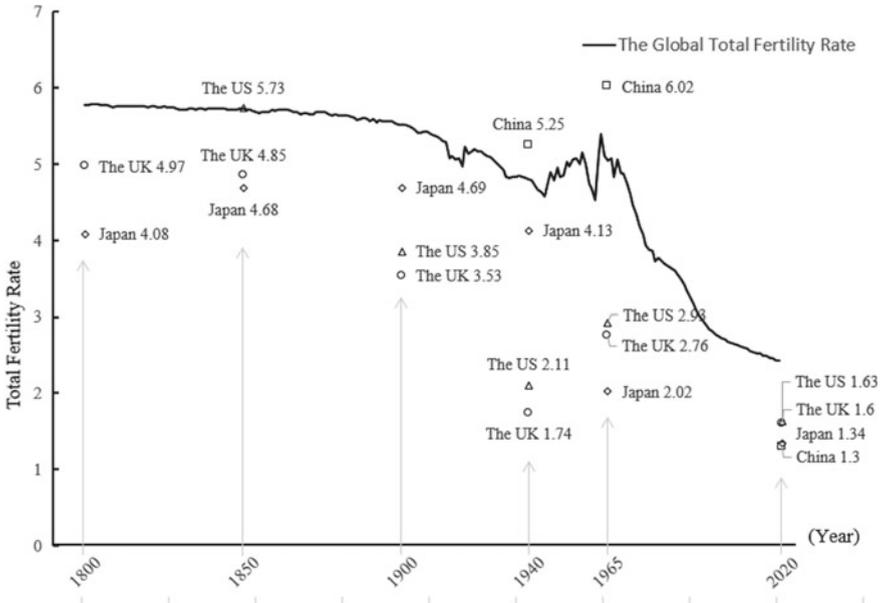


Fig. 1.9 Trends of total fertility rate in different countries. *Source* Our world in data database, the National Bureau of Statistics of China, the Centers for Disease Control and Prevention of the US, the Ministry of Health, Labor and Welfare of Japan, the National Bureau of Statistics of the UK, collated by the author

China has also experienced a rapid shift in fertility over the past half century. From 1950 to 1970, China’s fertility rate remained high, and it was common to have five or six children. In the early 1970s, the Chinese government introduced a policy of “later and fewer” births. Although this only advocated rather than forced reduction of births, the concept of families having fewer children was established, so the fertility rate began to decline rapidly from then on. Before the introduction of a relatively strict family planning policy in the 1980s, China’s total fertility rate fell below 3. In the 1990s, the total fertility rate fell further below the replacement level. In the twenty-first century, there are endless debates on China’s family planning policy and fertility rate data from academia and society, and the voice of liberalizing fertility is becoming even louder. In response, since 2011, China has introduced policies such as “couple grew up both as a single child can have the second child” and “couple grew up either as a single child can have the second child”. In 2015, China implemented the “universal two-child policy”. Data from the Seventh National Census show a significant increase in the second-childbirth rate. The proportion of second-child births rose from approximately 30% in 2013 to approximately 50% in 2017. However, the census also shows that China’s total fertility rate in 2020 was already at a low level of 1.3. The universal two-child policy has been implemented for five years. Although the number of births increased in 2016 and 2017, it still failed to reverse the downward trend of China’s fertility rate. Therefore, the government has

announced further optimization of the family planning policy and implementation of the universal three-child policy and supporting measures. However, the family planning policy is no longer the leading factor affecting China's fertility level. In fact, social, economic, cultural and other factors are increasingly becoming the key factors influencing China's fertility trend.

Fertility Fluctuations and Demographic Inertia

For a variety of reasons, fertility is not nearly as smooth as the downward progression of death rates. Some catastrophic events lead to a short-term drop in births and a decrease in people's willingness to have children, usually followed by a temporary rebound. During World War II, for example, fertility rates fell sharply, and the number of births plunged. After World War II, as the economy recovered and life returned to normal, the short-term fertility rate rose significantly as people had compensatory child births, and the related countries experienced a baby boom to varying degrees. As mentioned earlier, Japan's post-World War II baby boom lasted less than a decade, compared with 18 years in the US. Even as fertility rates fall, baby boomers were likely to have more children than any other age group because of their large population scale. So we're going to see the baby boomer wave in the demographics.

China has experienced three baby booms since the founding of the People's Republic of China, according to a report by the National Bureau of Statistics. From 1950 to 1958, China saw its first population baby boom, with an average annual birth of 21 million and an average total fertility rate of 5.3, during which 206 million people were born. From 1962 to 1975, China welcomed the second baby boom. In 1963, the births peaked at 30 million. During this period, a total of 364 million people were born. From 1981 to 1997, China had the third baby boom, during which 375 million people were born. In fact, in the 1990s, China's total fertility rate had fallen below the replacement level. The baby boom of the post-1980s generation was not because each family had more children but because those born in the first two baby booms were in their childbearing years so that their total population made a contribution to the third baby boom.

Demographically, "demographic inertia" is used to describe the phenomenon in which fertility is below the replacement level, but births still exceed deaths, and the population continues to grow. Demographic inertia causes fluctuations in births, which usually take two or three generations to return to normal. The generations after the so-called baby boom, because they have higher proportions in the age structure of the whole society, will have more characteristic demands, more influences on the whole society, and bring different business opportunities. This will create a more unique generation.

As shown in Fig. 1.10, those born in the first wave of China's high population growth in the 1950s reached 60 years old approximately 2021. In general, their consumption attitudes and demands for elderly care are relatively conservative, mainly focusing on basic living care and medical needs. The second baby-boom born generation is in their 50s, and their consumption capability and influence are just beginning to be unleashed. It may be hard to say exactly when square dancing

started, but there is no doubt that the post-50s and post-60s are the main force driving this wave of square dancing. Today, we can see that social platforms, e-commerce shopping services, universities for elderly individuals, information we-media and other online and offline specialized services for the elderly are constantly emerging. The impact of China’s baby boom generation on the elderly care market is beginning to take shape. The post-1980s and post-1990s generation is becoming the main force of social spending, and China’s consumption market targets its demand for housing, cars and other durable consumer goods. These young people, at the same time, have begun to prepare for their future elderly life.

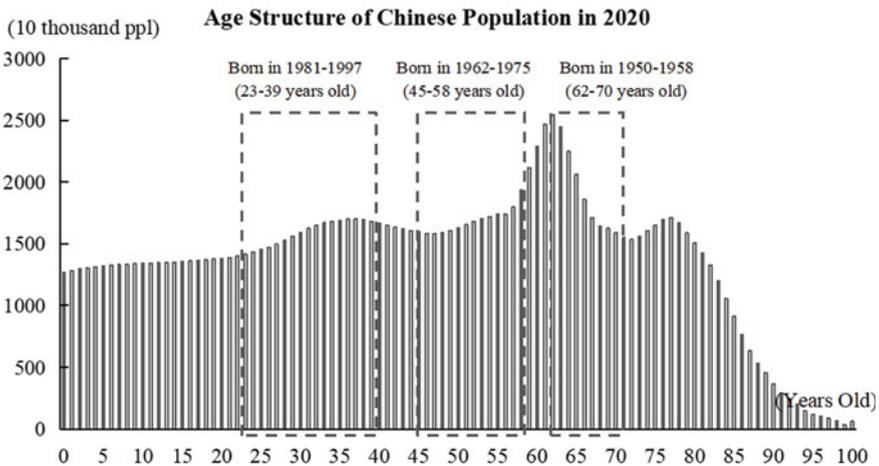
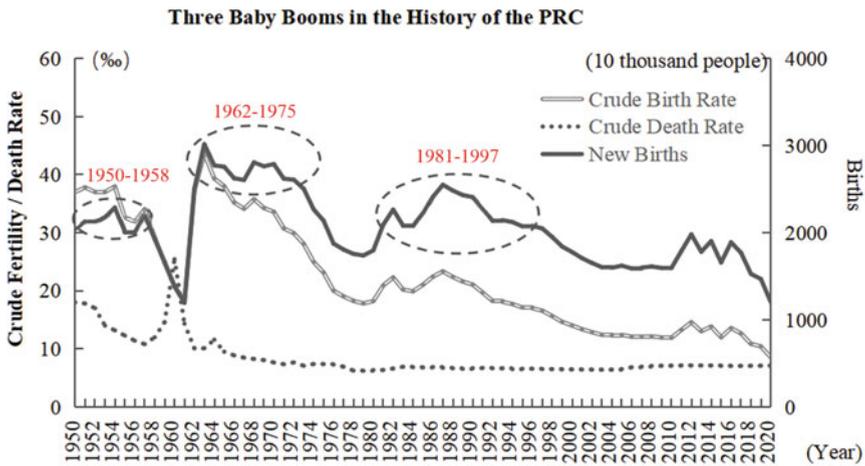


Fig. 1.10 Baby booms of China’s population and its age structure in 2020. *Source* National Bureau of Statistics of China, the UN World Population Prospects 2019 database, collated by the author

In 2020, the COVID-19 pandemic raged around the world, sparking heated debate about its impact on fertility. At the beginning of the outbreak, some people suggested that home isolation would boost fertility rates. However, the fertility data released by countries in 2021 once again prove that unemployment, poverty and anxiety will lead to a significant decrease in short-term fertility levels of the whole society in the face of major disasters. According to the results of the Seventh National Census, 12 million people were born in China in 2020, 2.6 million fewer than the 14.65 million reported by the National Bureau of Statistics in 2019. It is important to note that the number of people born in 2020 will be affected only in a very limited way, and the impact of COVID-19 may not be fully felt until 2021. The current decline in the number of births in China is mainly due to the continuing decline in the number of women of childbearing age and the declining willingness of the post-1980s and post-1990s generations to have children. The factors influencing fertility willingness are complex, and it is difficult to say whether the current low fertility rate will fluctuate later.

Can Low Fertility Rate Be Reversed?

Of course, the downward trend in fertility is not set in stone. The researchers observed that total fertility rates in several Eurasian countries that fell into the low fertility trap in the 1980s and 1990s slowly rebounded to 1.4 or more in the 2000s. However, it is difficult to say that there has been a fundamental reversal of fertility levels in these countries, as we have seen the total fertility rate decline again in the last five years. This makes it even harder to return above the replacement level.

A low fertility rate is an extremely complex issue, and almost all developed countries around the world are taking incentives to try to raise fertility levels. France, Germany, Japan and other countries implement the cash subsidy policy, providing cash subsidies directly to families who have children to reduce the pressure of raising children by increasing family income. The US, Spain and other countries provide tax incentives, cutting the income tax appropriately of the family that has children to increase after-tax income to cover the basic living expenses of child raising and other expenses. Russia, Sweden, Norway and other countries bank on the maternity leave system, extending the length of paid maternity leave for mothers and paternity leave for fathers, in an effort to spur fertility by increasing the benefits of maternity leave.

However, no matter what measures are taken, statistics find they show little effect. In fact, a low fertility rate is the inevitable trend of social and economic development to a certain stage. Scholars in Europe have also proposed a “second demographic transition theory” to explain why fertility continues to be below the replacement level and to predict the future overall demographic structure of society, as well as changes in individual and family behavior, after the traditional demographic transition is complete. The first demographic transition is a change in fertility behavior, with fewer children. The second demographic transition is a change in people’s expectations of marriage. The main reason for the second demographic transition is the change in people’s minds, which includes the recognition of the social role of women, the change in the concept of sex and family, and the emphasis on self-realization. This

change has led to great shifts in the family field. The main examples are the delay in the age of first marriage, the declining rate of people getting married, the rise in cohabitation rates and the rise in divorce rates. These behavioral changes are rooted in the context of social change and are difficult to be affected by external policies, which will bring great pressure and challenges to human society in the following days.

In recent years, although China has introduced the universal two-child policy, its fertility rate has not recovered due to the change in the fertility desire and the increasing hidden cost of raising kids. Instead, it has slipped to the low fertility trap. Currently, with the influence of traditional marriage and childbearing culture, people are still basically keeping the state of married universally. Keeping married universally means that there is still a foundation for birth-giving. However, the social environment and the concept of marriage and family are changing, making it increasingly difficult for the fertility rate to rise above 1.5.

1.4 Are We Ready for the Era of Longevity?

Human society is welcoming the era of longevity. In the near future, the elderly will make up more than a quarter of their population in an increasing number of countries as the population age structure gradually transforms into a column shape. The past population dividend is declining, and the economic consequences brought by population aging and negative population growth are worrisome. In the face of the ongoing changes in the economy and society, how should we deal with them? What actions should individuals, governments and enterprises, as different social participants, take to adapt to the era of longevity?

Five Characteristics of the Era of Longevity

The era of longevity will be a great change in human history. In the past nearly 300 years, the population has experienced explosive growth. However, this is just a short period in the history of human development. The longevity era will be a population norm and a new equilibrium in the future of human society. We believe that the era of longevity has five characteristics: low mortality rate, sustained extension in life expectancy, low fertility rate, columnar age structure, and the proportion of the elderly aged 65 and above accounting for more than a quarter for a long time.

First, the falling death rate has led to extended life expectancy. With the continuous progress of human knowledge and technology, people are constantly overcoming the threat of death from disease and aging. In the future, people's life expectancy will continue to extend at the rate of two to three years every decade, and centenary life will become increasingly common. Second, in the demographic transition period, the rapid decline in the fertility rate is the dominant factor in the population age structure transforming from pyramid to column. Low fertility rate is the result of industrialization and urbanization and has become an almost irreversible reality as

women's social roles change and the cost of raising children continues to rise. Long-term low fertility rate leads to a decrease in births, which gradually narrows the base of the population age structure and accelerates the transformation of the population pyramid to the column. Coupled with the extension of life expectancy and the expansion of the top of the population age structure, the proportion of people aged 65 and above has significantly increased and will exceed one quarter of the total population. Mankind will thus come to the era of longevity.

The era of longevity means that human beings have to re-examine ourselves. How will we come to this new era? First, longer life may not mean a longer healthy life, which I have summed up as "in the age of longevity, everyone will live with disease". In this case, the longer you live, the more you need elderly care and medical support. This will change the industrial structure, as well as the corresponding financing arrangements. Of course, living with illness does not mean that old age is a sick life and has to be confined to a sickbed. We believe that the goal of the development of the health industry is to minimize the loss from disease and even prevent people from getting sick. Perhaps when we enter the era of longevity with the state of "living with disease", disease is just a biological label that coexists with us. Second, the era of longevity requires a fundamental change in the way we view life. In the agricultural era, the average life expectancy was only 30 years old. "A man seldom lives to be seventy years old". At that time, twenty years old is young, forty years old is middle age, and sixty years old is old age. In the era of longevity, forty is youth, sixty is middle age, and eighty is old age. This allows us to replan our lives, and the institutional arrangements of the whole society have to adapt to this individual microscopic change. From this point of view, when we look at the future world next time, the era of longevity may not be feared, even something to be looked forward to.

After the Demographic Dividend Disappears

The relationship between population and economic development is one of the constant themes of concern for human society. The changes in population size and structure play a vital role in economic development. Taikang has always believed that the determining factor of economic development is "macro economic environment for short-term, structure for mid-term and population for long term". Population is the most fundamental driving force of economic and social development. The change in population age structure in the era of longevity will certainly have a profound and far-reaching impact on the future.

The relationship between population and economy has been an important issue in economic studies for quite a long time. Over the centuries, economists have conducted extensive and in-depth studies on this issue. Malthus was the first scholar to have conducted a comprehensive and systematic study on this matter. In the 1930s, when major developed countries in the West were experiencing a severe economic crisis, Keynes analyzed the causes of economic crises and corresponding countermeasures from the perspective of population and put forward the famous "Stagnation Theory". He believed that population growth is the stimulus and driving force of

economic development, and the decline in population growth is the main reason for the lack of demand and the decline in investment.

Early economists spent their attention mainly on the impact that population size has on the economy, while post World War II economists focused more on the impact that population structure has on the economy. Among their studies, those on Demographic Dividend were the most in depth. Demographic Dividend refers to a boost to the economy generated by a demographic transition when the number and share of the working-age population grow faster than those of other age groups and the total dependency ratio declines. The Demographic Dividend period is usually considered to be the period when the total Dependency Ratio of the population is below 50%. Traditionally, the demographic dividend is mainly reflected as a quantity-based demographic dividend, also known as the first demographic dividend.

In fact, China's rapid development over the past 40 years is the most vivid example of a demographic dividend. In the early 1990s, China's total dependency ratio dropped below 50% and entered its demographic dividend period, leading to an astonishing leap in its economic development, thus becoming the world's second largest economy in 2010. In its essence, the rise of China is the rise of human resources. China has abundant human resources—in fact it has the largest labor force in the world. In the past, 300 million migrant workers were shuttling between cities and villages, providing abundant human capital for China's rapid economic development. It is not an exaggeration to say that China's modernization was shouldered up by these 300 million migrant workers.

Today, China's total dependency ratio is on a path of rapid recovery (see Fig. 1.11). According to China's Seventh National Demographic Census, China's total dependency ratio in 2020 rose to 45.9% and may possibly climb up further over 50% in 2030. Although China still has a large working-age population, its quantity-based demographic dividend is fading quickly. There was a time when labor might have been the last thing China lacked. Today, however, in Southeast coastal cities where manufacturing is highly developed, we would hardly see tens of thousands of migrant workers flocking to factories as before. Countless factories are facing dire labor shortages and recruitment difficulties.

While the Demographic Dividend brings rapid economic development, it also leaves behind huge challenges for the future: when the working-age population that created the Demographic Dividend gradually ages, the proportion of the aged population will increase rapidly. The steep rise in the Old-Age Dependency Ratio puts great pressure on society, leading to problems such as an insufficient labor force, a declining savings rate, and a depleted motivation for social innovation.

The predicament Japan is currently facing is also partly caused by its fading Demographic Dividend. Japan experienced a brief period of Demographic Dividend in the 1970s and 1980s, but its total dependency ratio began to rise rapidly in the early 1990s. As the proportion of Japan's aged population grew, the demands for medical treatment, health care and pension continued to expand, and the society's dependency pressure increased daily. Within Japanese households, the working generation not only had to take care of their elders but also had to raise their children. It seemed as

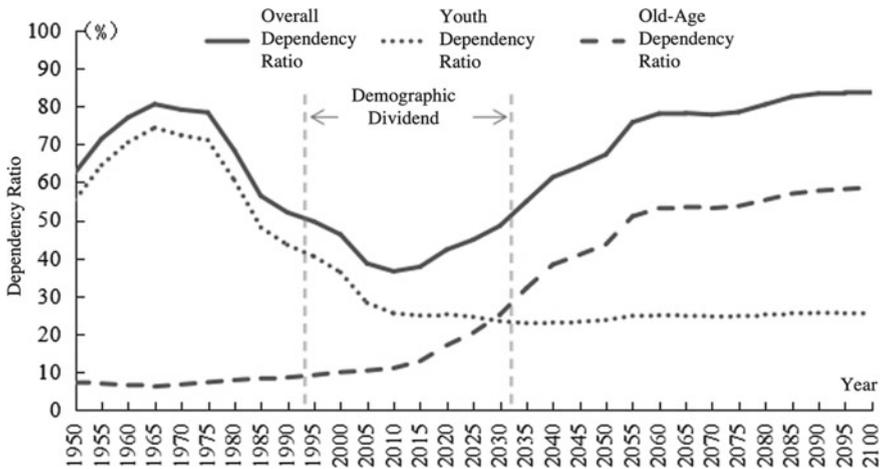


Fig. 1.11 China’s dependency ratio. *Source* World population prospects 2019, the United Nations

if the whole society was paying back what they had gained from the Demographic Dividend in the past.

With the Demographic Dividend fading off, will China’s economic growth stagnate in the future? Will China face difficulty in sustainable development? As the quantity-based demographic dividend wears off, the improvement of population quality will stimulate the formation of a second demographic dividend, namely, the quality-based demographic dividend, which will drive the economy to take off again. Theories on the Second Demographic Dividend propose that, facing a prolonged life expectancy and a lowering pension replacement rate, people will cope with various challenges brought by the aging of the population by rationally optimizing their personal consumption and saving behaviors and adjusting their human capital investment and labor supply. The increase in personal savings and investment in education will increase the aggregate social savings and improve human capital, which will create a boost in economic development. While the First Demographic Dividend only emphasizes the impact that population structure has on economic growth, the Second Demographic Dividend focuses on the quality of population structure. As population structure shifts, economic growth will become increasingly dependent on the resources which could be altered and nurtured.

The most important approach to the second demographic dividend is improving the quality of human capital through education, which can effectively counter the negative impact of a shrinking labor force. The return on education investment is highly lucrative, whether from the perspective of personal income or the macroeconomy. According to China’s Seventh National Population Census, the average length of education for people aged 15 and above increased from 9.08 years in 2010 to 9.91 years in 2020, and the number of people with a college degree reached 220 million, which is 100 million more than that of 2010. The significant improvement in the quality of the population and the continuous improvement of human capital

will drive China to transition rapidly from the quantity-based demographic dividend to a quality-based demographic dividend. It can be predicted that automation and artificial intelligence will bring about brand-new production models in the future, and the quality of labor required then will be different from the past: a lot of simple and repetitive work will gradually be completed by machines instead of people, and jobs that require human talents, creativity and social skills will increase. At the same time, many new professions are being created in society, such as Data Mining Experts, Algorithm Engineers, Artificial Intelligence Trainers, and Health and Wealth Planners. An increasingly higher education level of labor will be required in the transition from the quantity-based demographic dividend to the quality-based demographic dividend, and people will need to acquire new skills continuously to adapt to the changes at work.

With the arrival of the “Silver Hair Wave” in the Era of Longevity, over a quarter of the population will be 65 years old and above. Will the Demographic Dividend be sustained in the Era of Longevity? Until now, many still believe that population aging equals feebleness, negativity and passivity. They regard senior citizens as mere social consumers and dependents who can hardly create any value. However, neither the First nor the Second Demographic Dividend explored the true potential of senior citizens, thus failing to sustain themselves. We believe that in the Era of Longevity, senior citizens’ role in the society will change from the traditionally believed “consumers” to longevity economy “producers”, and the value recreation of senior citizens will bring a third demographic dividend. Taikang has been exploring and experimenting with the establishment of a longevity economy in our senior communities to stimulate the value recreation of senior citizens, the analysis of which will be the focus of the fifth chapter of this book.

Partita in the Era of Longevity: Health and Wealth

Living a good life is an eternal ideal of human beings. As life expectancy increases, people are beginning to pay attention to whether their health and wealth can support a quality long life. How can people enjoy a good life in the Era of Longevity? That is a question that individuals, governments and enterprises are all thinking about. We believe that the Era of Longevity is also the Era of Health and Wealth. It will certainly transform our economy and society, and most definitely inspire brand new solutions.

In the Era of longevity, an increasing number of people will experience a life of over one hundred years. Living with chronic diseases is almost inevitable for everyone, and that will bring strong demands of medicine and health, ushering in the Era of Health. International experience shows that as the proportion of the elderly population continues to grow, expenditures on health care and elderly care will increase, which will bring great challenges to the sustainability of relevant resources. It is well known that the burden of medical expenditure is closely related to the aging of the population. According to investigations by the Kaiser Family Foundation, in the 2016 US, people aged 65 and over accounted for 16% of the US population, yet their annual medical expenditure per capita exceeded 11,000 USD, and they were responsible for 36% of the country’s annual total medical expenditure. US people

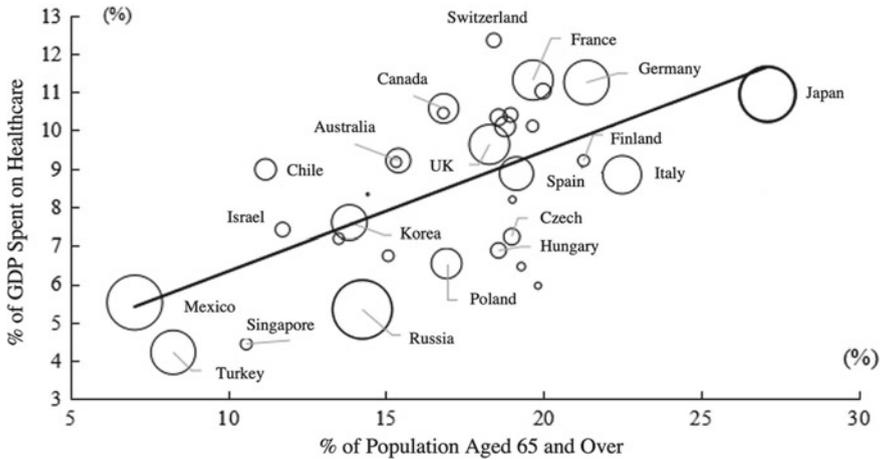


Fig. 1.12 Relevance between population aging and national health expenditure in main OECD countries. *Source* OECD database, collated by the author

aged between 19 and 34 years old accounted for 22% of the country’s population, their annual medical expenditure per capita was approximately 2,500 USD, and they were responsible for 11% of the country’s annual total medical expenditure. The average medical spending of people aged 65 and above was more than four times that of people aged approximately 30. People aged 55 and over accounted for 29% of the US population but were responsible for 56% of the country’s medical expenditure. Through calculations, we also found that, the proportion of a country’s total health expenditure out of its GDP is closely related to the proportion of its aged population. Taking OECD countries as an example, for each percentage-point increase in the proportion of the population aged 65 and older, we see a 0.34%-point increase in the proportion of the country’s total healthcare spending out of its GDP (see Fig. 1.12).

The era of longevity has delivered a tremendous financing demand for pension and medical care, calling for the arrival of the era of wealth. In the traditional pension scheme, the working generation pays contribution to the pension pool, from where the pension benefits of the retired elderly are withdrawn in the same period of time. When working people age and retire, they will be supported by the pension plan, while the forthcoming working generation will contribute to the pool. That is how the classic pension system formed in an industrial society has been operating generation after generation. The system may appear perfect, but as the old-age population grows larger, so does the consumption of pension benefits, and the pension fund pool will need more contribution from the working generation. The traditional pension scheme may still work well if a relatively high fertility rate could be maintained. However, when the fertility rate falls and the resources created by the young generation will not be sufficient to support the elder generation, the pension replacement rate will continue to decrease and put a heavy burden on the entire society. In the Era of Longevity, the population age structure tends to grow columnar, with which the

pension replacement rate will also decrease. To cope with pension fund shortages in the future, individuals, families and countries all need to pay more attention to wealth reservation.

Unlike pensions, health risks, such as illness and loss of capacity, are not evenly distributed among the population. For individuals, it will be difficult to cope with such risks effectively only by personal savings. Therefore, establishing a risk-sharing mechanism at the social level has become necessary to solve the problem of medical funding. Data collected from different countries show that medical costs per capita generally increase significantly faster than GDP per capita. As the working-age population shrinks and the old-age population grows, rapidly rising healthcare expenditures will bring by enormous pressure on governments around the world. Funding for healthcare spending is a global challenge: it requires complex social and commercial insurance mechanisms to strike a balance between cost, accessibility and service quality.

Compared with developed countries, China will face even more challenges. China has a large population base, but its fertility rate is declining rapidly. As a result, China's population aging has been accelerating continuously. China's current pension system and medical insurance system are struggling to meet the needs brought by the transforming age structure of its population. Despite the rapid increase in life expectancy, China's per capita income and savings are still far behind those of developed countries in similar development stages. In 2020, China's population aged 65 and above accounted for 13.5% of its total population, and its per capita GDP was 10,500 US dollars, while Japan and South Korea's per capita GDP exceeded 30,000 US dollars at the same aging level.

The era of longevity is not merely a simple demographic phenomenon but also a complex socioeconomic phenomenon. In the face of the profound changes that are about to take place throughout society, individuals, governments and businesses all need to respond actively and take collaborative actions to reap the benefits of the Era of Longevity. When the time comes, enterprises, as productive organizations, should take the initiative to become solution providers for one another and pioneers to lead the transition from "passively accepting realities" to "actively solving problems". Taikang Insurance Group, which I founded and have been operating, is a practitioner of the Era of Longevity theory. We have explored and developed a complete package of enterprise solutions. Its essence is the combination of virtual insurance payments and real health and social care services. Taikang created portfolios of products and services covering the full life cycle, to better accommodate people's needs for longevity, health and wealth in the Era of Longevity. By providing a whole set of ideas starting from financing to services for commercial institutions, the Taikang plan led the reform and innovation of the life insurance industry in not only China but also the world and provided a Chinese featured example of how human beings should cope with the Era of Longevity.

I often say that running a business is like writing an article. They both require a deep understanding of things, and the design of layouts and structures should be based on such understanding. The later chapters of this book are my further interpretation of the Era of Longevity. The Era of Longevity will definitely also be the Era of Health

and Wealth, and it will surely deliver a longevity economy. As a social member, Taikang’s corporate plan will interact with the individual and government plans in efforts to build a beautiful longevity society together.

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Chapter 2

The Era of Health: A Healthier Longevity



What Should a Centenarian Look like?

I used to have this impression that very few people could live to their seventies and that people in their fifties and sixties have already entered the twilight of their lives. It was hard for me to imagine what a person would look like when he or she is over one hundred years old. In 2010, I led the Board of Directors of Taikang Life Insurance to visit an elderly community in the United States, and it was the first time I met a centenarian in my life. She was wearing a nurse hat—I guess she was a nurse in World War II. Holding her hands, I felt they were warm and strong. She was exactly one hundred years old at the time, very outgoing and quick-thinking. She shared with us the glory of her youth and laughed out loud. Her cheerfulness lit up everyone around her. I was feeling many things at the time, and the biggest one was that I didn't know a 100-year-old person's life could be so vigorous and dignified, even toward the end of life. I cannot help but think of the daily living conditions of older people in China. Is it possible for older people in China to laugh and talk lively and energetically just like that?

We see that the life expectancy of human beings is getting longer, but does that mean people are getting healthier? In that extended life expectancy in old age, are people healthy, strong and at ease? Or are they sick, disabled and bedridden? Unlike young people, the health status among older people varies greatly. Some people, even in their eighties, may still have almost the same physical strength and intelligence as young people do, while others are more or less affected by diseases or even loss of capacity. For the latter, they suffer not only from the declining ability to take care of themselves in daily life but also from a reduced positive life experience, as they could hardly gain value through participation in social life, sharing experience and imparting knowledge. The widely diverse health conditions of senior citizens also result in significantly different family care needs and financial burdens. It is safe to say that a happy and dignified life in old age is impossible without health. As the World Health Organization highlighted in its 1997 *World Health Report*, increased longevity does not equal improved quality of life; healthy longevity is more important

than increased longevity. The essence of the Era of Longevity lies in the pursuit of a high-quality life in old age and healthy longevity.

The advent of the Era of Longevity provides us more possibilities in both the breadth and depth of our lives, but it has also brought about completely different health challenges. Health has become a more urgent and long-term demand that will grow more diversified. This demand will become a strong driving force for the growth of the health industry, ushering in the Era of Health.

2.1 As Modern Medicine Progresses, Chronic Diseases Have Become the Main Health Threat

Humankind has been fighting against diseases for thousands of years. Facing birth, aging, illness and death, human beings' fear, anxiety, longing and yearning have been driving us to constantly explore the real nature of life.

In early human development, mortality was mainly caused by deadly diseases and infections from pathogenic microorganisms in the external environment, especially infectious pathogens. Severe infectious diseases such as plague, cholera, smallpox, tuberculosis and syphilis raged and killed countless people. The Black Death struck at the end of the Middle Ages and killed one-third of Europe's population. Cholera was the worldly disease of the nineteenth century: seven global cholera pandemics broke out within 200 years. Another major challenge was pregnancy and childbirth: the process of childbirth is extremely dangerous for humans. Women faced severe pain and death risks when giving birth, and neonatal deaths were also very common.

Human beings' hands had been tied fast in the face of all these risks until the last 200 years, when the technological achievement of modern medicine grew exponentially, which changed the balance of forces between man and nature. First, preventive medicine and public health strategies came into play and made an essential contribution. As mentioned in the previous chapter, drawing from the experience of controlling deadly infectious diseases such as cholera and plague, human beings gradually established a relatively complete system of preventive medicine, both in theory and in practice. With public health strategies such as maintaining clean water sources and improving the living environment, people were able to reduce the prevalence of epidemic diseases in general. Even so, the help such an improved public health system could offer individuals against specific diseases was still very limited.

The rapid rise of industrial pharmaceutical manufacturing and the leaping development of surgical technology have enabled medicine practitioners to comprehensively improve the disease treatment of individual patients. The earliest drugs came mainly from plants, such as various Chinese herbs, pain-relieving opium poppies and cinchona tree (also known as quinine) bark, which was used to treat malaria. From this perspective, Chinese medicine and the earliest Western medicine are basically of the same origin. It is worth mentioning that Tu Youyou, China's first Nobel Prize laureate in Physiology or Medicine, who discovered artemisinin, was

also inspired by Ge Hong's *Handbook of Prescriptions for Emergencies* in China's Eastern Jin Dynasty. In the nineteenth century, with prosperous industrial development, Western chemists gradually mastered the methods of extraction and purification, which directed Western medicine onto a fast track. In 1897, researchers from the German company Bayer succeeded in synthesizing pure stable acetylsalicylic acid, which was later known as the world's most popular fever-reducing and pain-relieving drug, aspirin. The birth of aspirin set off a wave of chemical synthesis of pharmaceuticals.

Industrial production of drugs does not always happen overnight immediately after its discovery. In human beings' fight against bacterial infections, Sir Alexander Fleming's discovery of penicillin in 1928 was definitely a milestone. However, further extraction, concentration and purification were needed to put penicillin into medical use. These procedures were completed in 1938 by Howard Florey and Ernst Chain, two scientists from Oxford University. As the demands of penicillin swelled in wartime, pharmaceutical companies finally realized scaled industrial manufacturing of penicillin in 1943. Fleming, Florey and Chain were awarded the Nobel Prize in Physiology or Medicine together in 1945 for their contribution to the penicillin project. Inspired by the discovery of penicillin, scientists began collecting samples in the natural environment to look for new drugs, and consequently, a large number of antibiotics were discovered and produced. Streptomycin was discovered in 1943 and it cured tuberculosis. Cephalosporin was discovered in 1948. The discovery and widespread use of many antibiotics significantly reduced the incidence of bacterial infections in the second half of the twentieth century. At the same time, vaccines for common diseases such as smallpox, rabies, tuberculosis and poliomyelitis were invented and quickly applied, greatly reducing the fatality of infectious diseases. Antibiotics and vaccines have become two powerful tools for doctors to fight diseases; they not only greatly reduce the incidence and mortality of infectious diseases but also prolong human survival. As technologies in drug screening, synthesis and manufacturing continue to progress, the spectrum of human diseases changes over time. The most important category in the pharmaceutical market has gradually shifted from anti-infection drugs to drugs for chronic diseases. Today, the global pharmaceutical industry has reached a scale of more than one trillion US dollars, supporting medicine and health care as an important foundation. The pharmaceutical industry has been further subdivided into pharmaceutical manufacturing, distribution, retail and other subindustries.

Surgical operation, on the other hand, has played an irreplaceable role in the treatment of trauma, deformities, tumors and other conditions, especially dystocia. The main driving force for the development of surgery was the physical trauma of people caused by all kinds of cold and hot weapons in turbulent times of war. There were very few systematic surgical theories before the sixteenth century, when human anatomy was first developed. It was not until the eighteenth century that surgery became a specialty based on the development of human anatomy. Surgical pain was one of the core obstacles to the technical progress of surgical operation back then. Surgeries were almost torture, and the focus of surgeons was getting the operation done as quickly as possible. At that time, there was even an appalling

case where Robert Liston, who was known as “the Fastest Knife of the West End”, set a record of a 300% death rate in a single operation: the doctor’s assistant was accidentally injured by the sharp blade during the operation, an audience died of fright on the spot, and the patient and the doctor’s assistant both died of postop infections. It was not until 1846 when ether anesthesia was introduced into surgery, allowing patients to be operated on while being put in a controlled sleep. The time of surgery was remarkably extended, allowing surgeons to perform more complex and delicate procedures. Another major problem that restricted the development of surgical techniques was infection, which could cause more than 50% of postop mortality. In the mid-nineteenth century, Hungarian obstetricians found that washing hands with disinfectant before performing a cesarean section significantly reduced the incidence and mortality of “puerperal fever”. As the germ theory of infectious disease matured in the late nineteenth century, aseptic operation became the norm practice of medicine and markedly increased the success rate of surgeries and invasive procedures. Due to the popularization of anesthesia and aseptic operations, surgical techniques were liberated from previous limitations, and the scope of surgery began to extend to the heart, brain, abdominal cavity, joint and other parts of the human body. Today’s surgeries can even be performed remotely by a robot controlled by doctors. To a certain extent, the development of surgery has propelled hospitals to become the true place for disease treatment rather than a place for patients to receive hospice care. The medical equipment industry has also prospered along and has grown globally into an enormous market of nearly 500 billion US dollars.

With the molecular model of the double helix structure of human DNA being discovered in 1953, the era of molecular biology began. More medicine findings at the molecular level interpret the origin, development and decline of life from a whole new perspective, and humans, for the first time, were able to look at diseases at the molecular level. Molecular biology has a profound impact on disease diagnosis and treatment. Before, drugs were only used to kill external microbes invading human bodies, but now, drugs can work directly in human bodies targeting specific conditions, such as cardiovascular drugs, psychotropic drugs, immunosuppressants and diabetes drugs. In addition, the development of molecular diagnostic technologies, such as nucleic acid testing and gene chips, and the commercialization of targeted drugs and gene therapy drugs have started the refined and individualized development of drug use.

Since the end of the nineteenth century, many leaping medical achievements have been made (Fig. 2.1), and human life expectancy has increased dramatically. More importantly, people are full of confidence in the technological power of medicine, and they certainly expect to rely on medicine to solve life-related problems much more than before. As this trend continues, it appears that human beings are getting closer to ultimately conquering diseases and taking full control of our health. With emerging new drugs, advanced surgical techniques and the popularization and application of cutting-edge technology, many diseases that were once deadly can now be cured. Some diseases that used to cause acute deaths have become manageable chronic diseases now. As mentioned in the first chapter of this book, cancer, which

has long been considered incurable, is also becoming a chronic disease: the five-year survival rates for cancer patients are rising worldwide in general. According to 2019 statistics from the American Cancer Society, the overall five-year survival rate for cancer patients in the US increased to 69% from 49% in the 1970s. Research data from China’s National Cancer Center in 2018 show that China’s overall five-year cancer survival rate was 40.5%, which was a 10% increase compared with that of 10 years ago. There is still much room for China to improve in the application and popularization of new cancer treatment technologies, cancer prevention and cancer screening. Diseases that were once undefeatable, such as cancer, have gradually become treatable, delayable and controllable through early diagnosis and intervention.

With medical progress, human attention has also begun to shift from the traditional treatment of diseases to the control of aging for an eternal life. The immortal HeLa cell line was discovered in 1951. It was taken from cancer cells of a patient named Henrietta Lacks and could reproduce infinitely in cell culture, given the right environment. HeLa was the first “immortal” cell that can reproduce infinitely in human history. The first human kidney transplant surgery was carried out in Boston in 1954. Until now, except for brain transplants, which have not been thoroughly studied due to huge ethical issues, other human organs, such as the heart, liver, lung and kidney, can also be transplanted or even replaced by 3D printing with the support of powerful medical technology. After the birth of Dolly, the world’s first cloned sheep,

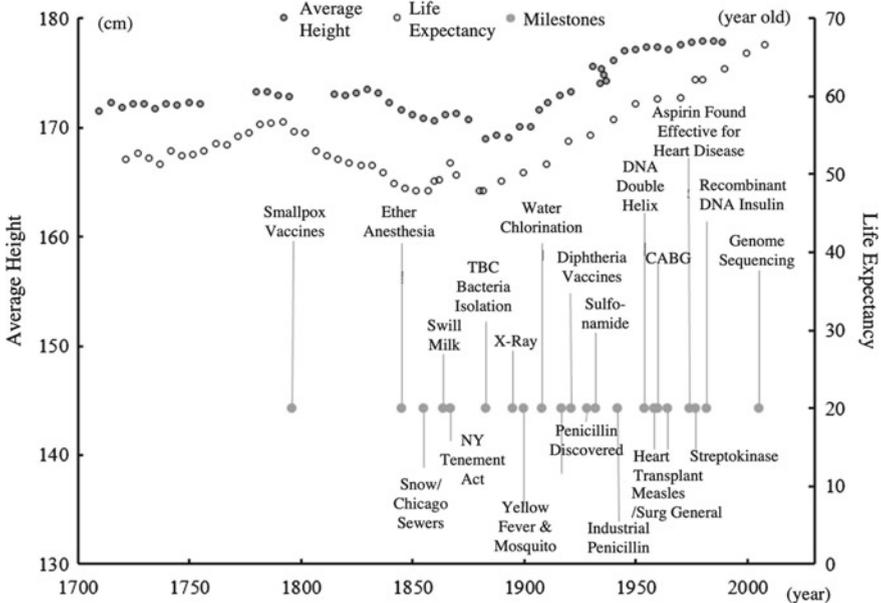


Fig. 2.1 Human life expectancy, height and public health and medicine milestones. *Source* Studies by Costa (2015), collated by the author

in 1996, people began to envisage growing vital organs such as hearts, livers and kidneys directly from our own cells in the future. With these remarkable achievements, humans are also imagining a world where aging no longer exists. The 2005 DreamWorks Film *The Island* tells such a story: rich people keep cloned humans on an island to provide harvestable organs and body parts when the rich need to cure diseases or even achieve immortality.

However, there is still a considerable distance between humans' dream of immortality and the reality of having to live with disease. When faced with real health challenges in the Era of Longevity, such as chronic degenerative diseases, aging and gradual loss of physical functions, we find that we are only just beginning to understand and explore longevity and aging. Aging will cause abnormal genetic expression and cell damage, which will gradually accumulate and develop into chronic degenerative diseases under behavioral and environmental stimulation. To date, such diseases can only be mitigated but not reversed. They certainly cannot be cured completely. After being found to be suffering from progressive lung disease, Dolly the Sheep was euthanized in 2003 at the age of six. Her life expectancy was only half that of a normal sheep. It seems that in the Era of Longevity the law of life would be "gradually suffering from chronic diseases, living with chronic diseases for a long time, and eventually dying from chronic diseases". Among chronic diseases, cardiovascular and cerebrovascular diseases, cancer and Alzheimer's disease have become the three that have drawn the most attention.

Cardiovascular and cerebrovascular diseases generally refer to diseases related to heart vessels and brain vessels. They are commonly seen in forms such as coronary heart disease, stroke, heart failure, and arrhythmia. What these diseases have in common is the buildup of lipids within blood vessels, which may have already appeared when patients are young. With age, the lipid buildup would grow and oxidize to form plaques. Mild cases include narrowing of vessels and organ hypoxia, while severe cases include myocardial infarction and cerebral infarction where ruptured plaques fall off vascular walls and cause death. The progression is multifactored: hyperlipidemia, hypertension, diabetes, obesity and smoking could all contribute to an increased prevalence at a younger age. According to the *2019 Annual Report on Cardiovascular Health and Diseases in China*, the prevalence of cardiovascular diseases in China is on a continuous rise, and the number of people suffering from cardiovascular diseases is estimated to have reached 330 million, ranking first among the causes of death total of urban and rural residents.

Cancer is also age-related. Most types of cancer are the result of long-term accumulation of genetic damage and changes in human cells under the long-term influence of external factors. Cancer is a multifactored, multi-staged, complex and progressive process that often takes more than a decade to several decades. Advances in medical technology have slowed down the progression of cancer and turned it into a chronic disease, cancer remains the second leading cause of death globally as the number of older people grows. The latest Global Cancer Data released by the WHO's International Agency for Research on Cancer (IARC) in 2020 shows that for the first time, breast cancer has surpassed lung cancer to become the world's most commonly

diagnosed cancer, and that China, due to its large population, has the most cases of newly diagnosed cancer in the world.

Alzheimer's disease is a neurodegenerative disease with insidious onset that progresses with age. The incidence of Alzheimer's disease is considerably high in older people, reaching 20–30% in people over 85 years old. The prevalence of Alzheimer's disease account for 60–70% of all types of dementia. Alzheimer's disease is caused by degenerative changes of the brain nervous system, leading to loss or disorder of cognition, language and memory accompanied by mood swings. However, the pathogenesis of Alzheimer's disease is not clear, and no effective treatment has been found. Statistics from the World Health Organization show that the number of dementia patients was 47 million in 2015 and is estimated to grow to 75 million in 2030 and 132 million in 2050, which is almost 3 times that of 2015. According to WHO's 2019 Global Health Estimates, dementia, including Alzheimer's disease, has become one of the 10 top-ranking causes of death globally.

In general, the shift in epidemiology of human disease types has coincided with the arrival of the Era of Longevity. The main diseases limiting the increase in the average human lifespan are no longer acute infectious diseases but chronic noncommunicable and degenerative diseases. A 2017 study of 195 countries by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington also shows that, 30 years ago (1990), the leading causes of death globally were neonatal diseases, intestinal infections, respiratory infections, tuberculosis and other infectious diseases, while in 2017, the leading causes of death globally were chronic diseases such as ischemic heart disease, stroke, chronic obstructive pulmonary disease (see Table 2.1). In developed countries, diabetes and Alzheimer's disease also rank among the top 10 causes of death.

It is a common phenomenon for older people to survive with diseases. According to the survey data in the Report on the Development of Life Quality of Older People in China (2019), more than 85% of people over 70 years old in China suffer from chronic diseases, and nearly 50% suffer from two or more chronic diseases at the same time. In the age of longevity, more diseases will coexist with elderly individuals, and long-term survival with diseases will become more common. This has led us to wonder whether longevity increases our risk of disease and how we can reduce the health hazards of living with disease and embrace the era of longevity more positively.

2.2 Can Longevity Be Healthier?

Longevity is only a good thing when it is healthy. According to the WHO's definition, "health" means not only free of disease or physical weakness but also a physical and mental status of well-being, content and adaptability. If the increase in life expectancy is related to the time of death, then health status is closely related to the quality of life prior to death. When picturing a serene life at an old age, we cannot help but ask the following question: as possible future centenarian life comes, will our health status improve with the increase in longevity?

Table 2.1 Changes in main causes of deaths from 1990 to 2017

Rank	Global 1990	Global 2017	US 2017	China 2017
1	Neonatal diseases	Ischemic heart disease	Ischemic heart disease	Stroke
2	Lower respiratory infections	Neonatal diseases	Lung cancer	Ischemic heart disease
3	Intestinal infections	Stroke	Drug abuse	Trachea, bronchus and lung cancer
4	Ischemic heart disease	Lower respiratory infection	Chronic obstructive pulmonary disease	Chronic obstructive pulmonary disease
5	Stroke	Intestinal infections	Stroke	Liver cancer
6	Congenital defects at birth	Road traffic injuries	Alzheimer's disease	Road traffic injuries
7	Tuberculosis	Chronic obstructive pulmonary disease	Self-harm	Gastric cancer
8	Road traffic injuries	HIV disease	Road traffic injuries	Alzheimer's disease
9	Measles	Congenital defects at birth	Liver cirrhosis	Neonatal diseases
10	Malaria	Malaria	Colorectal cancer	Hypertensive heart disease

Source: *Global Burden of Disease (2017)*, IHME, the University of Washington

To better evaluate the relationship between increased life expectancy and health, the world usually uses a new concept, health-adjusted life expectancy (HALE), to measure and statistically analyze people's health status. Individual diseases include long-term and short-term subhealth conditions, such as physical dysfunction and pain, which affect individual health and reduce longevity to varying degrees. The expected life years of individuals are adjusted and converted based on the weighting of diseases, and the sum is equivalent to the years of healthy survival, which is the health-adjusted life expectancy. A longer health-adjusted life expectancy reflects a healthier longevity (Fig. 2.2).

We see that life expectancy and HALE both increased, but the gap between the two has not narrowed; instead, it has widened. In other words, older people today may seem healthier than before, but the reality is far from optimistic. A 2015 study published in the *Lancet* pointed out that as life expectancy increases, the gap between life expectancy and HALE widens year by year. The gap even exceeded 10 years of time, which means that 11.5–15% of life expectancy is lost during weighting and adjustment due to poor health.

What is worth noticing is that diseases do not always appear in middle-aged and older people, which means that the gap could widen even further. Under the influence of growing unhealthy behaviors and the environment, the prevalence of hypertension, hyperlipidemia, hyperglycemia, hyperuricemia, cardiovascular and cerebrovascular diseases, cancer and other chronic symptoms or diseases in young people tends to

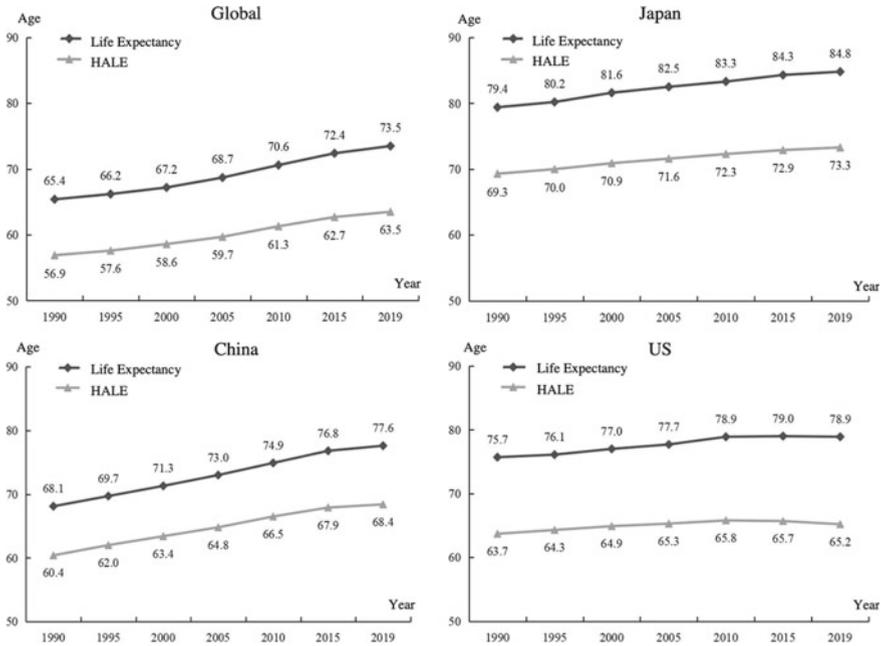


Fig. 2.2 Increase in life expectancy and health-adjusted life expectancy (HALE) in the world, Japan, US and China, 1990–2019. *Source: Global Burden of Disease (2019), IHME, the University of Washington*

increase. Data from the Global Burden of Disease by the IHME show that in the past 30 years, in Chinese people aged between 15 and 49 years old, the incidence of ischemic heart disease increased by 44.6%, the incidence of Type II Diabetes increased by 60.3%, and the incidence of colorectal cancer and female breast cancer increased by more than 200%. Moreover, individuals age physically at different rates, and premature aging may also appear in young people. Some young and middle-aged adults have shown signs of cognitive function decline and brain aging and may also have poor physiques. In other words, today’s younger generation is likely to be less healthy than the older generation at the same age. Therefore, some people propose the concept of “biological age”, using biological indicators related to physical aging to reflect a person’s real age, rather than simply using the chronological age of social identity.

Health is influenced by a combination of factors. One’s health condition is not only about whether a person is sick but also about whether he or she has the ability to maintain a normal life. Chronic degenerative diseases are often accompanied by varying degrees of long-term or short-term loss of capacity, especially vision and hearing impairment, stroke, osteoarthritis, diabetes, chronic obstructive pulmonary disease, Alzheimer’s disease, and other age-related conditions. Loss of capacity is reflected not only in the decline of motor function and perceptive and cognitive ability but also

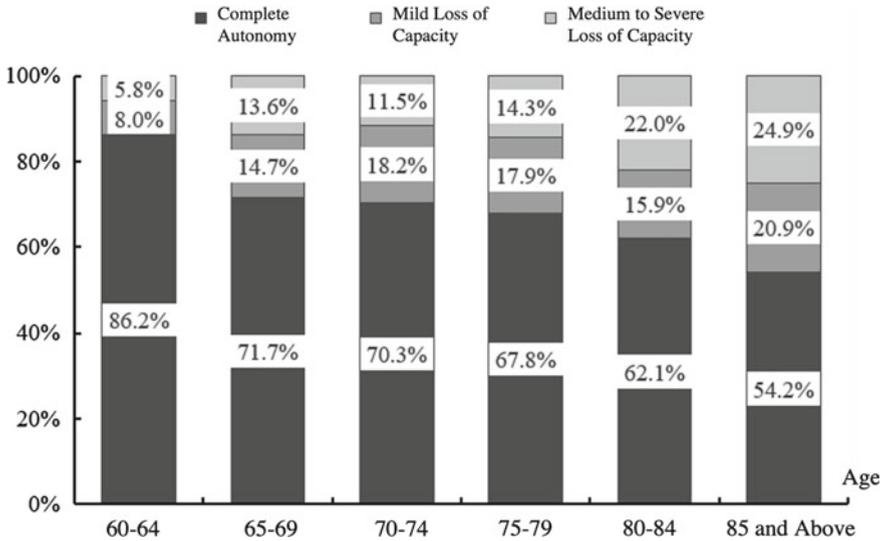


Fig. 2.3 Loss of capacity in age groups in China. *Source: The Research Report on Long-term Care in China 2018–2019*, by Insurance Association of China and Institute of Population and Labor at China Academy of Social Sciences

in the limitation of activities of daily living (ADL), such as the autonomy to handle going out, shopping, and financial management. More importantly, it may lead to a low sense of social participation, depression, anxiety, loneliness and other psychological changes. According to *the Fourth Sampling Survey on the Living Conditions of Older People in China’s Urban and Rural Areas* conducted in 2015, the number of older people in complete loss or semi-loss of capacity in China exceeded 40 million. According to *the Research Report on Long-term Care in China 2018–2019*, approximately a quarter of older people are in need of multidimensional care (Fig. 2.3).

Of all capacity losses, senile dementia is a special kind. Cognitive abilities will decline with age, but this kind of decline varies from person to person as it is influenced by a variety of factors, including lifestyle, socioeconomic status, chronic diseases and medication. A decline in cognitive ability may appear earlier or more severely in certain senior citizens, who suffer from mild cognitive impairment, Alzheimer’s disease, or other types of dementia. A study by Japanese scholars in 2012 proposed that for every 5 years of increase in age, the risk of older people developing dementia doubles. The research institute of Japan’s Ministry of Health, Labor and Welfare estimated that by 2050, one in every five Japanese citizens aged 65 and older will have dementia. Psychiatric conditions such as anxiety, depression, hallucinations, delusions, restlessness and aggression are also seen in the elderly population. This also means that disabled older people need longer-term and more professional care, which would be a huge burden. According to 2020 data from the US Alzheimer’s Association, dementia patients may have had to live with diseases

for over 10 years, and their average medical care costs in 2019 were more than three times those of nondementia patients.

We are entering the Era of Longevity, but not the Era of Health at the same pace. Growth in HALE has not yet caught up with the increase in life expectancy. The number of people living with chronic diseases continues to grow, and the number of disabled elderly people is increasing. How to live long and healthy has become an important topic for us to think about in the Era of Longevity.

Aging and death remain inevitable for all of us. As we age, our physical and mental functions decline, disease and death risks increase, and that is the process of natural aging everyone has to go through. People may age physically at different rates and on different trajectories. An optimal healthy aging process is shown as Trajectory A in Fig. 2.4: people remain strong and stable for a long time in their lives, and the occurrence of decline or loss of functions and capacities is postponed. For different groups, changes caused by aging also show different patterns in different social environments. In China, with the increase in age, the HALE proportion of life expectancy of older people generally declines rapidly at first and then remains dynamically stable, very much alike to Trajectory B. This also indicates that the aging process of older people in China is often less than healthy or ideal.

How can healthy aging of the elderly individuals be achieved? The World Health Organization proposed a “sugar cube” model in 2015 as a possible solution (Fig. 2.5). Generally, in regard to health, we pay more attention to the quantifiable biological indicators such as genetic inheritance, personal behaviors and physical and organ

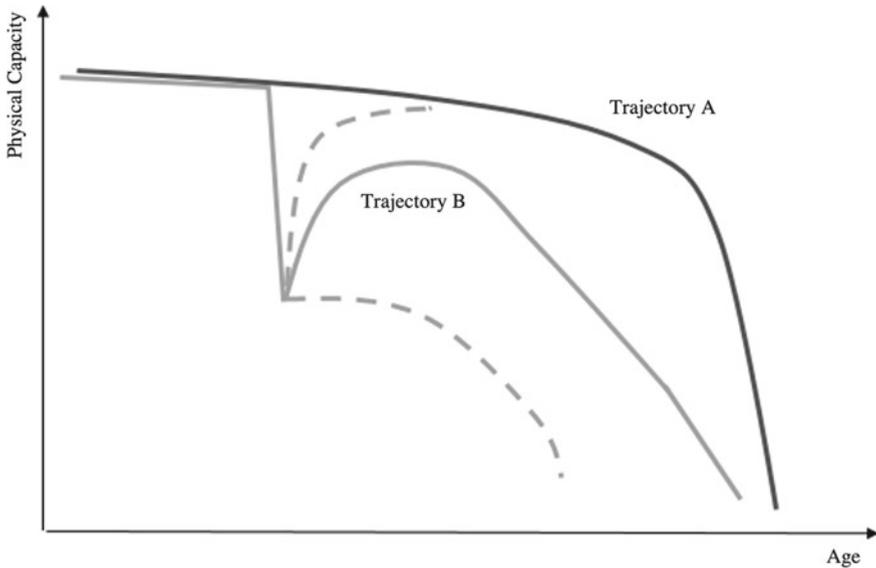


Fig. 2.4 Trajectories of aging. *Source: World Report on Aging and Health, World Health Organization*

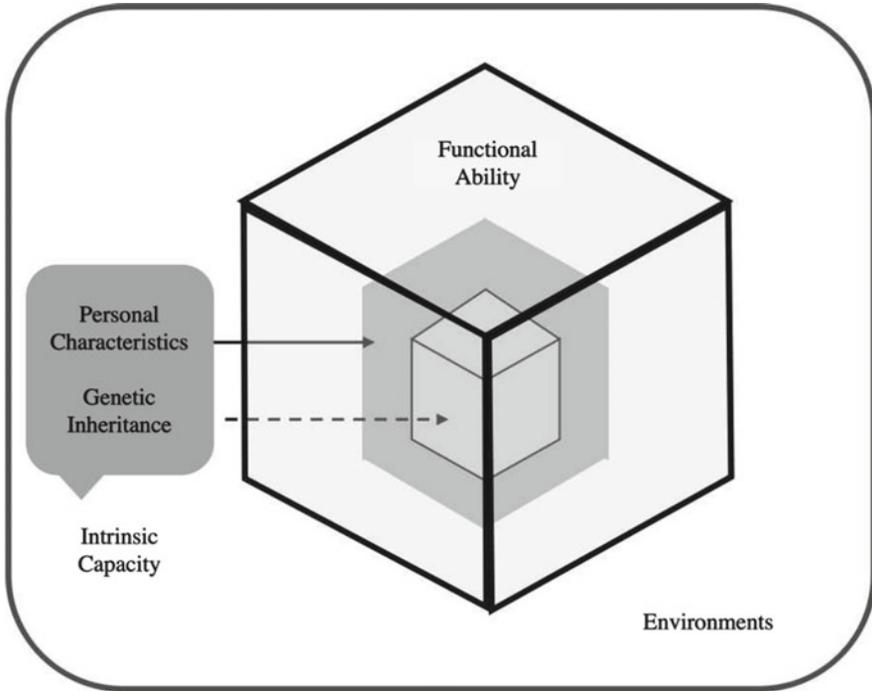


Fig. 2.5 Healthy aging model. *Source: World Report on Aging and Health, World Health Organization*

metabolism, which are individual factors inside the “sugar cube”. What we often ignore are the external influence of social environmental factors outside the “sugar cube” on healthy aging.

External environmental factors include all the factors in the extrinsic world provided by society—from the microlevel to the macrolevel—home, communities, the built environment, people and their relationships, attitudes and values, health and social policies, and the systems that support them. These factors may have a greater impact on our health than we think. Research shows that light labor workers, people who live in economically developed areas/cities, and those with higher education, higher income or assets tend to have better health in old age. It is not hard to understand, as these groups have greater access to health services. However, it reflects an influence of public policies and the unequal allocation of resources. In addition, the quality of life is also largely influenced by micro-factors and individual factors such as education level, medical insurance, social participation, mental health and disease status. Macro regional factors play an essential role as well: the availability of community medical services and the medical supply resources in the region are both important factors.

In working toward healthy aging, we should pay attention to the maintenance of intrinsic capacity of the elderly, such as the physical and mental functions. Moreover,

sufficient active assistance from the extrinsic social environment should be provided. Many high-quality elderly care communities in China and abroad are built in consideration of both. These communities are often located in places with beautiful natural scenery. While enjoying an interactive experience of education and entertainment and a variety of social activities, residents also have an easy access to medical services, hospitals and third-party payments of medical insurance.

Healthy aging is not an easy goal to achieve. The key is changing people's awareness. Past generations underestimated the increase in life expectancy in the future, and we are underestimating the maximum health expectancy achievable for older people. Today, most people are probably not adequately prepared for their long life ahead. The currently available health resources are only focused on treating diseases regardless of age. Services covering a full life cycle to aim at promoting overall health are not being provided. Therefore, a serious mismatch between health resources and health needs is formed. The real challenge is how to shift people's awareness from "focusing on treatment" to "focusing on health". Let us aim for healthy aging and be best prepared to meet the unprecedented Era of Health.

2.3 The Era of Health Calls for a New Model

Can Healthy Aging Be Achieved Through Medicine?

When picturing the future in the Era of Health, people often hold high expectations for modern medicine. The development of modern medicine has helped mankind fend off a large number of acute, infectious and fatal diseases and saved lives from severe injuries. It addressed human's most pressing survival needs, and extended life span to a maximum. Currently, survival-extending treatment measures have been developed even for with cancer and AIDS, which used to be considered incurable, to maximize the life span of patients. However, except for relieving life-threatening crises, medical treatment cannot guarantee that people will stay healthy, nor can it completely cure diseases or reverse aging.

Health is influenced by a combination of multiple factors, and medical factors account for only 11%. However, the other 89%, such as individual behavior, social environment and genetic factors (Fig. 2.6), do not receive as much attention as medical factors. With that said, almost half of the factors influencing an individual's health are determined by his or her "birth" and "origin". The biological diversity of individuals will also be reflected in the diverse health conditions of different people. The factor weighing the most is individual behaviors, and they could be effectively improved by efforts people make on their own. Individual behaviors should also be the main direction for general health maintenance promotion and disease prevention in senile age groups.

Health conditions are not completely determined by medical factors. The choice of medical treatment itself reflects a balancing process of benefits and costs. Medical treatment is hardly completely harmless. Although the benefits of most medical treatments far outweigh the costs, we should not ignore the side effects of drugs,

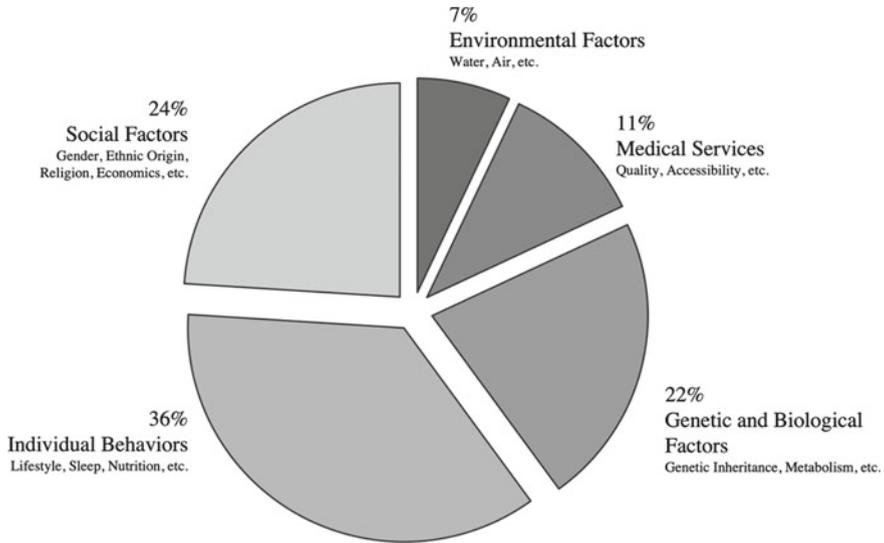


Fig. 2.6 Factors influencing individual health. *Source: Determinants of Health (2018)*, Edwin Choi, Juhan Sonin, collated by the author

surgical complications and sequelae. Therefore, the focus of medical research is also shifting to the early prevention of diseases.

Medical services are often considered a kind of social resource, but all resources are limited, and the consumption of resources requires more rational consideration of cost and health benefits. People’s traditional belief of medical services is “focusing on treatment”. As a result, most medical expenditure is spent after diseases occur. As more advanced medical technology and treatment are developed, medical costs keep increasing. Additionally, chronic degenerative diseases are usually difficult to cure completely and these patients may require years of increasingly expensive medical support. Living with multiple diseases means that patients have to be put on multiple medications, which are often expensive and ineffective. Therefore, medical models have also been under constant reforms.

Medical Model Reform

If we look back on human history, the first thing that came along the rapid progress of medical technology was the constant renewal of human awareness. As people have different understandings of diseases and health, their attitudes and methods also differ in treating diseases and dealing with health problems.

For a long time in ancient times, people believed that life and health were bestowed by gods, and diseases and disasters were either divine punishment or mishaps caused by ghost possession. Such early concepts of disease and health were considered the spiritualism medical model. At that time, maintenance of health and treatment of disease mainly relied on psychical inquiries, fortune-telling, and prayers to gods. At that time, medicine and witchcraft were often intertwined.

Later, naive dialectical holistic medical views emerged one after another in both Ancient Greece in the West and China in the East. These views drove out the spiritual elements in the spiritualism medical model, and people began to integrate and organize scattered fragmented pieces of medical knowledge. Empirical medicine gained major development, forming the Natural Philosophy medical model. Its examples include theories such as Yin, Yang and the Five Elements in traditional Chinese medicine and the ancient Greek physician Hippocrates' theory of the Four Bodily Humors.¹ Doctors carried out medical activities based on experience, intuition or speculative reasoning, and they accumulated valuable first-hand materials on diagnosis methods, treatment methods and drug efficacy in their practice.

In the sixteenth century, the scientific revolution flourished in various fields during the Renaissance. Medical development began to break through ideological shackles and technical barriers. With the establishment of Newton's classical mechanics theory system, the metaphysical mechanistic materialistic conception of nature came into being. It explains all natural phenomena with "force" and "mechanical movement". The Mechanistic medical model that emerged at roughly the same time believed that "motions of living creatures are mechanical movements" and explained all of human's physical phenomena from a mechanical view. It compared a healthy body to a well-oiled machine running in harmony and compared diseases to failures of certain parts of that machine. This model overlooked the biological and social complexity of life, but it did greatly accelerate the development of anatomy and biology. Many outstanding figures in the history of medicine emerged during this period, who also promoted the development of medicine to a certain extent. Vesalius, the founder and practitioner of modern human anatomy, is among the most famous. He enjoyed equal fame as Copernicus, and they are considered to be the two major representatives of the Scientific Revolution. Vesalius wrote the great medical books *De Humani Corporis Fabrica Libri Septem* (on the fabric of the human body in seven books). More importantly, he refuted the so-called authoritative ideas, which were impractical and wrong, broke away from religion's control over scientific research, and defended the scientific truths. His contributions to anatomy also paved the way for William Harvey, an English physician, to establish his theory of blood circulation with his work *De Motu Cordis et Sanguinis* (On the Motion of the Heart and Blood) published in 1628. Many great achievements and discoveries were made in physiological science in this period.

Entering the nineteenth century, in the process of western industrialization, three great discoveries were made in natural science, namely, the Law of Conservation of Energy, Cytology and the Theory of Evolution. These discoveries further propelled the development of biology and medicine. Scientific methods are widely used in medical practice, and people's awareness of health has been greatly updated. A biomedical model of health was built on the basis of biological sciences, breaking

¹ Theory of the Four Bodily Humors: it was believed by Hippocrates and his followers that diseases were caused by dyscrasia of the four bodily humors (blood, black bile, yellow bile and phlegm). They also believed that people of ideal health should have equal amounts of the four bodily humors, and people get sick when there is imbalance between the four bodily humors and will not recover until that balance is restored.

medicine completely free from the shackles of religious theology and idealism. Thorough research was performed on the morphological structure of the human body, physiological pathology, etiology and pathogenesis, and a relatively complete scientific system was formed in medicine. At the same time, William Osler, known as the “Father of Modern Medicine”, co-founded the globally top-ranking Johns Hopkins School of Medicine. Osler established the earliest residency system of doctors and published the famous textbook *The Principles and Practice of Medicine*. By his “bedside clinical training”, the idea of learning from practice has been sealed deeply in medical education, profoundly influencing not only medical practitioners at his time but also generations to come.

In fact, biomedicine alone cannot solve the problems people have in the prevention, incidence or prevalence of diseases, such as tuberculosis and sexually transmitted diseases, especially AIDS. Nor can it solve obesity and drug abuse, which are becoming increasingly common. The reason is that these conditions are the results of people’s lifestyles and individual behaviors, as well as social factors such as economic conditions and education levels. In 1977, George Engel, an American doctor, proposed the “Biopsychosocial Model”. Engel’s model expanded treatment from only focusing on the physical cause of disease to an integrated approach incorporating prevention, maintenance, treatment and rehabilitation, targeting biology, psychology, and socioenvironmental factors. This approach improved the efficacy of treatment more comprehensively. The biopsychosocial model interconnects biology, psychology, and socioenvironmental factors. It is a new multidimensional medical model that meets modern human needs in healthy aging.

Although the new medical model was put forward in the 1970s, the actual transformation was very slow in clinical practice. This was partly due to limited technical conditions: a fragmented healthcare system could not sustain continuous health management services. The full transformation was also hindered by utilitarian mindsets and the lack of interactions between segregated specialties. In the Era of Longevity, factors such as individual genetics, environment, behavior style, psychology, and society will have an amplified influence on people’s health within the full life cycle. Individuals and society’s demands for healthy aging will create challenges. These needs and challenges will accelerate the medical model transformation from sole disease treatment to a comprehensive package of health maintenance services covering the full life cycle.

Innovation Will Lead Human Beings to a Healthier Longevity

Welcoming the Era of Health, we still have a long way to go. Fortunately, human beings are making extraordinary technological breakthroughs in various fields. We are looking forward to harnessing that technological potential in disease prevention, rehabilitation, chronic disease management, sociopsychological health, etc. Through health intervention to individuals’ full life cycle and to the environment, people expect to age healthily in our finite lives.

First, we should minimize the risks of disease by prevention. The extensive application of vaccines is a classical example of disease prevention. New vaccination technology is showing huge potential: significant progress gained in molecular

biology and molecular immunology, and genetic engineering is being utilized. The commercialization prospects of vaccination are extended, especially to rare or difficult diseases that have never been completely conquered, for example, the prevention and treatment of cancer. No one could have foreseen that the global pandemic of COVID-19 would draw unprecedented attention to the new mRNA vaccine. Before COVID-19, the prevention and treatment of cancer was one of the targeted applications of mRNA vaccines R&D. The pandemic expedited the fast application of mRNA vaccines and added one more powerful piece of weaponry to the human arsenal in the fight against diseases. The Internet of Things, AI, machine learning and other emerging new technologies have also contributed to vaccine R&D by improving the speed and coverage of data collection and data analysis.

The development of Life Sciences has proven that there is a correlation between many commonly seen yet seriously damaging diseases and individual genetic inheritance. By taking genetic screening tests early, people have the option to take targeted preventive measures in advance to minimize the risks of catching certain diseases in the future. With “Test Tube Baby” technology and genetic testing, couples carrying thalassemia genes now have a chance to have a healthy baby. Through genetic screening tests, the famous Hollywood star Angelina Jolie found that she carries the hereditary gene BRCA1, which gave her an 87% chance of developing breast cancer and a 50% chance of developing ovarian cancer. She then underwent a voluntary double mastectomy, and her ovaries and fallopian tubes were surgically removed. The “extreme” measures Angelina Jolie took to reduce risks were not approved by all people, but her choices showed an alternative path. By understanding their own disease risks, people can manage the possibility of getting certain diseases in the future by adjusting individual behaviors, lifestyles and dietary habits. This proactive approach has become an important part of disease prevention.

Aside from the prevention of disease, scientists are also actively exploring the prevention of aging and death. With their efforts, the “immortal” HeLa cell line was discovered; old rats could get young by exchanging blood with young rats; lab rat’s life can be extended by controlling caloric intake in its diets; mutant DNA, which causes aging, could be cleansed by cell programming; R&D of telomerase inhibitors could delay telomere shortening; gene editing is being combined with stem cell therapy, etc. As for application, antiaging drugs (rapamycin, metformin, spermidine, NAD + precursor supplement, etc.) have shown possible antiaging effects in experiments and have become a very popular R&D direction, but their effect on the human body still needs further experimental validation.

Precision medicine makes treatment safer and more effective. Precision medicine was developed based on personalized medicine. By integrating methods and techniques of modern scientific disciplines (genetics, molecular imaging, bioinformatics, etc.), precision medicine provides customized treatment for patients based on differentiated individual genetic inheritance, environment and living habits. Customized treatment has the best clinical results, lowest medical cost and highest social health benefit, and the most classic example is the treatment of cancer patients. Due to the biological diversity of individuals, patients may have various degrees of sensitivity and resistance to chemotherapeutic drugs, and many patients have received

unnecessary or even damaging treatments with strong side effects. In recent years, targeted medicine has been carried out in many hospitals, especially in tumors that have been proven to be associated with genes. In targeted gene therapy, cancer cells will be tested genetically, and mutated genes, which are the targets, will be detected and treated. Because of their small molecular size, nanomaterials are used as drug carriers to improve absorption and utilization, and extend the biologic half-life of medications. After entering the body, they will only combine with molecular targets without acting on the normal tissues surrounding cancer cells, efficiently delivering targeted medication and reducing unnecessary physical burden and loss of health for patients.

In addition, the popularization of surgical robots has improved traditional surgery in accuracy, duration, visual field angle and other aspects. In the treatment of certain diseases, surgical robots have gained common recognition of doctors and patients. Surgical nanobots are designed following principles of molecular biology and can precisely kill cancer cells, remove clots and lipid buildup in arteries, clean wounds, crush stones, etc. Other robotic technologies for medical use, such as robotic radio-surgery, capsule robots, and robotic assisted ultrasound/imaging, are also in research and development.

For people who are already suffering from degeneration or loss of physical capacity due to aging or diseases, attention should be given to the timely prevention of further decline of physical ability and cognitive ability so that patients can recover as much as possible. Human body tissues and organs are self-healing to a certain extent. For example, stroke patients who go through a standardized rehabilitation program within 6 months after stroke have a 78.6% probability of improving ADL ability and minimizing loss of capacity. Our skin will heal by itself after being cut, and a cast can help bones “grow” after fracturing. However, chronic diseases, such as heart disease, diabetes and osteoarthritis, take a long time to progress and can only be alleviated rather than self-healed. If we can “learn” more about the principles of self-healing and methods to help self-healing, we can better cope with aging, diseases, injuries and infections.

Based on tissue engineering and life sciences, multiangled interdisciplinary research has been carried out in regenerative medicine. Examples include the fabrication of tissues and regeneration of organs using directive differentiated stem cells or progenitor cells² (cell therapy), organ regeneration in vitro, transplant of tissue and organ (tissue engineering), reconstructing the microenvironment to induce and activate cell regeneration (immunoregulatory therapy) through infusion of cell-active substances and growth factors, etc. Shinya Yamanaka, laureate of the 2012 Nobel Prize in Physiology or Medicine, discovered and successfully cultured iPS cells (induced pluripotent stem cells). The differentiation potential of iPS cells can be

² Stem cells are primitive and unspecialized cells that have the potential function of regenerating various tissues and organs. They exist in various cell tissues and have different types with differentiation in ability. Hematopoietic stem cells, for example, can differentiate into blood cells; embryonic stem cells appear before zygotes and have the potential to differentiate into a whole living organism. Progenitor cells are intermediate cells before differentiation, similar to stem cells, but with limited ability to differentiate, replicate and divide.

used in many fields, such as retinal tissue culturing, knee cartilage regeneration, and treatment of damaged hearts. The emergence of regenerative medicine has undoubtedly brought new hope to solving many medical problems currently faced by human beings. However, regenerative medicine is still in the stage of fundamental research and needs to be standardized and restrained due to ethical considerations.

Another observation is that the overcrossing of many new cutting-edge technologies has presented the possibility for humans to gain “external assistance” to our physical functions. The brain-computer interface (BCI) is one of the most eye-catching research directions in brain science and neuroscience. With electrodes implanted in the visual cortex of the brain, a blind patient in Spain wearing glasses equipped with a tiny camera was once again able to “see” letters and patterns on a piece of paper. Parkinson’s disease can also be contained to a certain extent by deep brain stimulation. By building a direct new pathway for neural directives, BCI can help stroke patients and those suffering from language dysfunction establish cross-language communications. People also have very high expectations for BCI in treating depression and Alzheimer’s disease. Machine science research is expected to reach a new height to substitute for certain physical functions of the human body, especially for disabled, elderly, and mobility-impaired people.

Having to live with diseases creates a need for chronic disease management. Scientific development enabled the “patient-oriented” healthcare to be reconstructed both in time and space. For a long time, medical resources lack integration, and older people living with multiple diseases at the same time often have to travel back and forth between different levels and types of medical facilities many times. The lack of synergy between facilities usually results in poor recovery and relapses of patients. Older people are often on multiple medications at the same time, which leads to an increase in adverse drug reactions. Currently, we do not have a well-established chronic disease management system in place that could offer multidimensional, proactive and continuous services. Therefore, it is difficult to delay the progression of chronic diseases, prevent complications, lower disabilities, improve quality of life and reduce medical costs. As more people will have to live with diseases, the social medical burden will also continue to grow.

With the rapid development of testing, diagnostic technology and information technology, healthcare services may be extended to more occasions: in addition to in-between facilities, they could also reach beyond hospitals to communities and families. Medical information and data will no longer be stored in isolation. It can be shared, compared and used to inform the self-management of chronic diseases. Patients with heart failure risks will be able to monitor their own vitals in real time through sensors in their watches, wristbands or wearable devices. Diabetic patients on long-term medication can monitor biological recognition indicators through on-skin wearable devices for precise medication. All these data could be uploaded to medical facilities or even larger platforms through the Internet. It will save time for both doctors and patients and allow patients stronger control over their own conditions. With the development of digital medicine, the process of medical services will be further optimized, and the quality and efficiency of medical services will be improved. Digital medicine will enable medical facilities to communicate, share information,

and provide personalized treatment protocols to patients based on big data analysis. The ultimate goal is for patients to enjoy better medical experiences and treatment results.

Aside from physical diseases, factors such as mental state, individual behaviors and social environment are affecting people's health as well, directly or indirectly. With the accelerating pace of life and increasingly intensified competition in the modern society, it is highly possible for people who lack sufficient socialization experience to present a series of psychological symptoms, such as fear, anxiety, tension and despair. These psychological symptoms are important pathogenic factors for cardiovascular diseases, hypertension, malignant tumors and mental disorders. According to statistics released by the World Health Organization in 2017, more than 300 million people worldwide suffer from depression, of which over 95 million are in China. Depression has become the third leading cause of disability, ranking only after heart disease and respiratory disease. New technologies could aid treatment of psychological conditions too. Internet big data can be used to study, explore and quantify the behavioral characteristics of psychological diseases and establish a quantitative model of psychological disease. Artificial intelligence can analyze users' facial expressions, voices and texts, and establish a common analysis basis of the three to identify and screen psychological problems. Online consultation, diagnosis and treatment have created new space for patients who are suffering from psychological conditions but too shy to see a doctor.

In terms of the social environment, intelligent home systems have been constantly developing. A intelligent home system could cover many housing needs: it could monitor individual health status, such as sleep monitoring, body temperature and respiration sensors; it could monitor indoor environment and coordinate air purification, intelligent environmental control of room temperature and humidity, noise cancellation and water purification; it can even intelligently interact with home owners, providing companionship, daily interactions and daily reminders. Hardware wise, special equipment with enhanced user convenience is introduced to help maintain people's physical vigor and functions, such as walking assistance devices, hearing aids, and home elevators designed for elderly individuals. More sites are being designed and constructed for older people to do physical exercises and participate in social events. Senior colleges, senior societies, social network sites, volunteer work and jobs for retirees are becoming more common, and senior citizens' needs for continuous personal study, social contribution and realization of personal value are accommodated. In 2010, the Department of Psychology at Brigham Young University conducted a systematic analysis on the correlation between social connections and death risk. According to their findings, individuals with good interpersonal relationships had a 50% increased likelihood to live longer than those lacking social contact. Further analysis by a 2016 study from the Department of Sociology at the University of North Carolina found that social inactivity had an even greater impact on the incidence of hypertension in older adults than diabetes, and that higher levels of social involvement would reduce the incidence of hypertension in older people by 13% and slow disease progression by 54%. Internet has shortened the social distance between one another, and people gather for their shared hobbies or sports, exchange

ideas and have fun together. These gatherings not only help maintain and improve their physical capacity and functions but also bring them to a healthier mental state.

For a long time, scientific progress was believed to be the solution to disease treatment. Today, we hold the same expectation for scientific progress to present a solution to achieving healthy aging. Many scientists and thinkers have openly declared that the ultimate question to modern science is how to defeat death and achieve eternal youth. Benefitting from the development of life sciences and information technology, such as the Internet, big data, cloud computing, AI and 5G, the sharing of resources and integration of functions will contribute great value to the ecology of health industry. We will need a brand-new point of view in welcoming the Era of Health. We look forward to new models and new technologies, which will enable us to cope with noncommunicable chronic diseases more effectively and lead us to a healthy long life.

2.4 Blue Ocean of the Big Health Industry

The Big Health Industry Harbors the Largest Business Opportunities

In the Era of Longevity, huge demands for all aspects of health will boost the development of the Big Health Industry. A crucial component of the Big Health Industry will be to provide people with healthy living solutions targeted at healthy aging. The Big Health Industry will harbor the largest business opportunities, and it will be a substantial force driving society to the Era of Health.

As of now, the Big Health Industry is already one of the largest industries worldwide. In developed countries such as the US, Switzerland, Germany and France, medical expenditure accounted for over 10% of their national GDP in 2019. Statistics from US medical insurance and Center for Medicare & Medicaid Services (CMS) show that the US spent 17.7% of its 2019 GDP on medicine and health. China's health expenditure in 2019 was approximately 650 million RMB, which is approximately 6.6% of its GDP in the same year. Compared with developed countries, there is still considerable room for growth for China's Big Health Industry. According to the "*Healthy China 2030*" *Blueprint*, the size of China's Big Health Industry will grow to 1.6 billion RMB by 2030. China's Big Health Industry has an immense potential and room for optimization in its industrial structure. With the boost of favorable policies and market prosperity, it is expected to become one of the pillar industries of China's national economy.

As a new and steadily developing industrial cluster, the Big Health Industry looks much alike medical care services in a narrow sense. But in a broader sense, the scope of the Big Health Industry is reaching beyond fields that are directly related to medical care services, and it will extend to incorporate a package of health services covering the full life cycle and all age groups. The application of new technologies such as AI, big data, and the Internet of Things will become more mature and infiltrate into medicine and health care. Their interactions with conventional healthcare industry

components will hasten new businesses, new models, new scenarios and new growth of the Big Health Industry.

The Big Health industry is extensive. It has a large number of subindustries, such as biological pharmaceutical manufacturing, medical equipment, elderly care, sports and fitness, health management, nutrition, medical cosmetology and Internet Medicare. These subindustries are already showing great market potential, and they have been attracting much investment. The Big Health industry is also intensive and concentrated. From scale and structure of business, pharmaceutical companies, health insurance companies and medical facilities are the three main drivers of the Big Health Industry's prosperous development. In 1996, 11 companies in the Big Health Industry made the Fortune 500 list, and this number had grown to 28 in 2020, which is a 255% of "explosion" in 24 years. Pharmaceutical companies such as Johnson & Johnson and Pfizer and retail companies such as McKesson and Sinopharm took half of the Big Health Industry market. The market value of Johnson & Johnson alone was over 400 billion US dollars in 2021. Commercial health insurance companies are also great contributors. The United Health Group in the US is the largest commercial health insurance corporation in the world, and its market value in 2021 was 380 billion US dollars. HCA, the world's largest hospital chain group, was valued at 70 billion US dollars in 2021. The "money-making" power of the Big Healthy Industry and its major players was astonishing.

The Era of Longevity Drives Structural Changes in the Big Health Industry

Older people are the main consumers of medical and health services. Noncommunicable chronic diseases have become a medical resource-consuming "black hole", and the demands and cost of medical services are both increasing further. The growth of the elderly population and the development of chronic diseases have brought unprecedented challenges to the current medical and health industry. According to investigations carried out in the US by the Medical Expenditure Panel Survey (MEPS) in 2006, 84% of healthcare expenditure was spent on chronic disease management. The China Development Report 2020 titled "*Population Aging: China's Development Trend and Policy Options*" also points out that the treatment costs of chronic diseases (such as circulatory system diseases, respiratory diseases, malignant tumors, etc.) have been rising, accounting for approximately 80% of the elderly's medical expenditure.

Various studies have also found that another major factor for the rising medical costs is the advancement of medical technology. In 2000, the United States Social Security Administration reviewed several studies on the contribution of different indicators to the increase in per capita medical service cost from 1940 to 1990. They found that medical technological advancement contributed 38–62% to the increase in medical cost. Some reports even pointed out that the contribution may be more than 65%. Research in Japan also shows that the continuous rise of medical and health expenditures was caused by many factors, including medical technology progress, economic wealth growth, an aged population and the changing structure of human disease spectrum, among which the primary factor is technological progress, accounting for 40% of contribution. The above findings are highly related with the

fact a that the current mainstream medical services are still concentrated on treating acute and major diseases, which require costly high technologies and equipment, resulting in the constant climbing of medical expenditure.

In the past, scientific research and medical resources were focused more on acute or fatal diseases and less on eliminating or delaying chronic and degenerative age-related diseases. This is largely because life expectancy was short back then, and medical research naturally focused more on deadly diseases. At that time, there were not as many people having to live with disease long term as today, thus they were more likely to be neglected by the society. The growing imbalance between the health demands and medical resource distribution is occurring not only in China but also in the US and other developed economies. The medical system itself also has problems such as weak prevention, strong treatment, fragmentation, inefficiency and abuse of medical resources. Excessive medical treatment, repeated hospitalization, and increasingly heavy medical burden on both the government and the patients are the most commonly seen manifestations. As the demographic structure changes, more people will have to live with chronic diseases for a long time. Health becomes people's largest demand, and it will cause structural changes to the industry.

On the one hand, the pressure on treatment should be relieved by strengthening disease prevention and health management. With the changes in the industrial structure and the guidance and support of governmental policies, patients with common diseases and chronic diseases and outpatients could be redirected from costly and inefficient general hospitals to community medical facilities, where more economical treatment and procedures will be applied. For example, nail-clipping services could be provided to diabetic patients to reduce the risk of foot infections, gangrene and potential amputations, and better management of pregnancy would reduce infant hospitalization and NICU cases. These efforts will not only benefit the patients' health but also play a role in curbing the rapidly rising medical costs.

On the other hand, integrated healthcare services should be created and provided. Medical institutions should be vertically integrated: closely connected medical associations should be established to provide continuous and active medical and health services for patients. There should also be horizontal integration between institutions and facilities of subindustries, such as obstetric services, physical examinations, health management, sports rehabilitation, elderly care, etc. With the boost of information technology, integrated services centering on health needs can improve operational efficiency and service accuracy of the health industry, optimize medical expenditure composition, and expedite industrial structure transformation. In a sense, the traditional extensive medical service model is being replaced by an inclusive package of medical and health services centering on individual health needs with the purpose of quality, efficiency, efficacy and value.

As the elderly population's compound demands for medical treatment, health, nursing, elderly care and other services grow gradually, integrated services are becoming customized with more features, and the service model is being constantly innovated. Health services such as home visit and home care for the elderly and the disabled are growing popular. In recent years, exploration of home visit medical services and professional support in caretaking and rehabilitation have begun in

Japan, the United States, China and other countries. Older people face many practical problems in getting healthcare: they have difficulty in mobility and often have unpleasant experiences at the hospital. Home visits and home care can solve those problems and reduce the overall medical costs greatly. Integrated eldercare communities are also developing vigorously in the United States. For example, the CCRC model, which is Continuing Care Retirement Community, provides a variety of service options based on different health statuses and social needs of residents in the community. The options include independent living, assisted living, professional 24-h nursing, etc. Thousands of elderly care communities in the United States have adopted the CCRC model: the housing designs of these communities are customized for elderly individuals, leisure facilities are built within, and residents have an easy access to professional medical and health services.

The CCRC model has also been introduced into Taikang's longevity communities. We established a "1 + N" service team model to implement the CCRC concept. "1" here refers to "1 case manager" in each team, who is usually the community housekeeper or care giver. "N" refers to a multidisciplinary professional team made of more than 15 specialists in nursing, rehabilitation, medicine and other specialties. The "1 + N" teams support the residents in maintaining and improving their physical, psychological and social functions, while ensuring their health, comfort and pleasure. We were pleasantly surprised to see that some of our residents, who were too weak to even get out of bed at admission, recovered well enough to live a healthy and happy life independently after two years in Taikang's longevity communities.

Considering that medical care is one of the necessities of our residents, we also equipped each of our elderly communities with a rehabilitation hospital to create a "one community, one hospital" model. With this model, we have built a triple-layered medical service mechanism for the residents, namely, "first aid—chronic disease management—rehabilitation". This mechanism provides comprehensive and sustainable medical and health services focusing on rehab and diseases commonly seen in older people. At the same time, we maintain close cooperation with surrounding top graded hospitals to ensure that residents receive public medical services when needed in a timely manner. By the combination of maintenance and medical care, we want to make sure there is "a top hospital close by, and doctors by the side" so that our residents have access to both sufficient daily care from community hospitals and effective timely public medical services. In the future, we will further develop a new five-in-one business model in locations with mature conditions. Medical care, elderly care, rehabilitation, health management and insurance will be seamlessly integrated to provide our residents with comprehensive medical services including health consultation, health management, diagnosis and treatment so that residents can truly enjoy a healthy longevity.

Commercial Health Insurance Companies Became Levers of Revolution

In the Big Health Industry, insurance companies, as third-party payers of medical and health services, are extremely important participants and naturally have overlapping business with elderly care and healthcare industries. In fact, in the entire

business world, there is no other industry like the medical industry: with the participation of third-party payers, customers only have to pay a very small amount of money but they can enjoy a great number of high-quality medical services. More importantly, third-party insurance institutions negotiate for better quality and lower price of medical services with medical facilities on behalf of customers. This position gives them unique advantages in optimizing the allocation of medical resources, and adding value to the industry and extending the industrial value chain. With these unique advantages, commercial health insurance companies became the levers of revolution.

In the Era of Longevity, people need more inclusive insurance services to provide protection for a longer and healthier life. On top of the basic social medical insurance system, commercial health insurance can provide stronger and wider protection and has a positive influence on improving people's overall health. Commercial health insurance developed best in the US. US commercial health insurance companies offer a large variety of health insurance products and a wide coverage of protection. According to the US Census Bureau of the Department of Commerce, approximately 68% of the US population was covered by commercial insurance already in 2019. Data from the US Centers for Medicare and Medicaid Services also showed that commercial health insurance accounted for 31% of healthcare funding in the US in 2019. Commercial health insurance has become an important component of the financial insurance system and social security system in the US. In other developed countries, commercial health insurance also plays an important role in medical and health systems. Germany also adopts a social medical insurance system. According to the data from the German Federal Statistics Office, commercial health insurance expenditure accounted for 8% of the country's total health expenditure in 2019, more than double that of China.

In recent years, Chinese consumers' demands for commercial insurance have expanded from life insurance to health insurance, such as sickness insurance, commercial medical insurance and long-term care insurance. According to the data from the China Banking and Insurance Regulatory Commission, health insurance premium income continued to grow from 2011 to 2019 at rate of 30%, much higher than that of any other insurance product, making it the fastest-growing market segment in the insurance industry. In 2020, the premium income of commercial health insurance in China reached 820 billion RMB and is expected to maintain rapid growth in the next 5–10 years to reach 2 trillion RMB in 2025.

People's demands for medical care and eldercare are growing rigid in China. These rigid demands are creating huge potential for health insurance products. There have been vigorous innovations in health insurance products, which have invigorated scientific and technological progress and boosted the development of the pharmaceutical industry. The development of innovative insurance products, such as chronic disease treatment insurance, specialty drug insurance, rehabilitation and nursing risks, aims to better compensate medical costs and help alleviate patients' financial burden. These new insurance products have improved the accessibility to medical services, high value drugs, new drugs and specialty drugs to a certain extent, driven sustainable development of relevant industries and contributed to the optimization

of social welfare. China's health insurance market is rapidly maturing, and health insurance products in China are being continuously optimized. A more well-rounded "umbrella of protection" will be held up for people's health.

As the main consumer interest in commercial insurance products shifted from life insurance to health insurance, the insurance industry also develops a trend of integration: segments throughout the health industrial chain from upstream to downstream are integrated, such as medical care, pharmaceuticals, health management, elderly care and nursing. The operation of health insurance is to operate the health value chain through the insurance lever. In the US, commercial health insurance policy holders had to pay medical costs out of their own pockets first, and then go to commercial health insurance companies for "reimbursement". As the commercial health insurance market continues to grow in size, the industry experiences increasing marketization and policy holders no longer need to do that. Commercial health insurance in the US has transitioned into a "managed health care" model, where insurance companies become directly involved in the management of the health service system. This new model reasonably controls medical expense growth and ensure that customers obtain medical services of higher quality.

Founded in 1945, in California, Kaiser Permanente (KP) is a nonprofit health-care group and one of the largest health maintenance organizations in the United States. KP built a lever through the integration of insurance and services, and its core business is the innovative integration of health plans, hospitals and physicians into one organization through a prepaid insurance model (see Fig. 2.7). Through a series of measures taken in finance, systems and incentives, KP became the first to unify insurance payers and medical service providers with common interests, forming a closed commercial loop where medical services are provided and paid for within the integrated system. Its profit model is that the risks are shared by the insurance end and the physician end, and the medical expenses are controlled through measures such as the strict patient guidance system and health management of its members. In KP's model, the Health Plan is responsible for premium collection and regional promotion; Kaiser Foundation Hospitals, as independent entities, receive their budget from the insurance end and are responsible for investing in their own medical facilities or managing facilities in cooperation with other local facilities. As an independent for-profit organization, the KP group has an exclusive cooperation agreement with the payment terminal, and its physicians are only responsible for providing services to KP members. By 2020, KP had more than 12.4 million members, 39 hospitals, 723 clinics, over 24,000 doctors and more than 64,000 nurses in 9 states of US. In 2020, its revenue reached 88.7 billion US dollars, with a compound annual growth rate (CAGR) of 7.2% in the past 10 years and an average profit rate of 3.1%, which all reflected its stable operational capability. The emergence of the "Kaiser Model" brought more attention to the efficiency of medical and health services and showed that medical care is needed and can be controlled by value, which indirectly promoted the development of managed health care in the United States.

Another representative of the US commercial health insurance industry is the United Health Group (UHG), which leverages bargaining power with health care services by pooling payment ability and business scale. UHG pooled payment ability

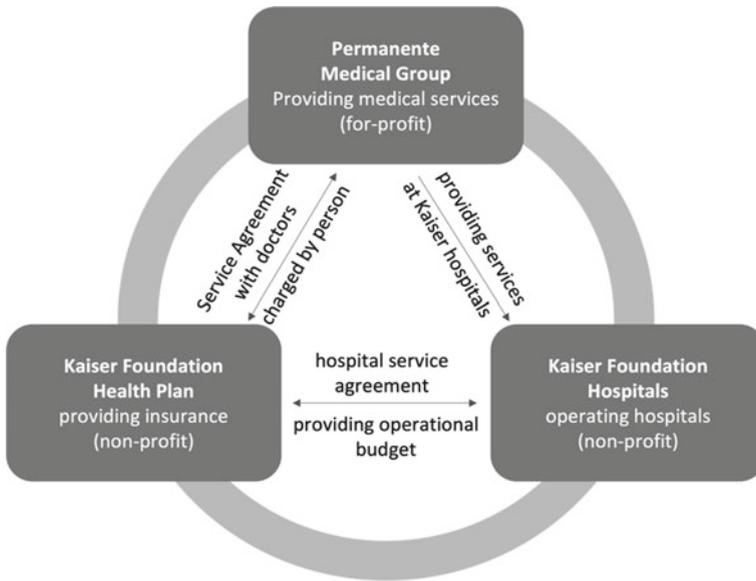


Fig. 2.7 Kaiser medical care model. *Source* Collated by the author

through aggressive acquisitions, entering the government healthcare market and building a strong distribution of health services. With the payment ability, UHG combines its two business segments, United Healthcare, which is the health insurance business, and Optum, UHG’s health services business, to achieve two-way synergies and profitability. United Healthcare is responsible for providing various types of health insurance and diverting clients to Optum, the health services business segment. While providing back-end health, medical and nursing services, Optum is also responsible for developing cooperation with hospitals, pharmacies and other related companies. This model enables UHG to control cost of the whole process of data and health services, reduce the indemnity cost of the insurance end, and achieve double spiral business growth. United Healthcare and Optum contributed 64.4% and 35.6% to UHG’s operating revenue and 52.5% and 47.5% to its operating profit, respectively. Since its establishment in 1974, UHG has grown to be the largest commercial health insurance company in the United States, providing health insurance-related services to more than 70 million people in the United States. In 2020, UHG’s business revenue was more than 250 billion US dollars, and its profit exceeded 15 billion US dollars. For over a decade, the CAGR of UHG’s revenues and profits have reached 13% and 10%, respectively. As of May 2021, UHG’s market value exceeded 380 billion US dollars, and is, without a doubt, one of the leading health insurance companies in the United States.

In general, all kinds of insurance companies are making efforts to involve themselves deeply into the Big Health ecology in their own ways. In addition to providing patients more cost-effective protection of finance and service, insurance companies

have also gradually grown to become investors of the health industry and participants in medical services, disease prevention and disease management. Insurance companies are an emerging force of the Big Health Industry: they add value to the industry, and extend the length of the industrial chain. As an increasing number of people will have to live with diseases over the long term, people will seek out solutions to prolong health-adjusted life expectancy. Under such circumstances, industries that would directly or indirectly affect health, including the insurance industry, will become part of the Big Health Industry and be welcomed in a blue ocean of development driven by huge demand.

The Era of Longevity is the result of the continuous progress of material civilization, creation of abundant social wealth and the constant development of medical technology. This unprecedented experience is both an opportunity and a challenge. The explosion of medical and health demands will place a heavier burden on social resources. It is not only about the elderly but also a social issue, and it needs to be addressed by several generations to come. In the Era of Longevity, health is the largest livelihood and the largest industry. Facing such epoch-making social changes, enterprises, as the main participants of market economic activities, must also gain a deep understanding of these changes, wield the power of business in innovation and exploration, and provide much more efficient corporate solutions to the health needs and challenges. Taikang started as a traditional life insurance company, dug deep into life insurance business and its entire industrial chain, and redirected itself to the path of building a grand Big Health ecology. We realized that we are facing great opportunities in the health industry in the Era of Longevity. From our experience, we also see in practice the powerful synergies between the insurance, health care and elderly care industry, and believe Taikang can make a great contribution to the Big Health ecology and to the society. Our determination was boosted and we aim to become a leading enterprise in the Big Health Industry. We will persist in expanding health insurance payments, establish services such as health care and eldercare to change people's lives, and serve human's goal of healthy aging in the Era of Longevity and Health.

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Chapter 3

The Era of Wealth, A Life of Wealth



As elaborated in previous chapters, it is almost certain that there will be more centenarians and that people will have to live a long life with diseases for a long time in the Era of Longevity. A healthy and quality longevity depends on wealth, including financial assets and property that could generate consistent income. After industrialization, the emerging well-off and wealthy people began to actively accumulate wealth to improve their quality of life after retirement. This will stimulate the vigorous development of the financial management and pension management industry, and the Era of Wealth will come into being.

Soon after starting in the life insurance industry, I realized that life insurance has a naturally close connection to people's financial demands in old age. An important motive for customers to purchase life insurance products, especially annuity products and permanent life insurance products, is to increase their pension reserve and extend their capital flow to the same length as their lives. My understanding of pension wealth accumulation was further developed by visiting insurance companies and asset management companies around the world. In the late 1990s, I visited Aegon, a Dutch insurance company, and learned that in addition to providing life insurance products for individuals on a personal level, insurance companies could also become fully involved in building the three pillars of pension. By providing individual and group pension products, life insurance companies could help with pension funding. In 2018, I visited the renowned Canadian Pension Fund Investment Corporation (CPPIB). Through professional asset management, they invested national pension funds in high-quality assets around the world, and again, they were trying to solve the pension problem on the investment level. The accumulation of pension wealth can actually be boiled down to two essential questions: where does the money come from? How should the money be invested?

Since the industrial revolution, people's professional lives have been divided into 3 phases: education, working and retirement. Because of the rapid growth of the working age population, early industrial countries implemented a pension system to encourage or force employees to make savings when working and use the savings in their retirement. The pension system once became the most important social policy

of the industrial age. In the era of longevity, the population age structure changes from a pyramid to a column, an increasing number of people need to receive pension benefits. The consumption of public pension funds will increase financial pressure of the government, and the replacement rate of public pensions will gradually decline. This means that it is vital for individuals to reserve personal wealth to cope with the pension shortages of traditional pension plan systems. It can be predicted that under such a background, the Era of Wealth will involve everyone, which means people's demands for wealth management will reach an unprecedented high. We should also keep in mind that with the increase of life expectancy, there will be increasing risks of wealth depletion of elderly individuals. There is much room for growth in the financial field focusing on providing solutions specifically for elderly individuals. Financial management products for the elderly in the Era of Longevity will be full of humanistic care.

3.1 Financing for a Long Life

Establishment of the Pension System and the Warning Bell of the Replacement Rate

In the long agricultural era of human beings, social production units were scattered, isolated peasant households, and older people were supported by their families. Because of the low social productivity at the time, there might not always be enough food and resources for the entire family to survive, and the elderly could lose their support. Folklore has it that there was a chilling custom in some poor areas in ancient Japan: to relieve the burden of the family, the elderly would be carried to the mountains by their children as "sacrifice to the mountain god", but in fact they were abandoned deep in the mountains and left there to die. These deep mountains are called "Ubasuteyama" (grandmother abandoning mountain) in Japan.

From the end of the nineteenth century to the beginning of the twentieth century, the Industrial Revolution swept across Western Europe. As a result of large-scale factory production, the personal and family risks of the aging of a large number of workers and their illness began to upgrade into social risks. Policy makers had to consider formulating social policies to deal with such risks. The pension system was created in Germany under this exact social background. Interestingly, such a pension system full of social sympathy was first initiated and established by Otto von Bismarck, the chancellor who delivered the famous "Iron and Blood" speech. Bismarck was an advocator of force. He provoked three wars to unify Germany and brutally suppressed the workers' movement, but he was also the founder of the modern social security system. The establishment of a series of social security systems, such as the pension system, eased various conflicts within Germany at that time and played an important role in Germany's economic development. In the late nineteenth century, industrial production in Germany grew rapidly, much faster than

in Britain and France. Since then, other countries have followed Germany's footsteps in introducing government-led public pension systems.

In the 1980s, the Latin American debt crisis and the change in population age structure exacerbated the Chilean government's plight in its public pension. Taking the suggestion on policies from the Chicago Boys, Chile was the first to put forward a pension system based on privately managed individual accounts, which is also known as the "capitalization" of the pension system. In 1994, the World Bank published a policy research report titled *"Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth"*, which summarized and reflected on the experience of the pension reform of Chile and other countries and formally proposed the "Three Pillars" of a pension system. The first pillar is the legally mandated state pension and is often on a pay-as-you-go basis. The government takes ultimate responsibility for the first pillar and provides protection. The second pillar is an occupational pension system where joint contributions are made by both employers and employees. The third pillar is the private pension, which is a personal pension savings plan of personal choosing. It can generate more generous pension returns to provide for life at an old age. The core of the three-pillar pension system is to expand the financing channels of pension, making the second pillar and the third pillar effective supplements to the first pillar.

As a pioneer in pension system reform, Chile has exerted a profound influence on the pension plan design of many countries. However, Chile's experience was not entirely successful: personal accounts provided a very limited incentive, and the system did not have a redistribution function; at the same time, decreasing ROI resulted in a very low pension benefits. The Chilean people went on street protests against the pension system many times. Entering the twenty-first century, Chile started its further reforms.

In the US, the three-pillar pension system is relatively mature. At present, the second pillar and third pillar account for more than 90% of the total assets of the US pension system. They are playing a pivotal role in the pension system and an important asset to ensure the retirement living standards of the US people. The development of the second pillar in the US pension system was quite a history. Before the 1970s, corporate pensions were mainly defined-benefit pension plans (the DB plan): the employer paid a fixed amount of pension directly to the retired employees, and the employer bore the investment risk of the pension fund. The population aging crisis and economic stagflation prompted the United States to start the pension reform in the 1970s, and the DB plan was shifted to the defined-contribution plan (the DC plan). The famous 401(k) pension plan¹ was invented in this very period. In the DC plan, the contribution standards of both the employer and the employee are fixed, but the amount of pension benefit the employee will enjoy is no longer a fixed figure. In the DC plan, the employees bear the investment risk of the pension funds in their own pension accounts. The DC plan eased the burdens on enterprises and gradually became the mainstream corporate pension plan. Additionally, 401(k) plans enjoy tax benefits and provide a wide range of investment options, including loans, insurance, stocks, funds, etc.

¹ It is named after the newly added subsection 401(k) of the U.S. Internal Revenue Code in 1978.

The IRA (individual retirement account) plan was born almost at the same time as the 401 (k) plan. IRA, as a third pillar plan, was created based on modifications of the *Employee Retirement Income Security Act* of 1974 by the US Congress. Individual retirement accounts are entirely set up by individuals and provide tax benefits. IRAs have the flexibility to take on assets transferred from second pillar plans when the employees leave company or retire, and they also offer a great variety of investment options. Featuring flexibility and tax benefits, the IRA plan expanded rapidly and exceeded second pillar plans in pension assets in the 1990s.

The evolution of pension plans has a profound impact on the United States, and the US pension system and its capital market achieved good interaction. After the implementation of IRA and 401 (k) plans, a great amount of money was invested into the capital market. These investments drove and shared the ensuing economic prosperity in the United States and promoted the continuous innovation of the asset management industry. The booming of the stock market, in turn, further expanded pension funds. Peter Drucker, a US management master, pointed out in his book, *The Pension Fund Revolution*, that it is with the help of the pension system and through their pension funds that American ordinary workers and residents became owners and providers of legal capital and controlling forces of the capital market.

Currently, the pension financing system with “three pillars” as the core has become a common practice in many developed countries and regions. As a country with the most severely aged population in the world, Japan has also established a pension system that will provide “insurance for all and pension for all”. Japan’s pension system still mainly relies on the first pillar and the second pillar. Its third pillar is smaller in size but developing quickly. Canada also has a “three-pillar” pension system. Its first pillar is the Canada Pension Plan (CPP), which is operated under a fully marketized mechanism and has obtained considerable investment returns from the capital market. Table 3.1 shows the three pillar pension systems in different countries and regions.

China’s pension reform has always been an important part of its economic reform. As insurance companies are major players in the implementation of the second pillar and the third pillar, I have witnessed the entire reform process firsthand. Before the pension reform in 1991, only a very limited population was covered by the pension system. Because of the urban–rural dual structure of China’s economy, there was hardly an endowment insurance system in the vast rural areas. The coverage of urban endowment insurance, back then known as labor insurance, was also very limited. It covered only urban employees of state organs, public institutions, and some enterprises and a few self-employed workers in urban areas. Organizations that joined the urban endowment program were responsible for the welfare of their employees, and the protection was somewhat comprehensive. In 1991, China began its pension reform and established a nationwide basic endowment insurance plan for the urban working group (the first pillar). In the twenty-first century, China successively introduced enterprise annuity and occupational annuity policies (the second pillar) and began the pilot of an individual tax-deferred third pillar pension plan, in 2018.

Table 3.1 Pension systems in countries and regions

	First pillar	Second pillar	Third pillar
Mainland China	Basic endowment insurance for the urban working group Endowment insurance system for urban and rural residents	Corporate annuity Occupational annuity	Personal tax deferred commercial endowment pilot
Hong Kong, China	Public pensions	Mandatory provident fund scheme	Private/Voluntary retirement schemes
US	Federal public pension	Pension plans initiated by employers, such as 401(k), 403(b), etc	IRA
Japan	Kokumin Nenkin (citizen annuity) Kousei Nenkin (endowment)	Employer pension plans	NISA (Nippon individual savings account) iDeCo (individual defined contribution)
Canada	Public pension plans (CPP, QPP, OAS, etc.)	RPP (registered pension plan)	Individual savings plan
UK	State pension The second state pension (S2P)	Occupational pension schemes	Personal pensions
Chile	Non-contributory public pensions	Individual account plan	Individual supplemental pension plan

Source Collated by the author

We observed that compared with developed countries, there are many challenges in China's pension system. First, China's total pension reserve is insufficient. In 2018, the total proportion of China's three-pillar pension reserve only accounted for 8% of its GDP, far lower than the OECD average of 49.7% and 146% of the US (see Fig. 3.1). Second, China's three-pillar pension system is extremely unbalanced in structure. Its overly dominant first pillar accounts for more than 3/4 of the entire pension system, while its second and third pillars are developing in serious tardiness. The third pillar of China's pension system was essentially nonexistent for a long time and is in urgent need of fast development.

Corresponding with the slow development of China's pension system is its consistently high savings rate. One opinion is that the long period of inadequate social security has affected Chinese people's saving habits: to cope with future uncertainties, residents regard savings as safety nets for their family and themselves. According to the World Bank, China has one of the highest savings rates and per capita savings in the world. Its savings rate peaked at 52% of GDP in 2008, and although it had fallen since then, it was still at a high of 44% in 2019. China's high savings contributed

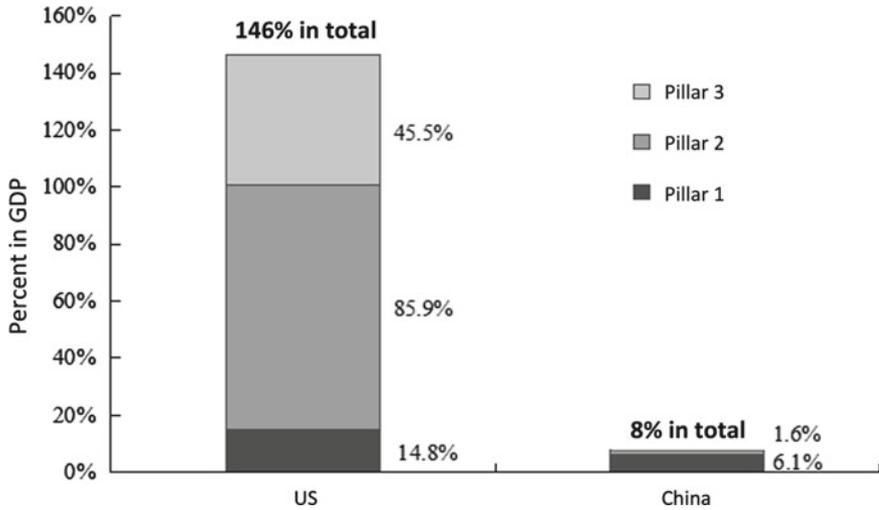


Fig. 3.1 The three pillars' pension in national GDP in China and US. *Source: Annual Report on the Development of China's Aging Finance (2018), China Aging Finance Forum 50*

sufficient funds for its rapid economic development, but also restricted consumption. When interest rates are low, the return on savings decreases, and residents' financial benefits are harmed in a way. Different from individual savings behavior, the future third pillar personal pension plan enjoys clear national policy preferences and provides abundant investment choices. It will be conducive to the conversion of residents' savings into investment.

With the advent of the Era of Longevity, pension systems will face unprecedented challenges. Many countries around the world, including China, adopted a "pay-as-you-go" first pillar scheme, i.e., the public pension. The so-called pay-as-you-go scheme is that the pension contribution from the working generation will be paid to retired people in the same time period. As long as the gap between the amount of pension contribution paid and the amount of pension benefits withdrawn is not too large, such a scheme can still be subsidized by the government. This scheme works well in societies where the population age structure is pyramid-shaped because there are large numbers of young and middle-aged workers making contributions to support a smaller number of retirees. However, in the Era of Longevity, with fewer contributors and more pensioners, the pay-as-you-go scheme will be unsustainable. The government could keep filling in the gap by borrowing, but that would be a bottomless pit. If the government cannot afford to keep the pension system running, the burden of providing for the elderly will eventually be transferred to individuals.

The Japanese pension scheme is a classic example of a pay-as-you-go scheme that the government could no longer sustain. The Japanese government, under the pressure of a heavy fiscal burden and an aged population, had to adjust its pension policy and transfer the pressure onto participants. The pension reforms introduced in 2004 included reducing pension benefits, increasing the pension eligibility age and

raising pension contributions. In 2016, the Japanese government changed the pension payment standard adjustment protocols: instead of being adjusted by changes in general prices of goods, the payment standard was to be adjusted by changes in the average social wage. Due to the long-term sluggish wage growth in Japan, the pension benefits were already decreasing. Japan's 2016 adjustment made matters worse by increasing the financial pressure of retirees and caused public dissatisfaction with the pension system.

What happened with Japan is a wake-up call that future governmental public pensions may not be adequate after all. The pension replacement rate² is commonly used worldwide as an indicator to measure whether pension benefits are adequate. The standard pension replacement rate is the ratio of an individual's retirement pension to his or her preretirement income, which, in plain English, lets people know if they are going to have enough money to spend when they are still alive. In the Era of Longevity, the pension replacement rate will continue to decline, which needs our attention.

According to the International Labor Organization's *Convention Concerning Minimum Standards of Social Security* in 1994, a pension replacement rate of 55% is the minimum for maintaining retirees' life standards. If the pension replacement rate falls below this threshold, the living standards of retirees will be seriously reduced. According to the Japanese government's 2019 pension estimates report, the monthly pension replacement rate for each Japanese couple is expected to continue to decline in the future. The Japanese government's projected pension replacement rate in 2019 was 61.7% and would fall to approximately 51% by 2040. According to the OECD's *Pensions at a Glance* report released in 2019, in OECD countries, the pension replacement rate for those born in 1996 was 5.8% points lower than that for those born in 1940. In China, the target replacement rate of pensions is not clearly stipulated. According to the research data of Professor Zheng Bingwen of the Chinese Academy of Social Sciences, China's replacement rate of the basic endowment insurance for employees dropped from 87% in 1998 to 50% in 2011, and the average replacement rate of social pension was stabilized at approximately 45% in the seven to eight years after 2011.

Therefore, to adapt to a changing future and to compensate for the decline in public pension replacement rates, societies and individuals should plan ahead and seek changes for solutions. For governments, speeding up the development of the third pillar pension plans through policy incentives can cushion the decline of the replacement rate. For individuals, the accumulation of wealth and establishing wealth management awareness can help maintain and increase the value of personal assets and compensate for the decline in living standards caused by the declining pension replacement rate.

² If the average pension for new retirees in a certain region is 650 RMB/month, while average wage income of local employed workers (usually used to measure the wage level before retirement) that year is 1,100 RMB/month, then the pension replacement in that region is $(650 \div 1,100) \times 100\% = 59.09\%$.

In the United States, the third pillar IRAs have been very effective in improving retirement life quality for US citizens through over 40 years of growth and market-based investments. According to the OECD's *Pensions at a Glance* report in 2019, the replacement rate of the three-pillar pension in the United States reached 83%, with the replacement rate of the third pillar alone exceeding 30%. By fund accumulation and marketized operation systems, the third pillar promotes the conversion of household savings into investment. Moreover, the fund accumulated in pension accounts is long-term available capital, and it can support the development of the capital market. The capital market will become an important link between industrial upgrading and realizing the "wealth effect" of residents. In addition, endowing pension fund investment with options such as financial facilities and products to pension plan participants would accommodate the differentiated needs of individuals, stimulate market competition and improve the efficiency of the financial market.

For individuals, there is a high possibility that after retiring we will need to rely more on ourselves for financial support in the future, and we need to be well prepared both in awareness and in finance. As China has a history of a planned economy in the past, urban residents still have high expectations for the government to provide pensions. However, the real cases and experience in the Era of Longevity made it clear that governments would possibly only assume the most basic responsibility in pension and that it would be unrealistic to rely completely on the government for adequate pension or expect a high pension replacement rate to be maintained. In the future, governments will still provide the most basic social security and favorable policies. However, the diverse needs people have for a better retirement life will be met more by the participation of individuals and marketized institutions.

The Arrival of an Era of Wealth for All

The gradual decline in the replacement rate for government-provided public pensions is a wake-up call, urging us to look for financial solutions best suited for the Era of Longevity from the entire wealth management industry. The three-pillar pension reserves are supported by national policies. In addition to these preferential reserves, the wealth that people spontaneously reserve for pension and health needs has a larger volume and a broader market. We need to keep in mind that, the wealth reserves accumulated spontaneously by individuals are the most crucial no matter what reforms pension and social security systems would go through in the future. This indicates that the size of the personal wealth management market will continue to grow. In the history of human development, industrialization created enormous social wealth, with which the middle class rose, and their strong demands for wealth management in turn boosted the development and prosperity of the financial industry. The Era of Longevity follows the Industrial Age, and wealth management will be in greater demand than ever before. It is inevitable that an Era of Wealth will come hand in hand with the Era of Longevity, and this time it will be an Era of Wealth for all.

China's wealth management market is far from mature. Chinese people dwell heavily on past experiences and believe "if you do not buy a house, what else should you buy?". A comparison between China and the US shows that the wealth of Chinese

Table 3.2 Wealth structure of US and Chinese citizens

	Real estate asset (%)	Financial asset (%)	Industrial and commercial asset (%)	Other asset (%)
China	77.7	11.8	5.6	4.9
US	34.6	42.6	19.6	3.3

Source: *Chinese Urban Household Wealth Health Report*, 2018 by China Guangfa Bank and Southwestern University of Finance and Economics, China

residents is overly concentrated in real estate. In the US, where the financial market is highly developed, people tend to allocate their assets in multiple types of financial investments, such as the stock market, funds and insurance (see Table 3.2). China's real estate market was considered a "invincible myth" in the past 20 years, and investing in real estate has become a belief of many Chinese families. According to the *Chinese Urban Household Wealth Health Report* in 2018, property assets accounted for nearly 80% of household wealth in Chinese families, much higher than the 35% of the United States. Surveys by the People's Bank of China, which is the central bank of China, also pointed out that 40% of Chinese households own at least two homes. The excessively high ratio of real estate assets severely squeezed the space for the allocation of financial assets. In Chinese people's financial assets, the allocation of products is relatively simple: they are concentrated in cash and savings, especially in rural areas.

An age of wealth management for all also means that the structure of wealth and ways of wealth management have changed. First, investing in real estate is not as attractive as it used to be. The skyrocketing growth of China's real estate market was a result of industrialization and urbanization. However, with the peak of the First Demographic Dividend, rigid housing demands have declined, which means the economy can no longer rely on the stimulus from real estate as much as before, and the increase in housing prices will return to a reasonable range. Second, bank financial products that are risk-free, high-yield, principal-and-interest-guaranteed will also become historic. In the past, banks could provide risk-free financial products with a yield rate of 6–8%, but the reason for that was still the real estate mortgage loans: the rising real estate prices ensured a continuous supply of such financial products. When the real estate market quiets down, such wealth management products will no longer exist. Last, we think the future will be the era of stocks and equities. When economic development no longer relies on real estate but on the businesses of excellent enterprises, our financing system will gradually transition from indirect financing, such as bank loans, to direct financing, with equity being a classic example. At the same time, with China's financial market quickly growing more open and mature, individual investors are also becoming more rational and experienced. With the changes in the financing structure and product returns, the wealth structure of Chinese residents will become more dispersed and diversified.

In the future, the declining interest rate will put greater pressure on the asset preservation and appreciation. A reasonable allocation of equity products can help

people better preserve and appreciate their assets. For example, in the US, IRA accounts owners allocate their pension to a large number of mutual funds and stocks, achieving good returns no less than that of the S&P 500 index. In sharp contrast, the German Riester pension plan focuses its allocation on a large number of fixed income assets, and its guaranteed return has been on a constant decline.

What we observed were not only changes in investor behaviors but also changes in China's financial sector. The financial industry has gained a deep understanding of the importance of developing the pension wealth management market, and financial institutions started launching products and services that accommodate various needs of consumers. Their innovation tries to solve the financial problems of pension while maintaining industrial features, and that was how China's pension finance came into being. Pension finance is the general term of financial activities centering on various pension needs of social members, aiming at a rational allocation of wealth for customers' full life cycle to improve quality of life at old age. Pension financial products provided by different financial institutions vary in features, and what insurance companies have to offer has unique advantages in risk diversification and long-term fund management. The commercial endowment products provided by insurance companies are an important supplement to social security and can provide protection against risks that policy holders may encounter when they get old. Among these commercial endowment products, annuity products are safe and stable and provide full compound interest. Policy holders of annuity products can receive insurance benefits for a long period or even for life. Pension products launched by banks are mainly pension savings products and pension financial products. As banks have many outlets and high public credibility, their products have great advantages in business development. Target date pension fund products launched by fund companies are developed to meet various customer needs: these types of products are equity investment fund products where portfolios of investments could be constantly adjusted based on different ages and risk preferences of customers. They are very flexible and accommodates differentiated pension investment needs. They provide a good management channel for those who look for stable gains from their pension investments. Pension trust products provided by trust institutions are especially favored by high-net-worth customers, because they protect the independence of trust property and could be renewed automatically upon customers' choosing. They not only guarantee the safety of pension property but also solve the problems for the elderly who are unable or unwilling to manage property by themselves.

In these endeavors, financial institutions also launched quite a few new products (see Table 3.3), such as reverse mortgage products. A reverse mortgage product refers to a product where homeowners mortgage their houses to insurance companies or banks, and the insurance companies or banks pay cash to homeowners. Through reverse mortgages, older homeowners could secure their living expenses with guaranteed access to their home equity, increase their cash flow, and improve their quality of life. This kind of product is relatively mature outside of China and is still in early development in China. With such a high home ownership rate in China, many older people are "rich in homes but poor in cash". Reverse mortgage products can turn

older people's fixed assets into cash flow, effectively relieving the economic pressure of the elderly and their children while increasing their consumption ability.

Many product innovations are explored by the financial sector outside the three-pillar pension framework, which is often supported by national policies. From the perspective of the industry, it is important that commercial innovations should be incorporated to solve pension problems. As the "third pillar to be", these products could be well included in national policies to become products within the three-pillar system in the future. It will help them better serve the financial needs of elderly individuals.

Funding for Healthy Longevity

In previous chapters, we talked about funding for retirement and that the key is making up for the income gap after retirement. Medical and healthcare costs, a very important component of personal expenditure for both young and older people, rise drastically with age. Funding for health is a more complicated topic. The risks pension systems take into account are the risks of life expectancy but not risks of individual disease or disability, which are unevenly distributed among large groups of people in society. Due to genetic and environmental factors, some people are at higher health risks; therefore, the ways societies raise funds for health risks will be different. To solve the health financing problem in a targeted approach, a risk-sharing mechanism should be established so that the risk is shared among the government, various organizations and different groups of people.

To take an overview of classic health funding systems across the world, Germany and the UK took the lead in establishing a government-led risk-sharing mechanism that covers the entire population to address the challenges posed by diseases and loss of capacity. Similar to the birth of the earliest pension system, it was the same "Blood and Iron" chancellor Otto von Bismarck, who set up the first disease fund. It was the first attempt to fund for health costs from the whole society based on contributions made by employers and employees. This model is also known as the "Bismarck model". Under the requirement of national compulsory coverage, nearly 90% of Germans received health protection through disease funds, while the rest were requested to purchase commercial health insurance. A two-track insurance system was formed in Germany. Another major health funding system was born in the UK after World War II. In 1942, William Beveridge, a famous British economist, issued a reform plan and delivered a health fund system in which a universal medical care would be directly supported by the UK's national finance and taxation. Therefore, this model was called the "Beveridge Model". Unlike Germany, the Beveridge Model did use employment as beneficiary eligibility qualification. Most public health funding systems in the world drew experience from both the German and British schemes, and in recent decades, the dual-channeled funding model of "tax + employment contribution" has been gradually adopted.

Let us look at the other side of the Atlantic Ocean. In the US, the overall social security system was a late starter. Its health funding has evolved to become a system based on commercial insurance with separate risk-sharing mechanisms of different groups. During World War II, when wage growth stagnated, the US government

Table 3.3 Pension finance products of financial institutions

Financial institutions	Products	Features
Banks	Pension savings products	Savings products targeted at customers with pension needs. Customers can choose the deposit term, withdrawal time and withdrawal amount which suit them best
	Pension financial products	Financial products aiming at long-term stable financing income from pension assets, which are encouraged to be held by customers long term
	Reverse mortgages	Older homeowners mortgage their homes to banks and banks pay cash to provide for homeowners' living expenses. Banks will gain ownership of the property after homeowners pass away and have the right to sell, auction or lease the property
Insurance companies	Commercial endowment insurance	Insurance products where the insured will receive pension from insurance companies based on insurance contracts once the insured retire or the contribution term is fulfilled
	Reverse mortgage endowment insurance	Older homeowners mortgage their homes to insurance companies and insurance companies pay cash to provide for homeowners' living expenses. Insurance companies will gain ownership of the home after homeowners pass away
	Endowment guarantee management products	Asset management products sold by endowment insurance companies or pension companies to individuals or institutions
Funds	Target date pension funds	Innovative publicly offered funds aiming at long-term stable financing income from pension assets, which are encouraged to be held by customers long term
Trust Companies	Pension trust fund	A form of trust in which the pension, as a trust asset, is entrusted to the trust company for management and operation, with the purpose of preserving and increasing value, and the beneficiary benefits after retirement

(continued)

Table 3.3 (continued)

Financial institutions	Products	Features
	Elderly care trust fund	A product whose main purpose is to provide elderly care services. The beneficial right of the trust may be the elderly care services provided by the elderly care service facilities

Source Public information, collated by the author

encouraged large enterprises to provide their employees packages of remuneration and welfare with medical insurance included, which stimulated the employer-based group health insurance model to flourish. In addition to corporate insurance, two governmental programs, Medicaid and Medicare, were established in 1965 to serve low-income groups and elderly individuals. These two groups make up one-third of the US population and are in most need of medical insurance. Since then, there have been several attempts in the US to reform this decentralized health funding system, and Obamacare, which we often heard about in the news, was a continuation of this direction. The Affordable Care Act was signed into law by President Obama in 2010. It increased the coverage rate and reduced the financing burden of commercial insurance policyholders, but it eventually failed to break through the framework of parallel operation of multiple funding mechanisms.

The essence of health funding is to accumulate funds and share risks. Therefore, funding and contribution organized by the government are often compulsory. However, for commercial insurance institutions, the funding comes from customers who choose to purchase commercial health insurance. In Europe, for example, although social insurance is mandatory in some countries, some people would still purchase commercial health insurance as a supplement, often to obtain more, better and timely medical care services.

Under the grand goal of the “Healthy China Initiative”, China is promoting a multi-level medical security system. Government-led basic medical insurance aims at “full coverage of basic insurance”. On that basis, the proportion of medical expenses paid by individuals is still relatively high, and in many cases, the out-of-pocket expenses account for 30–40% of the total medical expenses. To increase funding channels, the Chinese government has been working with all kinds of commercial enterprises to launch pilots of critical disease insurance systems and long-term care insurance systems in recent years. Innovative products such as regional inclusive insurance products and the popular “Million” supplemental medical insurance products were both efforts in providing health funding security on more levels.

Regardless of which funding mechanism is adopted to deal with health risks, the rapidly rising medical costs have been sending out warning that human’s current social ability may not be enough to deal with health risks. The Era of Longevity will face the risk of insufficient health funding. Empirical data show that in the past few decades, the increase in medical expenses has been significantly faster than the growth in per capita GDP. With fiscal expenditure and personal expenditure on

a constant rise, health expenditure is very much likely to become a heavy burden on society in the long run. Neither Bismarck nor Beveridge could have anticipated such drastic changes in population age structure. An increase in the aged population and the fact that more people will have to live with diseases for a long time will significantly increase health risks all around the world. Funding solutions from the last era is apparently far less than sufficient to cope with health funding challenges in the new era.

What can be done about it? Expenditure-wise, measures should be taken to control health costs, which means that governments should try to curb the growth rate of health expenditure through systematic reforms of the public healthcare system. Funding-wise, it is necessary to increase the initial accumulation of health funding and improve the ROI rate through marketized operations as much as possible. Germany has been actively dealing with long-term health funding risks by putting a mandatory requirement on commercial insurance companies included in the national medical insurance system. These insurance companies are requested to invest 10% of their policy premium into the capital market for long-term management. By doing so, Germany has built a designated reserve of funds to cope with long-term risks, and the total amount of reserve had reached 260 billion Euros by 2018. Before the outbreak of COVID-19 in 2020, the assets of the US government healthcare plan totaled more than 500 billion US dollars, out of which more than 300 billion US dollars were put to marketized operations to cope with the pressure of healthcare costs after the post World War II generation of baby boomers retired.

Despite the proactive countermeasures in place, the US Congressional Budget Office still made a projection that the Medicare hospitalization fund would run out by 2024, affecting hospital costs for 50 million senior citizens. In the context of the changing age structure of the population, existing efforts to increase income and reduce costs may not be enough to cope with health risks in the Era of Longevity. While the United States is already grappling with health funding solutions after the retirement of baby boomers, countries around the world that are moving toward the Era of Longevity must also confront and reflect on the enormous challenges that future health expenditures pose to health funding today.

3.2 Wealth Accumulation: From a Life Cycle Perspective

In the era of longevity, the funds people save for their retirement life and health care are highly likely to be insufficient. Hence how to accumulate wealth in a scientific way has become an important topic. In the following section, we will extend the time span and discuss some simple yet profound laws in wealth accumulation from a life cycle perspective, laws that should be followed whether it is to build up personal or social wealth. Accumulating wealth is akin to storing water in a tank. The volume of the water depends on the length, width and height of the tank, while the size of wealth also depends on three factors: the term of investment, the amount of principal and the rate of return. Therefore, there are three approaches to accumulate more wealth

for retirement in the era of longevity. One is extending the period of investment, one is increasing the amount of principal by investing in human capital in the second demographic dividend stage, and another one is boosting additional earnings by compounding.

Length: Extending the Term of Investment

The most straightforward way to extend the period of wealth accumulation is by either starting saving early or delaying retirement. The longer life expectancy is after retirement, the more time there is to accumulate wealth. People wish to retire on time as they schedule must plan ahead for retirement life. Financial planning is not optional or only for the middle-aged people but is essential for every career freshman. Public health studies have shown that the physical fitness of the older population has greatly improved compared with that of their preceding generation at the same age. A 60-year-old in the past is in the same health condition as a 70-year-old or even 80-year-old today, thereby paving the way for older persons to extend their working years. A prolonged working life of the workforce extends the period of wealth accumulation for retirement and thus a bigger size of wealth. In fact, many countries with significantly aged populations have delayed the statutory retirement age as one of the responses to an aging society (see Tables 3.4). In the West, most people retire in their 60s. Japan has recently introduced a law to prepare its society for retiring at age 70 by encouraging businesses to offer job opportunities for people who are willing to work until they are 70 years old. While we think delaying retirement is necessary, we believe that it should be implemented step by step, with an awareness of the differences among enterprises and industries, and based on the retiree's willingness. In the era of longevity, older persons might retire, then rejoin the labor market and retire again to replenish their wealth flexibly.

Width: Increasing Income and the Amount of Principal

For most people, the most important way to increase income is by improving human capital. The term "*human capital*" is the economic value of a worker's capital, such as knowledge and skills, education level, skillfulness and health condition. Improved human capital boosts personal income, thereby increasing the amount of principal invested for wealth accumulation. Human capital is interlinked to education level, and higher educational attainment benefits career development and wage income. Many studies have demonstrated a positive correlation between education level and wage income. According to the data from the U.S. Bureau of Labor Statistics in 2019, the median weekly earnings of workers with a master's degree is \$1434, 1.96 times that of workers with a high school education, and the unemployment rate is 51.2% of that of workers with a high school diploma. A higher education level contributes to higher personal income, which means that more principal could be invested to accumulate wealth for retirement. The principal, after a long-term accumulation, becomes a considerable pension reserve. At the macro level, higher education levels improve the overall quality of the workforce, which produces higher productivity and output per capita, expedites the accumulation of social capital, and benefits wealth expansion and economic growth.

Table 3.4 Statutory retirement age and proportion of population aged 65 and over in some countries

Country	Statutory retirement age (male)	Statutory retirement age (female)	Surveyed year	Latest statutory retirement age (male)	Latest statutory retirement age (female)	Surveyed year	Years delayed (male/female)	Population aged 65 and over, % total population (2018) (%)
United Kingdom	65	60	2012	65	62	2015	0/2	18.4
Germany	63	60	1985	65.5	65.5	2019	2.5/5.5	21.5
Japan	61	60	2010	65	64	2019	5/4	27.6
United States	65	60	1983					15.8
China	60	55	2011					10.9

Source: OECD Pension Policy Notes

Height: Boosting Returns by Compounding

Compounding is a way to realize exponential growth. Many people come across the term when they follow on Warren Buffet’s successful investment stories. Buffet once used the “snowball” metaphor to describe tremendous wealth reaped from long-term compounding. In fact, the essence of compounding is that quantitative change accumulates to a critical mass and leads to a qualitative leap. It is the power of long-term accumulation. A rule of thumb to estimate compounding is Rule of 72.

Assuming that the average yearly return rate on pension is 8%, the investment will basically take 9 years (dividing 72 by 8) to double; if 6%, then 12 years to double. There are three preconditions for compounding to come into play: a long period, above-average return rate and no fluctuations in return rate. Only when the term of investment is long enough, can compounding generate huge returns.

Let us make a hypothetical example with an investment that returns at 5% annually for 50 years. Nearly 43% of the returns are created in the last decade (see Fig. 3.2), while returns generated in the first decade only account for 6%. It shows that very little return could be reaped over a short-term investment and that the higher the rate of return is, the greater share returns in the later period take up in the total. Let us take a closer look at the results of the investment over a longer time span: after 30 years, the balance is 4.3 times the size of the principal; after 50 years, 11.5 times; 70 years, 30.4 times. This is exactly why I call compounding a friend of time. Over 30 years, compounding could significantly boost returns; over 50 years, compounding could grow from a bud to blossom; over 70 years, the power of compounding could be as great as God.

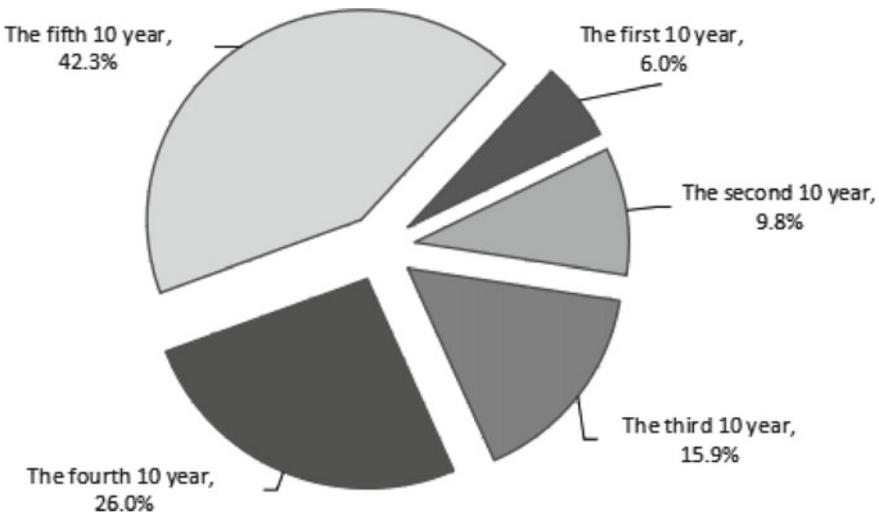


Fig. 3.2 Distribution of returns on investment with compounding by stage ($r = 5\%$, $n = 50$). *Note:* The annual interest rate (r) is 5%, and the number of investment periods (n) is 50 years

Certain investment income must be guaranteed for compounding to play its role. Even if the term of investment is long enough, with a low rate of return, compounding still cannot exert its magic. In the era of longevity, the time span to accumulate wealth for retirement could be ensured, so the impact of the return rate becomes more significant. The amount of wealth accumulated for retirement depends heavily on investment returns. Assuming that two young men, both with a strong sense of saving for the future, start to put aside 10,000 yuan every year for retirement life at age 30. One of them, not very good at wealth management, puts the money in a bank to enjoy a 2% return rate annually, while the other, having greater wealth management savvy, builds a diversified portfolio with funds, insurance and other financial products and reaps a 6% annual return. Forty years later, when these two young men become grandfathers, the one who is poor with wealth management would have a balance of 600,000 yuan, while the other would have assets worth more than 1.6 million yuan. The latter, with a nearly threefold asset size of that of the former, could provide for a much more comfortable and enviable retirement life.

Another point of note is that the returns must not fluctuate in the process of wealth accumulation, otherwise, the magic of compounding would be compromised. Let us assume that the two young men both enjoy a 6% rate of return annually on average. One of them has a stable investment performance, returning 6% every year, while the other, has a good year peaking at 27%, followed by a 15% loss, and this goes on for 50 years (the mathematical average return is 6%). Due to sharp swings in returns, the latter would end up with a 1.4 million yuan worth of assets, nearly half the size of the wealth created by a stable 6% annual return rate.

Actively Responding to the Challenge of Low Interest Rates

Comprehending the idea of “length, width and height” is not difficult at all, but it is hard to follow it through in investment practice. In the era of longevity, “length” is easy to achieve because the term of investment naturally extends as a result of longer life expectancy, and “width” is not hard as we already see the second demographic dividend reveal. “Height”, however, is much more challenging, as compounding could be hindered by low interest rates.

In the past decade, major developed economies have all been in low interest rate environments. Since the 1980s, fading dividends from technological progress and the changing age structure of the population have slowed economies. A dim outlook for potential growth was the main reason behind the long-term interest rate drop worldwide. In addition, governments have been overly reliant on monetary policies to intervene in the economy and capital market and have continued to increase money supply, which further drives down interest rates. Take the 10-year Treasury bond yield as an example. In the United States, since it plummeted below 10% in the 1990s, the yield has seen ups and downs but continued to slope downwards and remained at a low level since the financial crisis in 2008. In Japan, the declining trend could be observed even more clearly, as the interest rate has been negative for almost every year since 2015. In an environment where there is a persistently low or even large-scale negative interest rate, it is quite challenging to preserve, let alone increase wealth.

In China's case, its interest rate, compared with that of other major economies, remains at a high level but will decline slowly over the long run. Facing common challenges such as a heavily aged population, sustained low fertility rate, slow-paced technological progress and declining growth rate projections, China will see its interest rate go downwards as a long-term trend. That being said, the interest rate is unlikely to take a dive. It will be low only as relative to its past high levels, but once down, it would be very hard to climb back.

Equity assets, overseas investment and alternative investment could help to mitigate the impact of a low interest rate environment. In the era of longevity, longer life expectancy extends the term of investment, and a prolonged investment term often increases investors' risk appetite. Therefore, adjustments could be made to the investment portfolio to increase the allocation of riskier assets such as equities, in particular, stocks with stable earnings, low valuation, high dividend rate, managed by excellent teams and rising above economic cycles. These assets could help better achieve long-term investment goals. Increasing the allocation of overseas investment and alternative investments also helps. For example, institutional investors, insurance companies in Japan and the UK increased their investment overseas during low interest rate periods. By investing overseas into high-yielding assets, they are able to counteract unfavorable performance in the domestic market. For the purpose of risk diversification, alternative investments with low correlations to capital markets or economic fundamentals, such as gold and arts, are also worth considering as tools to cope with low interest rate environments.

3.3 A New Perspective on Longevity Risk and Elderly Finance

In the previous sections, we focus on the challenge of retirement savings in the era of longevity, confronting nations as well as each individual. The problem is so pressing that it requires extensive and close attention from all age groups. Now, we shift the focus to the older population. The era of longevity is characterized by an increasing number of older persons, especially the oldest old. This specific age group has its uniqueness in terms of its financial status and needs. Those unique status and needs, although yet to become common problems across societies, have been emerging in superaged countries such as Japan. While retirement finance emphasizes making financial arrangements from a life-cycle perspective, elderly finance focuses on unique financial problems of the oldest old. By envisaging ways to deal with those problems, we wish to provide some ideas for financial institutions to better serve elderly individuals.

A Man Lives, with no Money Left

A special project recording team at Japan's broadcaster NHK (Japan Broadcasting Association) once made a documentary called "Old Bankruptcy", which documented many tragic cases beyond our imagination. The documentary revolves around the

theme of money. The elderly in the documentary, all having worked diligently and made saving plans for retirement, had no idea that unanticipated long life, coupled with economic recession, would make their retirement life so financially tight, hard and lonely to the point that they even feel deprived of desire to live. Longevity, often considered a symbol of happy societies, could also be the last straw that crushes old life. We must realize in sober truth that prolonged life or long-term illness could increase the risk of wealth depletion, which is called longevity risk. A more straightforward language to explain it is “a man lives, with no money left”. When we talk about the pension replacement rate falling in previous sections, we refer to the insufficiency of public pension funds. When people are in their oldest old years, the expenses on medical treatment and health care increase steeply, and money becomes a huge concern. The term *longevity risk* is first used in actuarial science to refer to the risk resulting from chances that actual life exceeds life expectancy. For individuals, longevity risk is the risk of wealth depletion when their lifespan cannot be accurately predicted and they end up living longer than expected with no money at their disposal. (see Fig. 3.3).

Longevity risk could spill over and become a social risk. Asset depletion is most likely to happen to the oldest old. The cohort is highly likely to have been living with illnesses for a long time and has little chance to be reemployed to earn income, but burdened with high medical care bills. When the assets of the oldest old population are exhausted, normally, family members share the expenses of living and medical care to provide support. However, in a low fertility rate society, the burden on children to support their parents becomes heavier. Some families that are not so well off would be hit harder or even plunge into poverty. Inequality among families builds up, which will inevitably lead to inequality across society. As the number of long-lived but bankrupt older persons increases, there could be collective longevity risk, which could destabilize the social security system and undermine the sound and stable

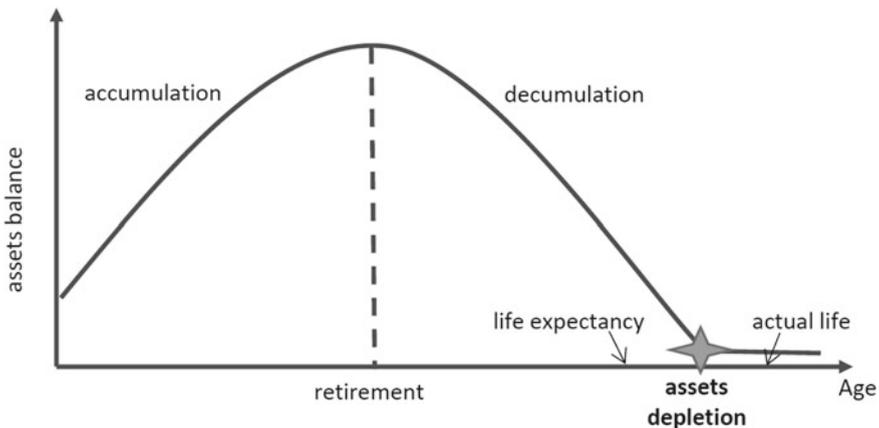


Fig. 3.3 Assets accumulation and the risk of assets depletion. *Source:* Nomura Institute of Capital Market Research

development of society. Therefore, in a longevity society, if there are no effective countermeasures, personal longevity risk could escalate and lead to systemic risks.

Among all countries, China should pay more attention to longevity risk. A significant difference between China and developed countries in terms of population aging is that China has yet to become rich before it becomes old. In developed countries, when the proportion of the population aged 65 and over hits 7%, the GDP per capita is approximately \$10,000, while in China, the GDP per capita was only approximately \$1200 when the same happened in 2000. In 2019, when China's GDP per capita finally exceeded \$10,000, the proportion of the population aged 65 and over has reached an astonishing 12.6%. When Japan and South Korea had the same level of population aging, their GDP per capita reached \$31,000 and \$27,000, respectively. "Getting old before getting rich" not only puts huge pressure on society but also increases the chances of old-age poverty.

Recognizing the Uniqueness in Financial Behavior of the Elderly

The financial behavior of older persons is unique due to the physical and cognitive decline associated with aging and their socioeconomic status. Older persons might have amassed a huge amount of wealth and wish to maintain their financial independence, and their desire to preserve or even to increase the value of their existing assets grows. They have low risk appetites and sometimes cannot manage their wealth well as a result of cognitive decline. When the era of longevity dawns, the behavior of this particular age group will have an ever-growing impact on the financial market, which requires us to effectively analyze and understand their financial behavior.

Survey data across nations have clearly demonstrated that the older population holds a huge amount of wealth. One case in point is Japan. Despite many cases of old-age bankruptcy, the older population in Japan remains the "wealthiest" age group at the macro level. A report released by the Tokyo metropolitan government in 2017 stated that 70% of Japan's 1800-trillion-yen household financial assets are held by those aged over 60. In the UK, a survey released by Savills, the global property consultancy firm in 2018 reported that 40% of the UK's national wealth is in the hands of the 65 plus retirees. Under such circumstances, for the middle class and the high net worth individuals around the globe, it is very important to think about how to pass on the wealth safe and sound in their old age.

Older persons have low risk appetites, which could affect the risk preference of the market. Residents' retirement investment risk preference curve follows an inverted U shape as their age increases, which is in line with the patterns of life cycle development. Young people who just enter the workplace earn relatively less income, but they are under the pressure of buying a house, children's education and other expenses; therefore, they have a low risk appetite. As they grow older, their income increases and expenditure pressure decreases, so their risk appetites grow. After they retire, the income and their risk appetites see a drop again. Older persons are typical risk-averse investors who prefer choosing low-yielding and safe investments such as deposit or fixed-income products. When older persons with low risk preference become the investor majority, the risk preference of the entire market will be lower, thereby contributing to a low-interest-rate economic and social environment.

Older persons are also more vulnerable to financial fraud due to insufficient financial literacy. In fact, financial literacy in all age categories, including older persons, has yet to be improved. The rating agency Standard & Poor conducted a global survey on financial literacy in 2015 and rated the financial literacy score of Chinese far below the global average, as the survey found that 72% of Chinese adults do not comprehend important financial terms such as risk diversification, inflation and compounding. This result is astonishing. According to the survey, three quarters of Asian adults and two-thirds of adults globally are financially illiterate. As they age, their lack of necessary financial literacy poses a great challenge to managing their assets. Moreover, with limited access to financial information and due to a lack of sound judgment, older persons might be exploited by financial predators and fall victim to various financial frauds. All these would jeopardize the financial security of the older population.

The movie *I care a lot* speaks to the issue of unscrupulous guardian agencies defrauding money from the elders widowed or with no children in a black satirical way, adapted based on true stories. Although we must admit film as a creation of art imitates real life and exaggerates it, such a film urges us to pay attention to financial fraud among older persons.

As their decision-making ability declines, older persons might end up putting their assets in a frozen state. As they age, cognitive functions decline gradually, disrupting their normal life. However, making financial transactions such as making or taking a deposit, securities investment or purchasing insurance products requires the party to be able to make sensible judgments independently. When older persons cannot carry out asset allocation or wealth management, their assets might slump into a frozen state, stalling economic development. *The Annual Report on the Aging Society* released in 2016 by the Japanese government shows that the number of 65-plus persons with dementia is rapidly growing, and by 2030, dementia patients will account for 7% of the total population. The size of the financial assets held by them is growing as well. According to a report by the *Japan Economic Newspaper*, it is estimated that the assets held by older persons with dementia will increase to 215 trillion Japanese yen in 2030, equivalent to 40% of Japan's total GDP. If that large size of assets ends up in a frozen state, economic development would take a huge toll, and it is not conducive to the effective allocation of resources. Therefore, innovations in both regulations and financial products must be made to unfreeze the funds and put them to work.

Elderly Finance that Truly Cares for People

Older persons will be heavily reliant on regulation assurance and services provided by institutional investors in their financial decision-making. In regard to providing financial services for elderly individuals, Japan's impeccable service is the embodiment of the "customer-oriented" culture. For example, the Japan Securities Dealers Association has specifically issued a guideline on sales of financial products targeted at elderly customers, formulating the definition of "elderly customers", the range of products and the procedures. Its members must follow the rules when they solicit sales. Nippon Life launched the GranAge pension scheme, which aims to provide

packaged services for older persons since they are in their 50s to when their life ends, including ID authentication, life support, voluntary guardianship, funerals and benefit payouts in their active years.

To deal with senile dementia, the Japanese government has joined hands with financial institutions to prevent asset freeze and guarantee daily life activities and medical care for the patients. Mizuho Bank launched a Dementia Support Trust, a product that allows customers to set up a trust as preparation for the possible attack of the disease, and if the customer is diagnosed, the money could be used to cover living and medical expenses. When the patient is diagnosed with dementia by a doctor, upon the submit of the diagnosis, the patient's expenditure would be restricted, and an agent such as a family member would manage the assets on behalf of the patient. The bank would check the payment made by the agent in case the trust money is misused.

Technology is also increasingly enabling financial services for older persons. As an increasing number of senior citizens access the internet, financial institutions are able to provide targeted products and services. Institutions could educate middle-aged and older persons on asset management skills and offer products through websites, online banking, apps and third-party platforms, among other internet channels. The application of big data made personalized services possible to meet customer needs. With massive customer preference information at hand, financial institutions could design tailor-made solutions to meet customers' needs for personalized and diverse wealth management products. Health technology is aiding older citizens suffering from mobility or memory impairment, and it is also assisting older persons with severe chronic diseases in making sound investment decisions and handling their own financial needs. Smart robot investment consultants are booming, and by analyzing the investment preference of different individuals with big data and artificial intelligence, they are providing professional help to the elderly in investment decision-making and investment actions.

More people have come to realize that elderly finance is an industry that is interdisciplinary and cross-field, and the financial sector alone cannot respond to the changing needs of elderly individuals. Not just professional institutions, every firm in the business of retirement finance should develop a better understanding of the elderly's behavior, health, psychology and demand. That is why it is increasingly important for firms in the financial sector to interact and for financial and nonfinancial sectors to interact and coordinate efforts. For example, designing a product that combines the merits of both insurance and trust to better serve the elderly's need to pass on their wealth. Financial institutions could work with elderly nursing communities to launch tailor-made products or products that offer both benefit payouts and elderly care services to cater to the elder's demands. It requires cooperation and intensive study from multiple industries to offer products and services that the elderly truly need. We expect that an increasing number of enterprises will realize the importance of elderly finance and take action as soon as possible.

3.4 Exploring the Optimal Financing Model for a Long-Living Life

The era of longevity is the era of health and wealth. In some sense, longevity, health and wealth arrive at the same time, but they do not necessarily come hand in hand. Adequate wealth ensures better elderly care and medical services, which in turn promotes longer and healthier life expectancy. However, for each individual, the level of wealth is not always sufficient to fund their payment demands in a long life. There is a risk of wealth depletion in older age. To illustrate this, economists have drawn the curve of labor income and consumption over the lifetime based on empirical data from developed countries such as Japan and the United States. The two curves intersect and create a hat shape (see Fig. 3.4). The income curve shaped a typical inverted U, peaking at the age of 40–50. The consumption curve stays much flatter, as spending on education is higher during youth and it slowly rises over age until peaking at older ages as the demands for care and health grow. At older ages, the deficit gap between income and consumption can be clearly observed, and it widens as life expectancy extends. One common challenge in the era of wealth is to fill or narrow the deficit gap during older ages with accumulated assets and investment income in younger days.

We noticed the imbalance between income and consumption over the lifetime long ago, and made business designs accordingly. We believe the operation of professional investment institutions could provide preconditions for individuals to make their optimal financing arrangements.

Let us first set up an ideal financing model for a long-living life. With this purely theoretical model, I will elaborate how to solve the problem of fund deficit in old age with long-hill theory and compounding. Let us assume there is a middle-aged 40-year-old man who decides to accumulate assets by an automatic investment plan and

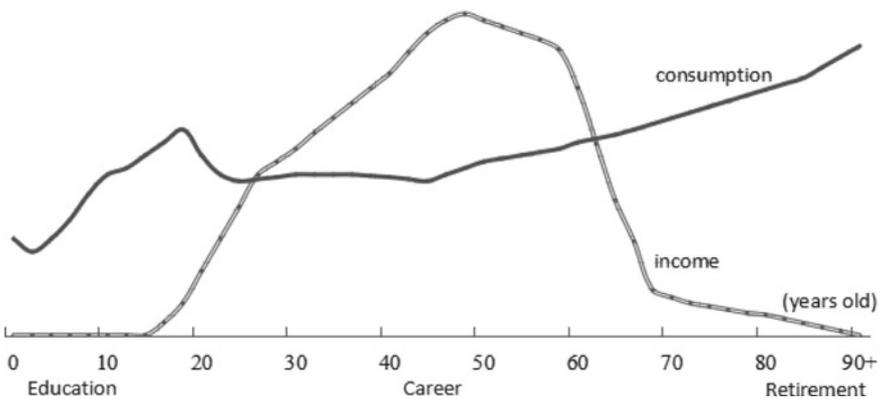


Fig. 3.4 Income and consumption curve over lifetime. Sources Lee and Mason (2011). *Population Aging and the Generational Economy: A Global Perspective*; author's calculations. Note: Government public expenditure is included in the consumption

spend down the investment in older ages. He could choose to start the withdrawal at any time, say at 70 or 80 years old. During the decades between the initial investment and the date when he starts to withdraw money, a professional investment institution has been delivering stable and excellent yields. Referencing the average annual return rate of the US stock market at nearly 7% and the bond market at 3% over the past 20 years, we assume that our model could deliver an average annual return rate of 5% by asset allocation.

If a one-off investment is made when he is 40, the total size of the investment could be expanded to approximately 7 times that of the initial principal during a span of four decades when he reaches 80 years old. According to the *White Paper on Medical Care for China's Middle and High Net Worth People in 2020* jointly released by Nielsen and Taikang Insurance Group, the average annual expenditure of middle-to-high net worth older population is 200,000–250,000 yuan. Let us make three assumptions to proceed. Assuming that the annual expenditure of older persons is 250,000 yuan, all the living expenses after retirement are funded by the investment, and to maintain standards of living, the expenses would rise by 2% annually in line with inflation.

If other conditions remain constant, the age when the withdrawal starts would have a huge impact on the size of the balance. Figure 3.5 details the balance in different scenarios in an automatic investment plan. If the man invests 200,000 yuan every year for 10 years, starting from 40 years old, and after several decades of accumulation, he would have a 3–6 times size of assets of the 2 million yuan principal, depending on the age that the withdrawal begins. The later the withdrawal begins, the larger the assets size is, and the better results compounding is able to produce.

As shown by the three scenarios in the figure, as soon as the withdrawal begins, assets that have been accumulated would start to shrink to some extent, resulting from that investment income in that year cannot cover the expenses and additional money must be withdrawn from the pool. If the withdrawal starts at 70 years old, the investment income generated in that year is only able to cover 75% of the expenditure. As the coverage ratio further drops, the shortfall could only be compensated by withdrawing from the accumulation. It is also shown that the later the withdrawal starts, the slower pace the assets shrinks. This is largely due to the effect of compounding. Although withdrawals are made every year, the assets left untouched are still producing returns. If the withdrawal starts at 75, the accumulated assets by then could be sustained until the age of 100. This leads to our conclusion on the advantages of establishing a financing model for a long-living life. For one, it could support life after retirement and improve life quality; for the other, it could help preserve or even increase the value of assets through compounding and slow down the drain on assets.

If the expenditure in old age is partly covered by the financing model and partly covered by other funds such as state pension or employer pension schemes, less money would be taken out and more left to accumulate. If there are other sources of support for old life, the amount of principal invested could be reduced to ease financial pressure during youth, or the withdrawal could start at earlier ages, and neither would affect the achievement of the investment goals.

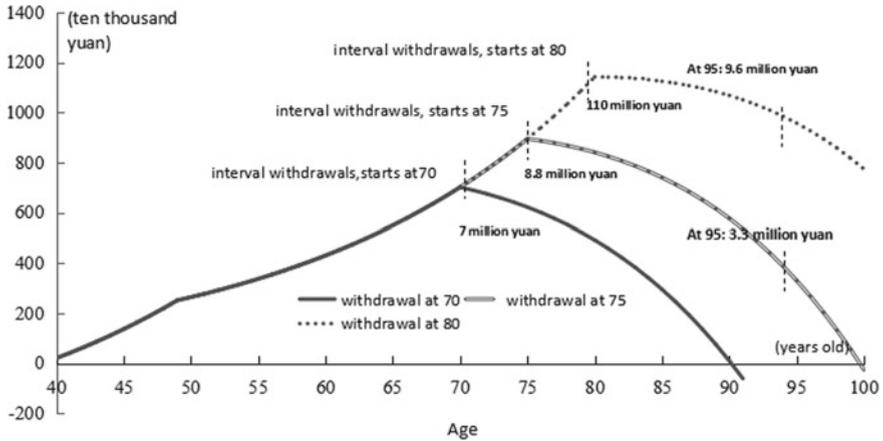


Fig. 3.5 Assets accumulation curve in the ideal financing model (part one). *Note:* In the ideal model, we assume that the annual expenditure of older persons is 250,000 yuan, and to maintain standards of living, the expenditure would rise by 2% annually in line with inflation. This means that the expenditure would be 450,000 yuan when a 40-year-old reaches 70. Suppose all the expenditure is covered by the financing model, which means 450,000 yuan is to be withdrawn when he starts to spend down at 70, while 500,000 yuan at age 75 and 550,000 yuan at age 80

Let us try extending the period of accumulation even longer to see how compounding works. As demonstrated by Fig. 3.6, if the investment is a designated old-life future plan some wise parents make for their children, the amount of principal invested does not have to be a huge sum. Say, it is half of what the middle-age invested, which is 100,000 yuan annually, for ten consecutive years. If the investment is made when the child is 10 years old, he or she starts to withdraw money at senior ages. In the time frame of nearly half a century, the size of the investment would grow exponentially. The balance would be 15–25 times the size of the initial 1 million yuan principal, varying based on different ages when the withdrawal starts. The difference between the two investment plans, one that starts at age 40 and the other that starts at age 10, is that in the latter case, assets would not shrink as soon as the withdrawal begins at age 80; instead, the turning point would be at approximately the age of 95. This is because the annual returns generated by the investment accumulated throughout 10–80 alone would be sufficient to cover the consumption, and the withdrawal would only slow down the speed of money accumulation. It is only when the investment income falls short of rising expenses due to inflation at the age of 95 that the total assets size finally starts to shrink. This example shows that the earlier investment starts and the later the withdrawal happens, or to say, the longer the term of investment is, the more rewards could be reaped through compounding. The larger the amount of assets accumulated before the first withdrawal, the more slowly it would dwindle after the withdrawal, and the more financially prepared we would be to provide for a quality retirement life.

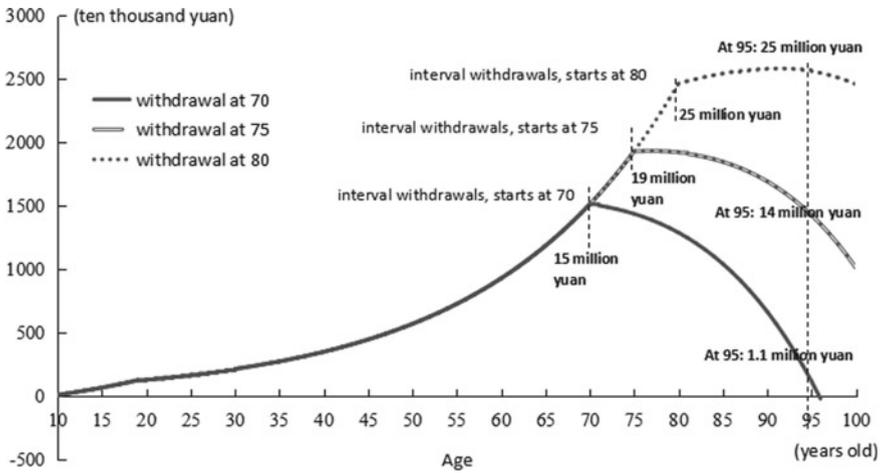


Fig. 3.6 Assets accumulation curve in the ideal financing model (part two). *Note:* The withdrawal assumption is the same as in Fig. 3.5. The expenses of a now 10-year-old kid would be 820,000 yuan annually in the age of 70 (a 250,000-yuan expense growing for 60 years by 2% of inflation). If the beneficiary starts to withdraw money at 75, the first withdrawal would be 900,000 yuan; if at 80, it would be 1 million yuan

The demonstration above helps us to better understand how to meet the need for a good old life through long-term accumulation. Of course, reality is far more complicated than our assumptions. For one, the rate of return in the real market swings. As we mentioned, a stable rate of return is the foundation for compounding to play its role, and return rate swings affect long-term investment income. In addition, professional investment institutions charge a certain amount of management fees, so the cost must be factored in when making an investment. Other assumptions in the model could also change in real life, and it is just a simple model for demonstration purposes.

Generally, there are three takeaways from the ideal financing model for a long life. First, the model demonstrates the advantage of long-term investment, which is what I call the long-hill theory. The example of starting investment at the age of 10 and withdrawing at old age vindicates the theory. In that case, the principal is only half of what is invested in the case of starting the investment at 40, but the total assets accumulated are much larger. Second, institutional investors are able to make professional investment decisions to deliver an excellent rate of return, which is also what Taikang has been striving for. Last, the investment model is able to produce enough money for old life, effectively reducing the risk of asset depletion in older ages. Apart from that, the investment continues to produce income even when money is pulled out, so there might even be some money left to pass on to the children.

What would happen if we change the “length, width and height” in the model, which is the investment term, principal and rate of return? The following table demonstrates the balance at 95 years old with the ideal financing model in different scenarios.

Supposing that the withdrawal begins at the age of 75 (there is only accumulation with no withdrawal before that) and rises along with inflation and that the money left still produces income. Based on the abovementioned assumptions, we could calculate how much money could be accumulated when the investor reaches 95 years old, with different rates of return and different amounts of principal, as shown in Table 3.5. It is clear that the higher the rate of return is, the longer the investment term is and the higher the amount of principal is invested, the more assets there would be at the investor's disposal to support life at age 95. In contrast, under the assumption of a low rate of return, a small amount of principal and a fairly short term, the investment might not break even or even end up with a negative balance. Length, width and height of investment are the three basic dimensions of building an ideal financing model over time, and everyone could decide on a plan based on their ultimate investment goal.

In addition, by dividing the balance of funds at age 95 by the total assets volume accumulated at age 75 when there is no withdrawal, we could have a picture of money consumption based on the steepness of the post-withdrawal curve. It is shown that in some cases, the value is greater than 1, which means that the balance at the age of 95 is even larger than that at 75, indicating that although the withdrawal lasts for 20 years until 95, the investment income during this period is sufficient to cover the consumption, and the balance is still gaining. Interestingly, with high yields and long investment terms, by the age of 95, the total assets generated by the 1 million yuan investment plan that starts at 10 are larger than those of the 2 million yuan investment plan starting at 40.

Based on the ratio of balance at 95 and balance at 75 in the two investment plans, the 1-million-yuan plan generates a higher number. The plan also sees a steep asset accumulation curve during the decumulation process. Both prove that the income produced by long-term compounding is staggering.

In addition to daily life expenses, the older population faces higher health risks; therefore, they should start planning ahead to save on medical expenses and nursing and rehabilitation services. The health risks create more demands for cash in tail events. The demands could be satisfied by more sophisticated financing products such as health insurance and care insurance. The topic has been covered in previous chapters. To take an overview of financing from the life-cycle perspective, it should be a package of a wide range of wealth management plans and insurance products so that the cash flow can be adjusted to adapt to needs in different stages.

Long-term handsome and stable yields are the cornerstone of the financing model for a long-lived life. Since financial products could compound returns, the earlier the investment is made, the longer the period is for the investment to produce interest and to compound, increasing the efficiency of wealth accumulation exponentially. It could help people improve the living standards of their retirement life and solve the problem of insufficient funds for elderly care and medical services in the upcoming centenarian era. Therefore, for investment institutions, it is crucial to implement the principle of life-cycle wealth management in their product design.

Let us wake up from the ideal model and return to the real world, where financial products are far from perfect, but compounding still applies. The theoretical financing

Table 3.5 Calculation demonstration with the ideal financing model

Initial age to start the investment		principal	Volume of assets balance at 95 with different rate of return (10 thousand yuan)					The ratio of assets at 95 to assets at 75, with different rate of return					
			4%	5%	6%	7%	7%	4%	5%	6%	7%		
40 (for 35 years)		1 million yuan (100 thousand yuan by 10 years)	- 840	- 656	- 305	554	- 2.5	- 1.5	- 0.5	0.7			
		1.5 million yuan (150 thousand yuan by 10 years)	- 607	- 236	604	2107	- 1.2	- 0.4	0.7	1.8			
		2 million yuan (200 thousand yuan by 10 years)	- 334	331	1566	3659	- 0.5	0.4	1.3	2.3			
25 (for 50 years)		1 million yuan (100 thousand yuan by 10 years)	- 924	- 258	1540	5134	- 1.5	- 0.3	1.1	2.3			
		1.5 million yuan (150 thousand yuan by 10 years)	- 444	951	3844	9417	- 0.5	0.7	1.8	2.8			
		2 million yuan (200 thousand yuan by 10 years)	160	2185	6149	13,701	0.1	1.2	2.1	3.1			
10 (for 65 years)		1 million yuan (100 thousand yuan by 10 years)	- 823	1428	6915	19,016	- 0.8	0.7	2	3.1			
		1.5 million yuan (150 thousand yuan by 10 years)	227	3993	12,438	30,833	0.1	1.4	2.4	3.4			
		2 million yuan (200 thousand yuan by 10 years)	1410	6557	17,960	42,651	0.7	1.7	2.6	3.5			

Note: Negative numbers represent the deficit by age 95 if the financing model for a long-living life cannot cover retirement expenses

model for a long-lived life could be a prototype for product design in real life, although one must be careful not to confuse the two. As a financial institution dedicated to catering to the client's needs over their life cycle, Taikang seeks to tap into the potential of compounding for clients by designing products with a view to long-term accumulation. A qualitative leap would naturally follow when quantitative changes build and reach a certain mass. To solve the financing challenge for a long-living life, business innovation and cross-sector solutions are needed since pure financial products play a limited role.

Taikang creatively combines long-term annuity products with the benefit of checking in its longevity communities, a solution that incorporates intangible insurance and tangible medical and caring services. Clients could enjoy insurance and wealth management services, reap the benefits of compounding delivered by our excellent investment performance and save up sufficient money for retirement when they are still young. When they get older, the insurance premiums accumulated could fund a quality retirement life in a longevity community or other arrangements as they please. Different from traditional solutions, what Taikang offers is an innovative financing solution that addresses the challenge of wealth accumulation in the longevity era, a solution that aims at maximizing the benefits for clients in their entire life span or even longer. Taikang offers professional investment capability empowerment and high-quality elderly care services in longevity communities. What the clients purchase is not just financial products but also a future lifestyle. It is a revolution in elderly care.

As mentioned above, among the three pillars of pensions, the third is private pension, which are often encouraged by national tax incentives. Taikang encourages clients to find an optimal financing model and provides incentives for people to accumulate wealth for older ages by offering a myriad of medical, caring, rehabilitative and end-of-life care and services that cover a full life cycle. If the lifestyle of living in a longevity community incentivizes people, these for-profit products to some extent play the role of the third pillar. Taikang will further innovate in the future, extending beyond elderly care to provide medical and nursing services. We will expand the business to the health sector, where Taikang will combine annuity with health insurance and nursing insurance among other insurance products that cover the needs of both elderly care and health care over the life cycle to respond to more complicated events, especially tail events that require more cash consumption.

In the era of longevity, as the older population continues to expand, financial services for the elderly will be the blue ocean. The industry is unique in that it requires traditional financial services, yet there must also be meticulous care and a people-oriented culture. Taikang has launched in its longevity communities products tailored for elderly individuals, exclusive asset management and financial services to help the elderly better manage and pass on their wealth. Sufficient and secured wealth gives the elderly a sense of happiness and reassurance, and that is where Taikang sees the value and meaning of its cause.

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Chapter 4

The Trailblazer in the Era of Longevity—Japan



The previous chapters present a panorama of the era of longevity, health and wealth. In this chapter, we turn our eye to the real world and seek a sample for observation and analysis. Japan, globally speaking, is the first country to enter the era of longevity. If the threshold of the longevity era is when the population aged 65 and over takes up 25% of the society, Japan has met the standard as early as 2014, and the proportion even increased to an astonishing 28.7% in 2020, ranking top in the world. Japan represents a typical country in the era of longevity, and it presents a great sample and subject for observation as it is undertaking profound social and economic changes. Analysis of these changes could provide valuable foresight for China in its future policy making.

Observing and studying Japan have inspired me a lot in starting and managing a business. When I visited Japan in the early 1990s, I saw signs of insurance companies line up on the streets of Tokyo, and I made the resolution to start a life insurance company. Later, in 2017, when I set my mind to set foot in the elderly care sector, I led my team to Japan again to draw experiences. Every time I visit Japan, I was greatly shocked by this rapidly aging country, where many taxi drivers and salespersons at convenient stores are older persons, a picture totally different from China. Both being East Asian societies, Japan could be a mirror that reflects what China might look like in a longevity era, thus offering some ideas for China on how to cope with the shock waves of the aged population in advance and on how the elderly care sector might evolve.

4.1 An Impression of Japan

If you sketch in the streets in Japan, one special scene would be the gray-haired elderly. Some of them rush to the subway to work, some choose a more stable job and drive taxis to make a living, and very few have some moments of leisure to spare. According to the data of the Ministry of Health, Labor and Welfare of Japan

in 2017, the average age of taxi drivers in Japan is as high as 59. They dress neatly to greet passengers and get off voluntarily to help passengers with their luggage, which embarrasses many young travelers to Japan. Grandpa taxi drivers and grandma waitresses are typical examples of how older persons in Japan participate in the job market. Japan recently proposed to raise the retirement age from 65 to 70, and its society welcomed a culture of life-long job participation. Those are guarantees for the elderly to be employed on the one hand, but on the other hand, they could also be deemed a helpless move taken by the government when there is no other option. If you focus on this specific cohort and look back into history, you can find that they were born after the Second World War and are known as baby boomers. From 1947 to 1949, an average of 2.7 million babies were born in Japan every year. This generation is also called the “Dankai” generation, who had seen the golden age of Japan’s postwar economic recovery and witnessed the withering years of economic recession.

In the process of economic development, the demographic dividend in Japan quickly came to a halt and was replaced by population aging. From 1964 to 1994, the proportion of the population aged 65 and over in Japan rose from 6 to 14% step by step in 30 years. In the following 25 years, the proportion quickly doubled and exceeded 28% in 2019 (see Fig. 4.1). The rate of aging is much faster than that of developed countries in North America and Europe. According to Japan’s Statistic Bureau, the population aged 65 and over in Japan hit an astonishing number of 36.17 million in 2020, accounting for 28.7% of the total population. China is forecasted to hit Japan’s level by the mid-twenty-first century.

According to Guinness World Records, the Japanese basically took all records of the longest living persons, which is a proud boast of Japan. Kane Tanaka is recognized by Guinness World Records as “the oldest living person on earth”. In 2021, when she ages 118, she has been actively preparing for the Tokyo Olympic

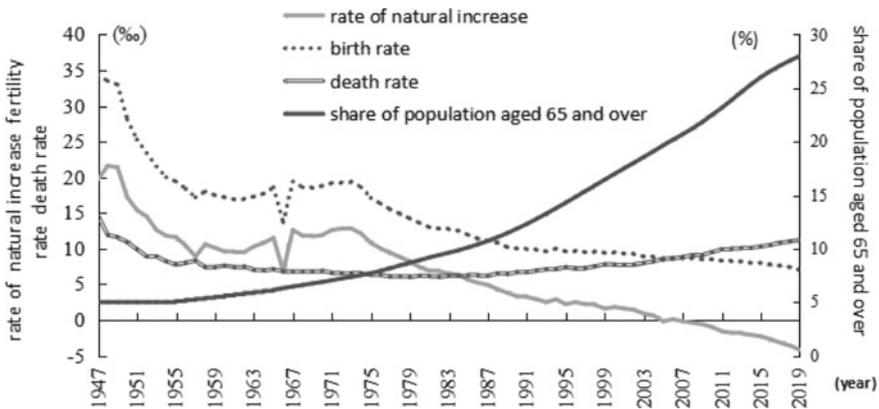


Fig. 4.1 Rate of natural increase, birth rate, death rate, proportion of the population aged 65 and over in Japan. Sources: The Wind Economic Database, the World Bank

Games torch relay (she withdrew from the relay for concerns over spreading coronavirus). According to data released by the Japanese Ministry of Health, Labor and Welfare in September 2020, there are more than 80,000 centenarians in Japan, and they would all receive certificates and silver trophies from the Prime Minister. Since 2013, Japan has been one of the countries with the longest life expectancy, which could be attributed to Japan's effective and high-quality health management. Taking cardiovascular diseases as an example, data from the World Health Organization in 2018 show that the mortality rate of coronary heart disease in Japan was only 32/100,000, the lowest in the world. Among males aged 55–64, the death rate of Japan is not even a tenth of that in the United States.

Unlike the relatively flat death rate, Japan's birth rate decline has been salient. Over the 40-year span from 1947 to 1990, the birth rate dropped from 34 to 10‰. The fertility rate has remained low for 30 years, resulting in the first negative population growth in 2005. In 2019, the birth rate fell to 7‰, and the rate of natural increase decreased to -4.2‰. In 2020, the number of newborns in Japan was less than 850 thousand, a record low in history. In terms of the total fertility rate, in the past 10 years, it stagnated at approximately 1.4. Despite a slight rebound, Japan has been mired in the low fertility trap.

The surprisingly dramatic changes in Japan's population age structure set the alarm bell ringing for the world that the era of longevity might come more quickly than expected. Due to the persistent low fertility rate and prolonged life expectancy, the median age of Japan's population jumped from 25.4 in 1960 to 48.4 in 2020. The age structure shaped an obvious inverted trapezoid, and the population is increasingly aging. In the era of longevity, the employment structure in Japan has seen tremendous changes too, with an increasing number of older persons entering the low-end part-time job market, especially in labor-intensive industries such as wholesale, retail trade and catering. In 1975, the 60-plus cohort accounted for only 9.2% of the total population, whereas after 2000, the proportion remained at approximately 20%, and the size of the elderly employed doubled compared with that in the late 1980s. Japan has been contemplating passing a series of policies and acts¹ to ensure the employment of elderly individuals. A higher employment rate enables older persons to improve their quality of life when their savings run low. Delayed retirement age has helped ease Japan's fiscal pressure.

As the population age structure changes, a phenomenon in Japan emerges called "shopping refugee". In approximately 2000, the competition among retailers in Japan intensified. Meanwhile, commercial facilities became larger, and private cars became more available. As a result, commercial facilities have relocated to suburban areas. There is a smaller number of commercial facilities close to home, forcing people to

¹ Such as the "Act on Social Welfare for the Elderly" (1963), "Act for Promoting Employment of Middle-aged and Older Persons" (1970), "Act Concerning Stabilization of Employment of Older Persons" (1986), "Subsidy to Promote Continuous Employment of Older Persons" (1998), "Act on Stabilization of Employment for Elderly Persons" (2004), "Amendment to the National Pension Act", "Law for Facilitating the Creation of New Business" etc. To promote employment by raising the statutory retirement age and pension eligibility age, increasing subsidies for enterprises, and encouraging the elderly to start businesses.

travel a long distance to shop. In this regard, the Ministry of Land, Infrastructure, Transport and Tourism of Japan refers to “older residents who want to shop in stores within a diameter of 500 m, but cannot do it due to reality conditions” as “shopping refugees”.

The realities of employment and consumption have also brought deeper social problems. In 2014, Japan’s NHK TV station compiled and published a book called “*Unrelated Society*”. Through a two-year investigation, it traced the life trajectories of the deceased and determined how they came to the tragic end of “dying a lonely death”. “*Lonely Death*” is a term coined in Japan, which is a reflection of Japan’s aging society and the lonely status of elderly individuals, referring to the phenomenon that some older persons living alone die long before someone finds out about their death. They live in a so-called unrelated society, where they have no geographical, blood and professional ties. They die alone with no one claiming the body. Such death is also called “unrelated death”. The cause of a unrelated society is the collapse of geographical and blood-centered communities that follows industrialization and urbanization and the rupture of professional ties resulting from the end of the lifetime employment system and worsening population aging. Governments and societies must respond to the problem quickly and create new bonds.

In terms of social stratification, Japanese society has shaped like an M, hollowing in the middle part, which reveals a dwindling middle class. The once “100 million middle class”² with smaller income disparities shrinks; instead, some middle class sinks into poverty, and the gap between rich and poor people further widens. It is a result of a deteriorating employment environment, an increasing unemployment rate and rising difficulties in finding jobs in economic downturns. Upon entering the twenty-first century, the employment system was reformed. An increasing number of businesses abolished life-time employment and started to adopt informal employment. The employees’ expectations for welfare benefits and career stability were compromised. A disappearing middle class has had a longstanding negative impact on Japanese society, one marked trait of which is low desire. Residents take a dire outlook for life and lack ambition, with no desire, dream or motivation, and the *hikikomori* (isolated) population surged. They do not go to school or work, do not engage in social activities and stay confined to their homes without interacting with the outside world. According to a survey conducted by the Japanese government in 2015, there were 541,000 *hikikomori* among young people aged 15–39 and 613,000 among middle-aged to older persons aged 40–64. To respond to the low fertility rate and an aged population, Japan has started to call for positive voices. For example, in 2018, Japan proposed the goal of building an “ageless society” in the *Outline of Countermeasures for Aging Society*, which points out that the popular notion of defining people aged 65 and over as “the elderly” did not keep up with reality, and it is necessary to change the division of life into distinct stages based on chronological age. In an ageless society, people are not categorized by age; rather, they are free

² “100-million middle class” (いちおくそうちゅうりゅう, or 100 million all in the middle class) is a national awareness emerge in Japan in the 1960s and trending in the 1970s and 1980s. With life-time employment system, 90% Japanese consider themselves as middle class.

to choose their lifestyles as they please and as their abilities permit. By building an ageless society, the Japanese government expects to take advantage of the knowledge, skills, expertise, life experiences and wealth accumulated by older residents to create value. In the private sector, some with vision initiated the *New Elder Citizen Movement*. According to Shigeaki Hinohara, a doctor described as a national treasure of Japan, new elder citizens are healthy older persons aged 75 and older who are capable of taking care of themselves and continuing to work. The *New Elder Citizen Movement* has made a huge difference in changing stereotypes and redefining older persons.

4.2 Where is the Japanese Economy Heading?

Demographic Shift Throughout the “Lost Decades”

From the end of the Second World War to the 1970s, the Japanese economy saw a golden period of robust development. Its rise challenged the interests of the United States, which started a trade war with Japan that lasted for 30 years. The United States government later negotiated for the appreciation of Japanese yen with the Japanese government in the name of resolving the U.S.-Japan trade deficit. It ended with Japan’s signing of the *Plaza Accord* in 1985. Since then, the Japanese yen appreciated sharply and took a huge toll on Japan’s exports. The Japanese government responded by cutting the interest rate as an effort to stimulate the economy. From 1986 to 1989, a large amount of hot money poured into Japan, which fueled speculation and drove up the stock market price and real estate price, creating a huge economic bubble. As the bubble inflated, the Japanese central bank hiked interest rate five times in a row as an attempt to burst the bubble deliberately, which plunged the stock market and real estate market. Japan’s economy later entered a period of low growth for as long as 30 years, which is called the Lost Decades.

Sustained weak economic performance in Japan is a result of a myriad of factors. In the 1990s, both investment and consumer demand fell sharply. In the meantime, Japan’s politics saw several upheavals as the prime minister came and went one after another, and the country lacked effective reforms. With little confidence in the economy, Japanese businesses aimed to minimize debt instead of maximizing profit and chose to repay the debt rather than reinvesting, causing a balance sheet recession that lasted for 15 years. When the balance sheet recession finally ended, demographic changes and institutional failures stalled technological advancement and innovation, and Japan failed to catch up with the tides of the mobile internet. Further worsened by faltered global demand after the financial crises, Japan’s economy suffered sustained sluggish growth.

In the early stage of the downturn, many researchers attribute it to the financial crisis that follows the bubble burst. However, financial crises usually last for 2–4 years. Even in the case of the Great Depression in the 1930s, the worst financial crisis recorded in history lasted only for 12 years. In Japan’s case, the economic depression lasted for a long time. It is widely believed in academia that recession is

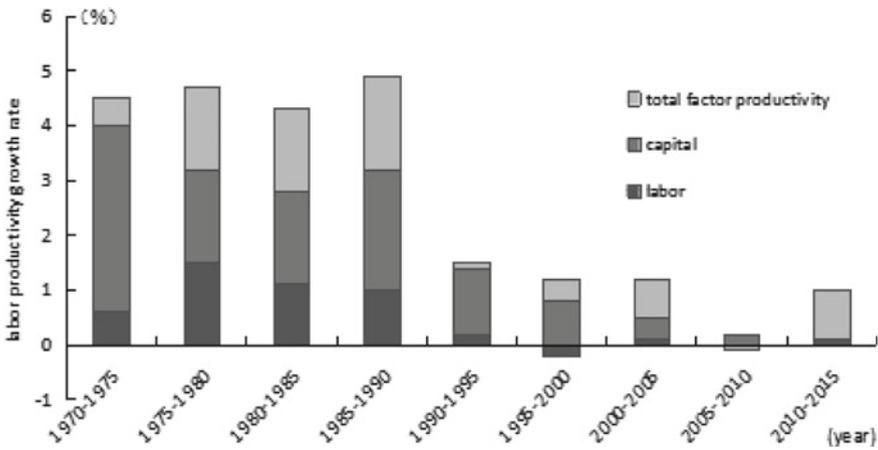


Fig. 4.2 A breakdown of Japan's economic growth contributor at different times. *Source:* Asian productivity organization, APO productivity databook 2019

closely linked to aging. There are problems emerging in Japan, such as lower labor supply, slowdown in technological progress, declining capital formation and heavy national fiscal burden. The drag of aging on the economy could be clearly observed.

The Shifts of Three Leading Factors of Production

Based on the role of labor, capital and technological advances,³ the three main factors of production contribute to the growth of GDP, and both labor and technological advances are significantly affected by demographic changes (see Fig. 4.2). From 1985 to 1990, the shares of contributions from labor and technology to GDP growth were 1% and 1.7%, respectively. However, the contribution of the two factors continued to drop for 30 years after that, even to negative values at some point, and never rebounded. The contribution of capital to GDP growth did not decline as much as the other two factors, as it remained a strong contributor to the economy until the late twentieth century. However, it has played a smaller role since the financial crisis hit in 2008.

In terms of labor, a factor of production, as the older population grows, labor shortages have become prominent in Japan. As labor force growth slows down or even becomes negative, it is highly likely that factories and businesses will be short-handed, which in turn will adversely impact economic development. According to the statistics from Tokyo Shoko Research, a private corporate credit research agency, in 2019, there were as many as 426 companies that were indebted as much as 10 million Japanese yen and ended up in bankruptcy due to a “lack of manpower”, an increase of 10% year-on-year, which is also the highest in record since manpower was included in the research.

³ Technological advances are often measured by total factor productivity, which is the productivity of all productive activities in a period of time. It is a productivity indicator, a measure of output as relative to all the inputs.

An aged population also weighs on Japan's labor productivity, more so in labor-intensive industries than in capital-intensive ones. Taking wage level as a rough measure of labor productivity, the hourly wage in Japan in the past 20 years has fallen by 9%. Japan's wage level is not just lower than the average of OECD countries; worse still, the gap continues to widen. While changes in industrial structure (such as the importance of the service sector rising) also lower labor productivity, it is undeniable that the aging labor force played a major role in the widening gap between Japan and other countries.

Of course, there have also emerged many positive elements in Japan to offset the fall in the labor force. First, automation and the robotic industry have become an important countermeasure of a shrinking labor force. Japan's robotic has flourished as spurred by the era of longevity and has now become a veritable global superpower, taking up the lion share of the industry. Second, there is a rising participation rate of the elderly in the labor force. As of the end of 2020, the labor force participation rate of the elderly over 65 in Japan has risen to 25.1%, which means that one-quarter of the elderly are still participating in the labor force. Japan has entered the retiring phase at 70. Although it has not been made mandatory to retire at age 70, past experience indicates that the Japanese government is highly likely to push for it. Japanese labor economist Atsushi Seikei once calculated in *Financial Gerontology* that if most elderly people work until the age of 69 and start to receive pension benefits from then on, the trend of declining labor force might be kept at bay.

In terms of capital as a factor of production, the life cycle theory suggests that the older population is a consumption-oriented cohort. The higher the proportion of the elderly is in the total population, the greater there is to share the total output, which will drive up consumption and drag down savings at a macro level. In 1970, elderly individuals aged 65 and above accounted for 7% of the total population, which is the onset of population aging. One of Japan's characteristics at that time is high savings, with a national savings rate at approximately 40%, higher than the world average. After that, Japan's national savings rate has been on a downward slope, dropping to 28% in 2018 (see Fig. 4.3). The decline in the savings rate in Japan is in line with the life cycle theory. Micro research data have also shown that Japan's residents save the most in their 30s–50s and the least when they age over 65 and then take a turn to negative savings in their 70s. Judging from the rate of return on capital (by direct observation in comparison with interest rates), Japan's experience shows that an aged population puts downward pressure on interest rates because the price of funds (which is the interest rate) falls when savings supply exceeds investment demand for a long time. The contribution of savings and investment as a share of GDP have both declined in Japan since 1970. Since 1990, investment has fallen at a sustained faster pace than savings in Japan. The interest rates went down accordingly, entering the phase of zero interest rate after 1999. Since 2016, Japan's central bank has even imposed negative interest rates on new reserve accounts of commercial banks. The low interest rate environment has undoubtedly put much pressure on investment.

In terms of technological advances, another factor of production, even though Japan still stays ahead in high-end manufacturing, it has obviously been left behind in the waves of mobile internet after the financial crisis in 2008. The list of 500

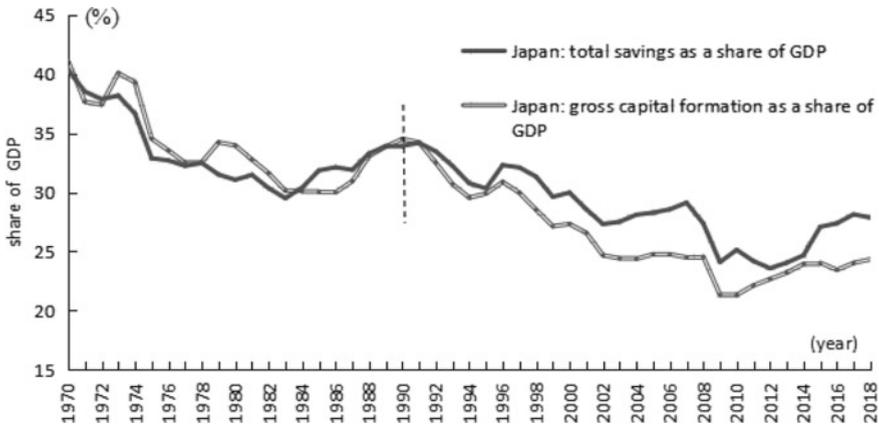


Fig. 4.3 Savings and investment in Japan from 1970 to 2019. Source: The World Bank

global unicorn companies in 2019 shows that unicorn start-ups in China and the United States account for 73% of the world’s total. Only 3 are in Japan, all small ones with a valuation of approximately 1 billion to 2 billion US dollars. Japan ranked lower than India (with 19) and South Korea (with 9) and was even outnumbered by Indonesia (with 3). Generally, people are most active in innovation in their youth. When the older population grows as a percentage of society, technological innovation and entrepreneurship inevitably come under pressure. Globally, the higher the old-age dependency ratio is in a country, the lower the share of contribution from unicorn companies to the total GDP (see Fig. 4.4).

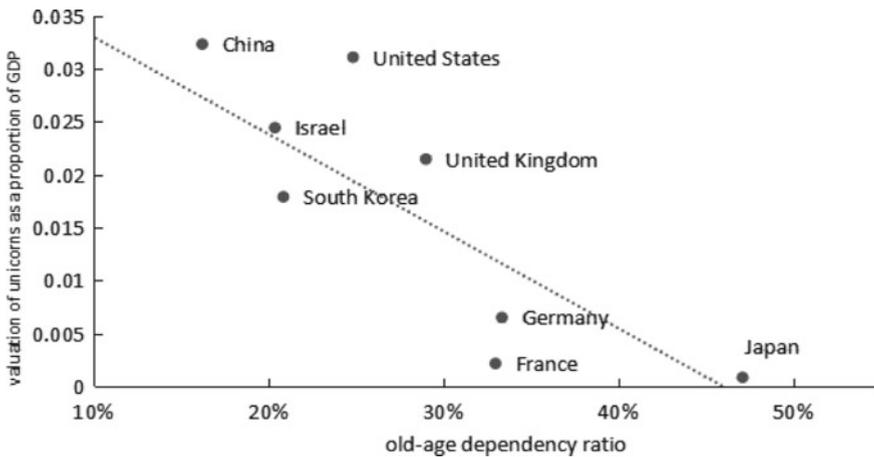


Fig. 4.4 The correlation between unicorn valuations to GDP and old-age dependency ratio. Source: The World Bank, CB Insights database, author’s calculations

There is a view that the labor and HR policies in Japan hinder innovation. The lifetime employment system and the seniority-based wage system⁴ are widely accepted in Japan's labor market and once played a significant role in stabilizing employment and promoting economic development during the postwar period. However, as aging became prominent, such systems have in turn hampered innovation. Businesses are redundant and unable to eliminate an excessive labor force; outstanding young talent moves slowly on the career ladder, with their abilities and willingness to innovate restrained. Japan has been reforming to unleash the innovation "potential" in the economy. Well-known companies in Japan's Information and Communication Technology (ICT), such as Nippon Electric Corporation (NEC), Sony, and Fujitsu, have begun to reform their wage system, abolishing the seniority-based wage system and matching job grades and wage levels to one's abilities and performance. Although demographic changes could hold back innovation, it is the environment and institution that make the difference in generating innovation. Perhaps for Japan, fundamental system reforms and creating a level playing field conducive to the free flow of factors of production are ways to better unleash the innovation potential in the economy.

The Shifts in Industrial Structure and Consumer Behavior in Japan

Postwar Japan experienced a shift from industry to services. During the economic recovery after the Second World War, steel, electricity, automobiles and electrical appliances, among energy and heavy industries, became the dominant industries fueling economic growth. The global energy crisis hit in the 1970s led to Japan's upgrading from energy-intensive industries to energy-efficient and technology-intensive industries with high added value. In the 1980s, Japan officially put forward the slogan of "building a country with science and technology", and technology-intensive industries such as precision machinery, microelectronics, integrated circuits and new material began to enter a booming fast-track.

Industrial upgrading increased per capita income and brought out the transformation of consumption patterns. Japan's per capita exceeded US\$ 10,000 in 1981 and quickly doubled to over US\$ 20,000 in 1987. During this period, the contribution of the service sector to the economy continued to rise, and the manufacturing of consumer goods such as automobiles and electrical appliances thrived.

The burst of the economic bubble and severe population aging in the 1990s plunged Japan's economy to a long-term downturn, holding back its industrial upgrading. One consequence is that Japan was taken over by the United States in high-end technology competition, most typically, in information technology. Japan's competitiveness fell sharply. However, during this stage, the proportion of the service sector in Japan's GDP maintained a steady upward trend. According to data in 2018, the service sector contributes nearly 70% to Japan's GDP, and to further break it down, the technology and health sectors have embraced explosive growth, accounting more and more in the economy (see Fig. 4.5).

⁴ Seniority-based wage system first started in the beginning of twentieth century. It is a wage system Japanese businesses use to increase employees' wage annually based on their age, length of time in the company and education level etc.

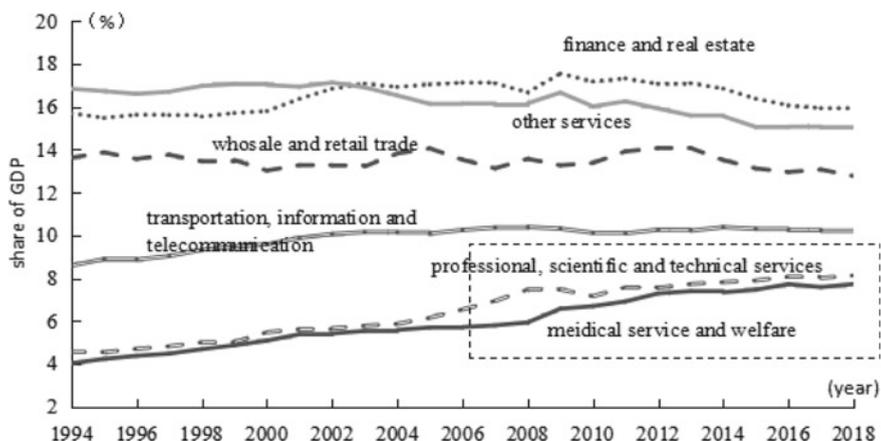


Fig. 4.5 Share of different services industries in gross domestic product (GDP). *Source:* Cabinet Office, government of Japan.. *Note:* The data only include services industries in the tertiary sector of the economy

As the service sector becomes increasingly important in the economy, its intrinsic problems have started to manifest themselves. Since the productivity level in the service sector is lower than that in manufacturing, the increase in services' share of GDP entails drag on the productivity of the economy. Renowned economist Baumol concluded that it is the “cost disease” of the service sector. The key to curing the problem lies in increasing productivity through innovation.

The dawning of the era of longevity has stimulated the boom of automation, artificial intelligence and health services in Japan. As the population becomes increasingly gray, it is an irreversible trend that robots and artificial intelligence would replace some human labor as there is a shortage in human resources and health care professionals. In terms of robot supply, Japan delivers approximately 50% for the world. Benefiting from Japan's top-notch automation clusters, coupled with intensive ways of production, a large number of world-renowned companies emerged, such as Mitsubishi, Panasonic, Keyence and Fanuc. The trend of aging has also stimulated Japanese consumers' demands for health products, which pushes for the betterment of Japan's health sector to become the industry benchmark. The spending on health as a share of GDP in Japan rose from 4.4% in 1970 to 11.1% in 2019, a relatively high level among OECD countries. The quality of medical treatment in Japan is high, and medical technology leads the world in many areas. As the government, industry and businesses cooperate and adapt, Japan has seen a mature elderly care industry set in place, covering the needs of the older population, such as medical treatment, elderly living, commodities and services for elderly individuals.

We could also have a picture of how industries and consumption evolve in Japan by observing the stock market. First, we locate the ten highest-priced stocks traded on the Tokyo Stock Exchange in 1993. At that time, the economic bubble just burst, and most companies with high market capitalization are large banks and the leading

companies in automobiles, electricity and telecommunications, where Japan has the edge. Toyota, Tokyo Electric Power Company (TEPCO), Nippon Telegraph and Telephone (NTT), to list a few. By 2020, it is a completely different scenario with the ten highest-priced stocks (see Table 4.1). Banks have disappeared from the list and have been replaced by leaders in electronic information, automation (such as Sony, Keyence) and medicine and healthcare (such as Takeda, Daiichi Sankyo). Based on the ups and downs in the stock market, industries in which Japanese stocks have fallen sharply in the past 30 years include cyclical industries such as finance, materials, and construction. Stronger performers are those in the pharmaceutical, consumer goods, some fields of electronics, and service sectors. The change in the makeup Japanese stock market is also consistent with our observations at the macro level.

The era of longevity sent shockwaves through finance and the real estate market in Japan. There once was a time when financial companies took up the lion share of the list of the top ten companies with the highest market capitalization. However, with the rate of return on capital down and with a zero or negative interest rate, the financial sector in Japan is faced with a grim market environment. For insurance companies in particular, lower interest rates would lead to spread losses, which would have a significant impact on the assets and liabilities of insurers and even drive them into bankruptcy in serious cases, jeopardizing the entire industry. From 1997 to 2001, nine Japanese insurers closed down one after another. Among the top ten large companies by market capitalization in Japan, it is difficult to find a bank or insurer.

Table 4.1 Top ten stocks by market capitalization in Japan in 1993 and 2000

Top ten stocks by market capitalization in Japan				
Number	1993		2020	
	Company name	Industry	Company name	Industry
1	MUFG Bank	Finance	Toyota	Automobile
2	Industrial Bank of Japan	Finance	Sony	Electronics
3	Toyota	Automobile	Softbank	Telecom
4	Sumitomo Mitsui Banking Corporation	Finance	Keyence	Electronics
5	UFJ Banking	Finance	Nintendo	Software
6	The Fuji Bank	Finance	Nippon Telegraph and Telephone	Telecom
7	Daiichi Bank	Finance	Takeda	healthcare
8	Sakura Bank	Finance	Nidec	Electronics
9	Tokyo Electric Power Company	Electricity	MUFG financial corporation	Finance
10	Nippon Telegraph and Telephone	Telecom	Daiichi Sankyo	Healthcare

Source: Bloomberg

Real estate is another market that took a heavy toll in the era of longevity. It is widely known that Japan's real estate market bubble burst in the 1990s, the reasons behind which include the sharp rise of the Japanese yen exchange rate and subsequent policies mistakes from the central bank, but the root cause is the changing demographic structure. The agglomeration of the labor force plays a huge role in pushing up real estate prices. American scholar Harry Dent points out in the book *Population Cliff* that consumers' demand for houses runs through their whole life, peaking at their golden age from 27 to 41 years old. Once the demographic structure undergoes major changes, the landscape and growth model of the real estate market would also face adjustments. As Japan's baby boom recedes, a low fertility rate persists, and the population ages quickly. In addition, many young people do not have a stable job and are unable to afford purchasing a house. A series of demographic factors have led to the price falling in the real estate market and plunging it into stagnation. The price fall started in 1991 and lasted for an entire 15 years until 2006. During the time, many people made the purchase under the false assumption that the price has bottomed out; however, it turned out that the price was just in the middle of the dive. For another 15 years starting from 2006, the real estate price has seen ups and downs, only climbing slowly back to half of the peak price in 1991.

Japan, in the era of longevity, has ushered in the golden age of elderly consumption. Statistics from the Japan Bureau of Statistics show that the consumption of households aged 60 and over accounts for 48.8% of the total, and the number was only 29.9% back in 2000, which means that it rose by 19% in approximately 20 years, 8% points higher than the increase in the share of the older population in the same period. The elderly in Japan prefer to buy healthy food, and there is a growing demand for convenient life services such as nursing and care. The healthy older population is enthusiastic about leisure tours. As the mobile internet develops by leaps and bounds, older persons have become a major force of online shopping. According to a survey on household consumption by the Japanese Ministry of Internal Affairs and Communications, 31.2% of the 65-plus elderly used online shopping in 2020. The Japanese society also invested a lot in developing consumer goods and services that cater to the needs of elderly individuals, separating them from regular goods and services.

The Japanese government has given much thought into institutional arrangements to safeguard the interests of elderly individuals. In addition to setting stringent standards on the hygiene and safety of related goods and restricting market access, Japan has also adjusted laws to protect older consumers and promote the food industry. Japan's experiences suggest that government and businesses could work hand in hand in taking action to unleash the consumption potentials of elderly individuals. It is the combination of high-quality and smooth corporate supply, maturing government policies and sensible consumption philosophies of the elderly that enables Japan's value chains for elderly consumption to stand at the forefront of the world. Revitalizing and reshaping the consumption of the elderly is becoming a new trend in the Japanese business sector.

4.3 Is the Era of Health and Wealth Around the Corner for Japan?

Standing on the Doorstep of the Era of Health

Unlike the economic performance in the lost decades, Japan boasts its achievement in the health industry, where Japan has maintained the top class. In the health reports released by the World Health Organization, Japan has ranked top for many years because of “high average life expectancy”, “high-quality medical services” and “equitable distribution of medical expenditure burden”.

These achievements must be attributed to the experiments and improvements the Japanese government made in healthcare that have been going on for half a century. As early as 1978, Japan’s Ministry of Health, Labor and Welfare first launched a national health management program, which includes key measures such as promoting health check-ups and increasing the number of public health nurses and nutritionists. Ten years later, the upgraded version of the national health management program was launched, which established a health check-up arrangement for elderly individuals, specified a regional health center, and strengthened the training of health and exercise instructors. In 2000, the Ministry of Health, Labor and Welfare proposed a national health management plan for the twenty-first century (referred to as the “Healthy Japan 21 Plan”) that is to be carried out nationwide from 2000 to 2010. Later, in 2002, the Japanese government passed the Health Promotion Act, which provides a legal framework to promote national health.

It is easy to find that health check-ups have always been high on the agenda of Japan’s national health management programs for many years. Almost all hospitals, large or small, have health examination departments. There are government-funded health management centers in every city responsible for providing comprehensive health management services for local residents by working together with local public hospitals and university-affiliated hospitals. The main job for such centers is to perform regular health examinations. Every center is equipped with sophisticated health check-up machines, such as MRI machines (to check the condition of the brain and blood vessels), CT machines (for early detection of lung cancer), ultrasonic diagnostic machines (for examination of the liver, spleen, kidney, arteries, etc.), and a physical component analysis machine (for examination of bones, fat, and muscles) to provide accurate health check-ups. In recent years, medical tourism has drawn much attention in China. Receiving cosmetic surgeries in South Korea or health examinations in Japan has become popular tourist attractions, which in another way indicates that Japan has won wide recognition in the field of health examination.

If we compare health examination as the vanguard of the Big Health Industry, the three engines or horse carriages of it are medical care, medicine and medical insurance. The demand in the elderly care market could be seen as the accelerator, speeding up the setup of all-round services in the industry to cater to the needs of elderly individuals.

In Japan, medical care services are mainly provided by private hospitals and individual physicians. According to data from the Ministry of Health, Labor and Welfare of Japan, in 2018, there were 8372 hospitals in total in Japan, with 81.1% being private hospitals; there were more than 100,000 nondental clinics and nearly 70,000 dental clinics, and 95.5% of the clinics were private. Private clinics and outpatient departments of private hospitals are the main healthcare service providers, while hospitals that qualify as “advanced treatment hospitals” defined by the Ministry of Health, Labor and Welfare are mainly public teaching hospitals and some large specialized hospitals. Data from the Ministry of Health, Labor and Welfare of Japan show that in 2018, the number of hospital beds in Japan reached 1.64 million, and the number of hospital beds per 1000 people was 12, top in the world. Japanese people prefer going to small clinics when they get sick, instead of going to big hospitals like we do, mainly because most doctors in small clinics are also famous doctors. Japan implements a free-access system for medical institutions to perform practice, and professors from private medical universities in Japan and doctors from major hospitals are allowed to sit in clinics other than being confined to only their own schools or hospitals.

While taking on the problem of healthcare availability, Japan also tackles the problem of healthcare accessibility by providing universal coverage of health insurance. Since 1961, Japan has started to implement the national health insurance system and national pension system. Despite an aged population, Japan has reached a relatively wealthy stage in terms of its economic and social development and has put into place a universal social security system that provides universal health insurance and pension. After the 1980s, with the introduction of the Golden Plan (*the Ten-Year Plan for the Advancement of Health and Welfare for the Elderly* launched in 1989) and the New Golden Plan (*the Ten-year Plan for the Advancement of the Health and Welfare of the Elderly* launched in 1994), medical care systems for retirees and for elderly in the late stage of life (for people aged 75 and over) were successively implemented, completing a comprehensive social security system as a response to population aging. At present, the out-of-pocket payment patients bear for receiving health care in medical institutions is different and varies according to their age and income. Generally, those aged between 6 and 70 have a copayment of 30%, and those aged between 70 and 74 have a copayment of 20%, while for low-income patients aged above 75, the copayment is 10%. In the cases of major disease, there is a cap set for high medical cost in the healthcare insurance system, which means that according to the patient’s income, a ceiling charge amount is set for the payable copayment. When the upper limit is hit, patients could apply for a reduction or exemption in advance or apply for a reimbursement from the insurance agencies afterwards. In this way, the copayment patients bear from receiving treatment of major diseases would not take up too much of their income, avoiding illness-induced poverty.

In addition to the universal healthcare insurance system, Japan has also implemented a nursing care insurance system, also known as long-term care insurance. Japan began to formulate a law in 1997 and implemented the Long-term Care Insurance Act in 2000, providing elderly individuals with a suite of services ranging from daily living activities to rehabilitation care through the insurance system. The cost

is split by half; one half is borne by the central and local government, and the other half is borne by individuals and employers. All persons start to pay long-term care insurance premiums at the age of 40 and can access the services at the age of 65. The long-term care insurance system further secures the payment ability of the elderly to stay healthy.

With a sound social security system in place, deregulation was not started by the Japanese government until in 2001 to allow life insurers and nonlife insurers to offer medical insurance and healthcare insurance products, which marked the official start of Japan's commercial medical insurance. However, private health insurance plays a complementary role, mainly to compensate for the copayment patients bear in the national health insurance plan or to cover the expenses that public health insurance does not cover. Private medical insurance offers savings-type critical illness insurance products such as cancer insurance. However, because of the generous benefits and coverage of Japan's public health insurance, demands for private health insurance are squeezed. In 2018, Japan's private health insurance accounted for only 3% of total expenditures on health, while public health insurance accounted for 84%.

In addition, there are almost no direct transactions between private health insurers and medical institutions in Japan, resulting in private health insurance products having no direct impact on the allocation of medical resources, let alone cutting the expenses for the insured or improving the quality. This is a distinctive difference between private health insurance in Japan and in other advanced economies. However, population aging has also created unique market opportunities for private health insurance. In 1990, Japan gradually opened up its private health insurance sector and nursing service market. Private health insurers could set up nursing care institutions as long as they meet the criteria. On the one hand, such institutions could receive payments under the long-term care insurance scheme covered by the government; on the other hand, by offering private long-term care insurance products, the insurer could enjoy more complementary benefits.

In the 1990s, Japan achieved the separation of drug prescribing and dispensing services by medical system reform and adjustment of health insurance payments, severing the collusion between doctors and pharmaceutical suppliers. This did not stop Japan from growing into the world's second largest pharmaceutical market. As early as the 1970s, Japan invested hefty money in pharmaceutical R&D. Drug development in Japan started with the production of follow-on generic drugs (*me-too drugs*), which are based on the chemical structure of first-in drugs. By modifying some chemical compositions, new molecular structures could form without affecting the pharmacological mechanism of action and targeting of the preexisting drugs. Since the 1980s, the Japanese government has imposed control over drug prices. The price of a new drug was cut by 5% every year since its launch on the market, which has been a huge driving force for pharmaceutical companies to engage in R&D. In the 1990s, Japan lifted all restraints on the drug market, and Japanese pharmaceutical companies started to build their supply chain, putting an end to the chapter where they were "squeezed" and "exploited" by European and American competitors. Upon entering the twenty-first century, Japan put forward the strategy

of building a biotechnology economy and released a series of policies to encourage innovative drug R&D domestically.

Takeda is a representative of Japanese pharmaceutical companies. Established in 1781, Takeda has had a history of 240 years. It started off by selling traditional herbal medicine and generic drugs, reaping huge profits. In recent years, it has shifted its focus to drug R&D in four core fields, namely, tumors, rare diseases, digestive system diseases and neurological diseases. It has also made inputs earmarked for blood products and vaccines. In 2020, Takeda ranked seventh by market capitalization in Japan's stock market. Boasting a revenue of \$30 billion, it ranked tenth among the top global pharmaceutical companies in 2020 and first among the top Asia pharmaceutical companies, becoming one of the global front-runners in the biochemical sector. It is also worth mentioning that Japan is also a strong player in basic R&D. In the past 10 years, there have been four Japanese scientists on the list of Nobel laureates for physiology or medicine. Japan has been at the forefront of many areas of life sciences.

Building on a coordinated and balanced development of medical care, medicine and medical insurance, Japan, as a pioneer in the era of longevity, has attached great importance to elderly care and launched a series of policies to support the industry. For example, the *Guidelines on Policy for a Society of Longevity* in 1986, *Ten-Year Strategy for the Promotion of Health and Welfare for the Elderly (the Gold Plan)* in 1989. The establishment of the long-term care insurance system, in particular, has promoted the development of the elderly care industry. Elderly care service institutions have set up sophisticated business models in Japan and continue to innovate their specialized services. Elderly care is mainly divided into residential care services and in-home nursing care services. Residential care is what we often refer to as admitting nursing homes, and in Japan, such homes are categorized into different groups based on the level of care older persons need, and each group has detailed entry criteria to check in. For example, special nursing homes are for those who need long-term care, while sanatorium-type nursing homes are for those who do not need nursing care. In terms of in-home nursing care services, elderly individuals usually stay in their own home instead of in nursing homes, and caregivers provide professional home-visit long-term care. Such caregivers include health care professionals, rehabilitation professionals and medical care professionals based on the physical condition of elderly individuals.

In recent years, a third type of elderly care service has emerged, called “nursing facilities”, in addition to the two abovementioned services. It is a daycare center for elderly individuals, which is usually within a 30-min drive distance from where older persons live, providing daytime care services. The older persons are picked up or sent to the center in the morning, where they can participate in different hobby clubs and health-enhancing activities under the supervision of professionals and escorted back home at dusk. According to the data of Japan's Ministry of Health, Labor and Welfare, Japan's total social security expenditures in 2018 accounted for approximately 21.5% of the GDP, of which nursing care accounted for approximately 2%. In terms of the number of beneficiaries, in 2019, more than 5 million people received elderly care services through long-term care insurance, accounting for approximately 4% of the

total population. The development of the elderly care industry has also given rise to some new business concepts. For example, Teruko Mizushima from Japan introduced the idea of time banking in 1973. In time banks, participants deposit their hour of time given and withdraw “hours of services by others” when they encounter difficulties themselves. Based on this model, everyone could deposit and withdraw elderly care service hours at the time bank, being both the supply and demand side, thus pioneering an innovative model of “contribute today and enjoy tomorrow” in elderly care. The time bank idea is an attempt to solve urgent problems with future remedies, but just as distant water cannot quench a fire nearby, it cannot solve the problem of insufficient manpower in providing elderly care that Japan currently faces.

Technological innovation might make a difference, especially artificial intelligence. Japan is a robotics powerhouse. It started to develop and use robots in the 1970s and included the R&D of robots as a new industrial strategy. In recent years, the focus of robot R&D and production in Japan has shifted from the application in industrial scenarios to elderly care scenarios. According to the survey results released by the Yano Economic Research Institute in Japan, the size of the domestic market for elderly care robots will exceed 200 million yuan in 2021. It is estimated that by 2025, there will be a shortfall of 380,000 in the labor supply of elderly care professionals, which signifies that there is rigid demand for robots, and the market size of elderly care robots is projected to grow by ten times.

Building on Japan’s successful industrial chain, Japanese tech companies have already developed a fleet of elderly care robots with excellent performance, mainly physical assistance robots and social assistance robots. In providing physical assistance, Resyone robots developed by Panasonic could transform from a robotic bed to an electric wheelchair and could help the elderly turn over to prevent bedsores. The Robear, a nursing bear robot developed by Japan’s Sumitomo Riko, could flag early warnings when the elderly are about to fall off bed to avoid fractures due to falling. The robot could also monitor clinical indicators such as breathing and heart rate. In providing social assistance, the nursing care robot developed by Yaskawa could help paralyzed and semi-paralyzed elderly individuals exercise their limbs and restore some mobility to improve their quality of life. An interactive and healing seal pup robot named Paro was designed in Japan and could be comfortable for patients with Alzheimer’s disease or dementia. Paro has been certified by the U.S. Food and Drug Administration as a medical device, and studies have confirmed that elderly individuals who interact with Paro experience a decreased sense of loneliness.

To conclude, we could see that Japan in the era of longevity is standing at the doorstep of the era of health. However, the growth rate of healthy life expectancy in the Japanese population did not keep pace with that of life expectancy. In the decade from 2010 to 2019, the life expectancy of Japan’s population maintained an upward trend, increasing from 83.3 to 84.8, a growth rate of 1.8%. During the same period, the healthy life expectancy has also grown, but only at 1.4%, outpaced by life expectancy (see Table 4.2).

An increasing number of older persons has led to rapidly soaring social security expenditures on medical care and elderly care. Japan’s heavy debt is concerning, as is the phenomenon that older persons take up an increasingly disproportionate

Table 4.2 The healthy life expectancy of Japan's population outpaced by life expectancy

	2000	2009	2010	2019
Japan-life expectancy (years old)	81.6	83.3	83.3	84.8
Japan-healthy life expectancy (years old)	70.9	72.2	72.3	73.3
The ratio of increase in healthy life expectancy to increase in life expectancy	0.76		0.67	

Source: The World Bank

share of medical and fiscal resources. In terms of health insurance, Japan is one of the few countries that provides universal coverage, with only 10–30% out-of-pocket payments borne by individuals while more than 80% covered by the government. In 2018, Japan's social security expenditures, including medical care expenses and pensions, accounted for 21.5% of the GDP, and the figure is expected to rise to 24% in 2040 according to the Japanese government. As of now, the Japanese government has already been debt ridden, with government debt accounting for more than 200% of its GDP, which is much higher than that of other countries. Japan has not been able to make ends meet financially for a long time and has to borrow against future income. If Japan's financial condition is to take a health check-up, the results might well be unhealthy.

How Far Away is the Era of Wealth?

With the oldest population in the world, Japan has established a social security system where there is national health insurance for all and national pension for all. In the previous sections, we have discussed Japan's health insurance and long-term care insurance system, and now we focus on pensions.

Although Japan's pension insurance system is often used as a textbook case, in the context of deepening aging, the system has become an increasingly heavier burden, and this is thought-provoking. The Japanese government covers half of the basic national pension payments, all the administrative expenses of basic national pension and employees' pension. The aged population puts Japan under unprecedented financing and payment pressure. The replacement rate of Japan's public pensions has also been declining. The 2019 Actuarial Valuation in Japan released by the Japanese government shows that the replacement ratio for every Japanese married couple is projected to further decline by month in the future. According to the government's forecast, the replacement ratio would be 61.7% in 2019, then drop to a level ranging from 51 to 52%, and further fall to 45% approximately 2050.

The biggest problem Japan's pension system faces is that its sustainability is threatened by a persistently low fertility rate, intensified population aging and weak economic performance. To sustain the operation of the public pension scheme, the Japanese government has repeatedly adopted measures such as cutting the pension benefit amount and raising the pension eligibility age to alleviate fiscal pressure. In 2016, the Japanese government adjusted the indexation system, and the amount of benefit was indexed to the average salary increase instead of the consumer price. The amount of benefit saw a decrease as wage growth in Japan has long been sluggish.

Such measures helped ensure the sustainability of the system to some extent, although they eroded people’s trust in the pension system. Distrust has intensified among young people in particular, and more of them are choosing not to make contributions or default on premiums. People worry that with all the money contributed at young, they could not enjoy pension benefits as expected when they get old.

Less pension benefit income dealt a blow to the after-retirement living standards of elderly individuals. In recent years, there have been an increasing number of cases of old-age poverty, which has become a social problem. The Japanese media reports that one in every four old-aged persons lives below the poverty threshold. Old-age poverty could arise from many factors. For one, the size of the family decreases, and a larger old-aged population no longer relies on children’s support. Single older persons are hit the hardest. In addition, with rising medical care expenses and lower pension benefit income, the elderly are confronted with building financial pressure. The impoverished old-aged population is exploding. Despite lots of media coverage on old-age bankruptcy and old-age poverty, the elderly in Japan are still relatively wealthy, based on data at a macro level. This points to the ever-widening income disparity between the rich and the poor in Japanese society, as we see some elderly in poverty struggle to make a living, while some rich old-aged persons hoard substantial wealth. Data from the Statistics Bureau of Japan show that the net savings of the old-aged population in Japan are much higher than those of other age groups (see Fig. 4.6). The old-aged population has very little debt, mainly due to a long period of accumulation. As Japan’s society has become increasingly aging, the wealth gap among the elderly might be a prominent systemic problem.

Those elderly with substantial savings had gone through postwar reconstruction, holding the belief that savings is the best of things in the world, and then lived

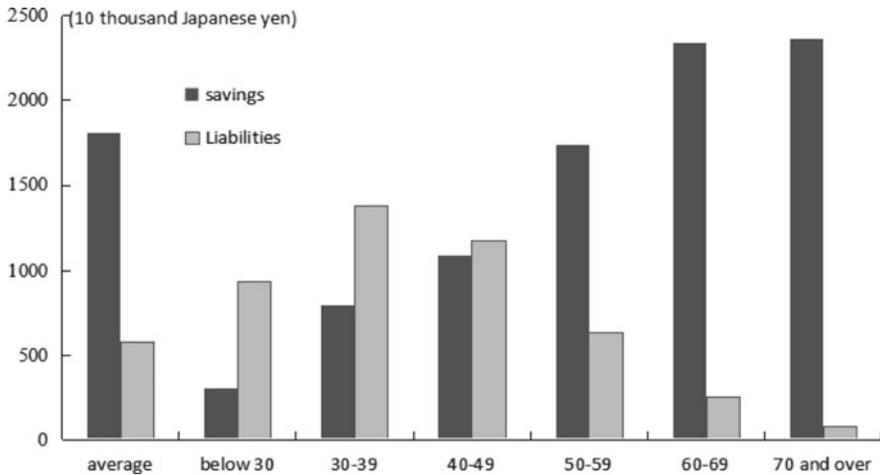


Fig. 4.6 Savings and liabilities of Japanese households (2019). *Source:* The statistics bureau of Japan

through the recession after the economic bubble burst, always anxious about the future, always saving for rainy days. Kenichi Ohmae, a famous Japanese scholar, described in his book “*Low Desire Society*” that it is a strange thing that Japanese live with anxiety about the future during their entire life and end up being rich on their death bed.

While the thought of saving ingrained in the old-aged population, the young are heavily indebted. This fact has swayed investment behaviors of the Japanese. Against the backdrop of sluggish economic growth and in consideration of huge pressure for future retirement life, people prefer avoiding losses as much as possible when making investments. Personal wealth in Japan has existed in the form of low-risk assets such as savings for a long time. According to the latest data released by Japan’s central bank, the financial assets held by Japanese households in 2020 reached a record of 1948 trillion Japanese yen (approximately \$17.85 trillion), half of which is in the form of cash and bank deposits. After the coronavirus pandemic hit, the Japanese government handed out economic stimulus checks to eligible residents. However, the money did not boost consumer spending, for most of it has been deposited. In Japan, after going through the bubble economy burst and ensuing economic recession, people seldom had luck in stock investment, and the stereotype has been deep-rooted that investment equals speculation.

A bank deposit is indeed a safe investment that guarantees a stable life but will also inevitably slow down personal asset growth. Japan’s persistently low and even negative interest rates have posed challenges to the preservation and appreciation of asset value. Nevertheless, most people still choose to put money in a bank or a postal savings institution.

For those who do invest, the amount of money they are willing to invest is limited. Young people in their 30s–40s must spend most of their income on house mortgage repayment and education, with little money left to invest. Older persons are often risk averse, and their investment priority is to keep assets from decreasing rather than increasing, so they are also cautious in spending on investment.

On the supply side of financial services, large numbers of Japanese financial institutions went bankrupt and closed down after the bubble burst, and the survivors spent years dealing with nonperforming assets. Against this backdrop, the innovation and supply of financial products have been weak. Japanese financial institutions could be meticulous with their service details, such as constantly optimizing processes or improving services to make customers feel at home. However, business model innovation at a great scale is hard to spot. For example, in integrating demands for old-age health with insurance product design, I heard about some attempts in Japan, but they failed to scale up. Insurance companies that set up old-age care entities are more out of business diversification considerations. In contrast, in China, Taikang, as a pioneer, has been followed by many in the insurance industry to invest in medical and caring services by setting up a chain of retirement communities by integrating intangible insurance plans with tangible medical and elderly care services. A unique business model has been formed gradually to respond to the trend of population aging.

It is safe to say that Japan has entered into the era of longevity, but not the era of wealth. There are no sound wealth solutions available whether it is for the poorer or richer elderly. As a result, those who are worse off depend on fewer pension benefits, living a hard life and struggling to make ends meet, while those who are better off still prefer savings to investing even when the interest rate is next to nothing. The financial sector failed to offer sound and innovative solutions to facilitate the conversion of personal wealth to investment. Few institutions combine the need for old-age health in the era of longevity with financial product innovation, and if this goes on, capital cannot be put into efficient use. When people have no strong demands for wealth, the wealth management industry is deprived of the soil to flourish. Both personal investment and the national economy are mired in a morass. Without stable flows of resident assets being channeled to invest in growth sectors, the economy is hard to kick-start to shake off deflation, let alone to expand resident wealth in turn. It would be such a huge pity.

4.4 Striding Towards a Prosperous Longevity Economy

As an important sample of a society in the era of longevity, Japan has gone through profound economic and social changes. Under the undeniable underlying trend of demographic changes, Japan has formed a unique M-shaped society and experienced lacklustre economic growth. The changes in the age structure have not just been a drag on the labor force, innovation and capital among many other aspects but have also hindered Japan's economic and social development.

Demographic change is worth great attention, as it exerts such a huge influence on a country. At present, it is a similar case in Asian countries and regions, such as South Korea, Singapore and Taiwan, where aging accelerates and the fertility rate remains low. Moreover, South Korea and Singapore have already seen negative population growth for the first time in 2020, an alarming sign of population shrinkage. Taking another look at China, population growth has remained low for almost a decade, and negative population growth is expected to arrive earlier than expected. China entering the era of longevity would bring profound changes to the economy and society, both domestically and beyond, which requires close attention and early planning. Japan has been trying some positive attempts. The era of longevity has stimulated the emergence of new demands and new industries, where we could look for positive factors that come along. In terms of scientific technology, Japan boasts several Nobel Prize laureates in physiology or medicine and other basic research fields. It is also an absolute front-runner in robotics, leading the world in elderly care service robots. In the Big Health Industry, the age of longevity has created many opportunities, and the demands of the elderly have given rise to medical and health care. Bolstered by sustained support from the government, Japanese businesses have shown strong initiative in the fields of medical care, medicine and medical insurance.

However, as David Pilling, the Asia editor-in-chief of the Financial Times, once commented, "Japan's innovation advantage lies in incremental improvements rather

than revolutionary breakthroughs.” In the mobile internet wave trending in the recent 20 years, search engines subverted portal sites, mobile payment subverted cash circulation, takeout subverted catering, online car-hailing subverted taxis, self-media subverted mainstream media, and e-commerce, which used to subvert off-line shopping, have been defined as traditional e-commerce, at risk of being subverted by social media e-commerce. In contrast, Japan has had a well-fledged social infrastructure to match the needs of the main population. Although there is some innovation driven by the craftsmanship that was passed down from generation to generation, due to a lack of internal drive and external shock, there were no international mobile internet giants emerging among native Japanese businesses. This is a similar case with Japan’s elderly care industry. The Japanese government has put in place effective systems, such as national health management programs, universal health insurance coverage and long-term care insurance system which provide elderly individuals with health care in sickness and nursing care in old age. The generous welfare guarantee held back the elderly care industry from systemic innovation in institutional arrangement, financing model and business model. There is no single enterprise in Japan that both provides the elderly with financial products producing persistent and stable returns, or allows them to enjoy a new lifestyle of living in a chain of large private retirement communities.

There are many industries and economic forms emerging in Japan, driven by the consumption of the elderly. I use the term “longevity economy” to describe the economic activities participated in by the elderly and the resultant ripple effect, and the activities include both the demand and supply sides. Based on current observations, the elderly in Japan have played more of a consumer role, driving economic progress on the demand side through spending on nursing care and medical care. Therefore, Japan is still in the early stage of its longevity economy. Only when the elderly also assume the role of producer and innovator and contribute to economic growth and social advancement from both the demand and supply side could human society be ushered in the advanced stage of the longevity economy. Although the elderly in Japan are rejoining the labor force, their productivity and innovation are yet to be further unleashed at a greater scale. In Japan, there are no enterprises that help the elderly plan, manage their health and wealth or provide services across their lifespan from different angles of multiple fields, such as insurance, investment, medical care and elderly care. If there were, the elderly would no longer be afraid of investment; instead, they would be able to enjoy long-term stable yields and compounding while embracing a new lifestyle of an active retirement life.

We believe that only by providing a solution that integrates elderly care and medical care services by offering an advanced financing model that combines benefit payouts with services could the elderly be free from worries about their retirement life. The elderly could then engage in consumption, production and innovation, constantly contributing to the economy from both the demand and supply sides and expediting the advent of a prosper and dynamic longevity economy.

In the age of longevity, the population reaches a new equilibrium. We need more in-depth strategic thinking and forward-looking planning and action to achieve a new growth path that outperforms Japan’s model. Although the advanced stage of

the longevity economy characterized by the elderly producing and innovating has yet to take shape across the world, I believe the industrial economy will take a leap to the longevity economy after constant adapting and innovation. Emerging supplies and demands driven by people's pursuit of longevity will continue to sprout and grow, expanding the landscape of the longevity economy. Mainstream businesses in the longevity economy will take the center stage of the world business arena, similar to the FAANG in today's internet mobile era, which is Facebook, Apple, Amazon, Netflix and Google.

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Chapter 5

Longevity Economy, Boundless like the Sea and the Sky



There is an influential resident at Taikang's retirement community called Taikang Community Yanyuan Garden in Changping district of Beijing, professor Qian Liqun of Peking University. Coincidentally, the campus of Peking University is also called Yanyuan Garden. Professor Qian moved into the community in July 2015 and found his "Peach Blossom Land". In the five years after that, he concentrated on writing and finished three academic works, two essays and one photography collection. He wrote more than three million words and published seven books. I asked Professor Qian which of the two Yanyuan Gardens he thinks is better for his research and writing, and he answered that the works he has done in Taikang's Yanyuan Garden is not only unprecedented in quantity but also in quality. It is his better works in more mature years.

In addition to Professor Qian, there are other residents in the retirement community who rediscovered their identity and value. The 92-year-old Ms. Niu has spent her entire life on architectural study, and after moving in Yanyuan Garden, has picked up her passion in classical Chinese literature. During the coronavirus pandemic in 2020, she became an "internet anchor" to teach Song Ci poem classes "on the cloud". After the launch of the "Tianwen-1" spacecraft in 2021, Mr. Chen, who has worked in aerospace, gave a lecture on Mars exploration in Yanyuan Garden. The lecture was vivid and professional, greatly uplifting the spirits of the audience. The longevity community of Taikang has become a new platform for residents to achieve their life pursuits.

The vibrant and lively life the residents in Taikang Yanyuan Garden live forms a stark contrast to the old-fashioned retirement life people picture. In the industrial age, senior citizens, after retirement, become pure resource consumers, being pictured as sitting in a rocking chair, basking in the sunlight all day without doing work. The notion has been deeply rooted in people's minds since William Osler, the father of modern clinical medicine, proposed that work is not for people over 60 years old. However, it is a very different story in Yanyuan Garden. The elderly in the Taikang community enjoy a full retirement life and even open a new chapter in their life of value recreation by sharing their wisdom and experience. This has inspired me to

rethink the division of life stages. In the era of longevity, traditional ways of defining the conditions and needs of senior citizens based on their chronological age no longer apply. We used to define the 20-year-olds as young, 40-year-olds as middle-aged and 60-year-olds as old. However, let us assume that when the life expectancy of humans reaches 100 years and the time of centenarians finally arrives, the categorization would have to change. For example, 40-year-olds may be considered young, 60-year-olds are middle-aged and 80-year-olds are considered to be old. The ability and willingness of the older population to participate in social production are constantly increasing, which will require adjustments to be made in the economic system, social structure and wealth plans in society, leaving far-reaching impacts on economic activities.

5.1 A Bird's Eye View of the Status Quo of the Longevity Economy

The longevity economy refers to the sum total of all economic activities participated in by senior citizens and the resultant ripple effect. In the mid-to-late twentieth century, developed countries experienced population aging one after another, and the influence of the older population on the society and economy has been increasing daily. Swelling numbers of old-aged persons have not only transformed the existing economic structure but also facilitated the emergence of a distinctive longevity economy, where many industries are required to move in a more elder-friendly direction. The size of the longevity economy has expanded during the process, and the role it plays has become increasingly important in many developed countries and regions. Oxford Economics conducted a study on the size of the longevity economy in the United States and incorporated economic activities by the 50-plus population into the analysis. The results show that the activities by the cohort mainly have effects on three levels. The first is the direct effect, which is the value generated by the direct consumption of services and goods by the 50-plus population. The second is the indirect effect, which is the economic value generated upstream and downstream along the supply chain of the services and goods consumed. The third is the inductive effect, which means that employees of the supply chain earn income from direct consumption by the 50-plus population, and the income generates a new round of consumption of goods and services. An analysis of U.S. data in 2015 shows that the value generated by the three impacts amounts to \$2.9 trillion, \$2.1 trillion, and \$2.6 trillion, respectively, so the total size of the longevity economy is estimated to be \$7.6 trillion. In terms of the proportion relative to GDP, direct spending accounts for 16% in that year, while the sum total of the three effects accounts for 41%.

The American Association of Retired Persons (AARP) studied spending on various sectors by the 50-plus age groups of the population in the United States and concluded that the size of the longevity economy contributed by them amounts to 40% of the U.S. total GDP in 2018, worthy as much as \$8.3 trillion. If it were

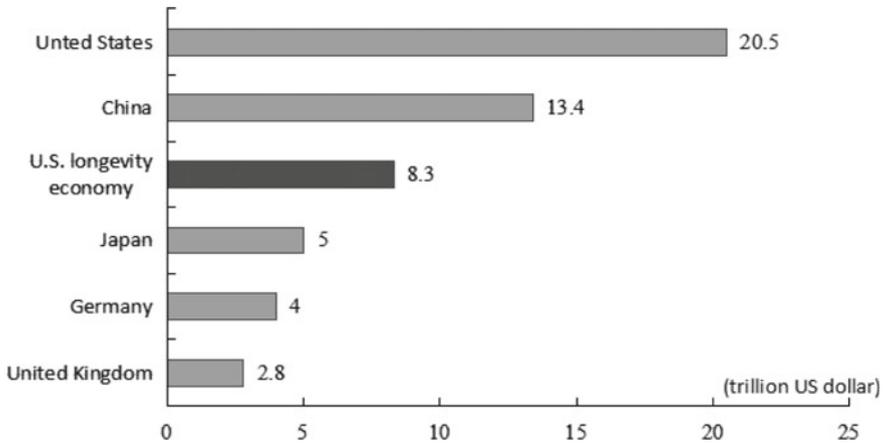


Fig. 5.1 A comparison of the longevity economy of the U.S. in 2018 with other major economies. *Source:* The American Association of Retired Persons (AARP), *The Longevity Economy Outlook*

a country’s GDP, it would be the third largest global economy, coming only after the United States and China (see Fig. 5.1). The European Commission conducted a similar study in its member states in 2015, and the results show that the longevity economy (the economy of the 50-plus population) accounted for 28.8% of the total economy in EU member states in 2015, and by 2025, the number would grow to 31.5%.

The longevity economy will see greater growth in the future. As the American Association of Retired Persons (AARP) forecast, by 2030, the contribution of the 50-plus cohort to GDP would rise to \$12.6 trillion and further increase to \$28.2 trillion in 2050, 3.7 times that in 2018. The longevity economy will underpin the public finances. The data analysis of AARP suggests that taking into account the tax revenues generated by the economic activity by the older population and the resultant activities, the longevity economy contributed \$2.1 trillion tax revenues for the United States in 2018. The number is expected to quadruple to nearly \$8.3 trillion in 2050. In addition, economic activities of the older population create more jobs, powering sustainable economic growth. In 2018, 88.6 million jobs were directly or indirectly created by older persons in the United States, and the number is estimated to increase to 102 million by 2050.

As China begins its age of longevity, the longevity economy is set to embrace greater growth potential. According to the data analysis of the China Research Center on Aging, the market value of old-age industries in China will exceed 100 trillion yuan in 2050, making up one-third of the total GDP. Meanwhile, as responding to the population aging proactively ascends to a national strategy, government agencies have quickly released public policies and detailed implementation measures of elderly care. In 2020 alone, the State Council and relevant ministries released more than 50 documents concerning elderly care, and another 150-plus documents, plans and strategies were published by local provincial and municipal governments. The

development of industries that come along with the era of longevity will be a critical part of China's future economic structure changes.

It is worth mentioning that the potential of the longevity economy has yet to be tapped. In traditional industrial societies, a person's life is demarcated into three stages: school, career and retirement. However, with the advent of longevity, the ability and willingness of older persons to continue working after retirement grow stronger, challenging the popular preconception that the older population is a drain on wealth and is unable to create more value for society.

5.2 Recreation of Supply and Demand in the Era of Longevity

The birth and evolution of the longevity economy, in its essence, is a new economic form that comes into being and evolves as the older population becomes larger and starts to transform the supply and demand in economic activities. It does not happen overnight; instead, it is a progressive process. In the mid to late twentieth century, industrialized countries became increasingly aging, and a growing size of older population brought about changes on the demand side. As observed in Japan's case, industries related to inelastic demand of the older population see great development. In this stage, the older cohort simply plays the role of consumers. The advent of the longevity era would inevitably call for the longevity economy to develop into a new and more advanced stage. By then, the older population would be not only consumers but also producers participating in social production.

The older population will transform the longevity economy from both the supply and demand sides. In terms of demand, an increasing number of old-aged persons in the era of longevity will create more demand, fueling the formation and application of new goods and services, especially those adopting technology innovation. This will change the market or even create new markets directly or indirectly, again, creating new demands. In terms of supply, the older population rejoins the labor force after retirement age. They will continue to work or start a business, either earning wages or paying wages, thus creating new supply. Their contribution to economic activities will increase, boosting economic growth. In the era of longevity, we must reject the traditional way of defining older persons' conditions and needs in work simply based on age.

Despite the transition of roles the elderly will play, another equally important change is that the arrival of the digital age is breaking the barriers that keep the older population from participating in economic activities. As technology advances, a new round of technological progress represented by big data has not just greatly improved productivity and has also created new formats and patterns, such as live-streaming shopping hosts and video uploaders, by integrating with traditional industries, ushering in a new age of digital data. We believe that the digital data age is an enabling force for the longevity economy. It empowers the older population to

continue to participate in social production and value creation, thus harnessing their potential human capital value. By doing so, a new demographic dividend dominated by the older population will be created, a third demographic dividend that stands very different from the first two times.

Labor Supply of the Older Population at New Height

In the era of longevity, people's life expectancy constantly increases, and accordingly, so does their healthy life expectancy. According to the Institute for Health Metrics and Evaluation at the University of Washington, the life expectancy and healthy life expectancy of the global population in 2019 amounted to 73.5 and 63.5, respectively, an increase of 8.1 years and 6.6 years from 1990. At the same time, improved health has also encouraged the willingness of old-aged persons to work. Many old persons in good health condition wish to continue working after retirement age, and financial benefit is not their sole motive. For example, a study by the Bank of America Merrill Lynch shows that among all the motives, staying mentally active is also an important reason why the elderly choose to work. As a matter of fact, the surveyed elderly who cite "to stay mentally active" is two times that who choose "for money". This is evidence suggesting that the period of time older persons participate in the labor market will be longer, and the labor supply will be improved in the future. Against this backdrop, there would be a major shift in the role the elderly assume in society, from pure consumers to a dual role of both producers and consumers.

An online platform economy and diverse forms of work will also help the elderly to leverage their strengths in the labor market. In the industrial age, employees sign long-term contracts with employers to work full-time around the clock. In the digital data age, online platforms have become increasingly important, forms of work have diversified, and both enable the older population to better take part in social production. For example, the mobile internet has given birth to flexible forms of work, represented by independent lawyers, independent media influencers, independent designers, live-streaming hosts and self-media bloggers. On top short video platforms, there have emerged a number of middle-aged and even older influencers, such as Grandpa Jigong You Benchang, internet celebrity professor Dai Jianye, Aunt Luo, and Grandpa Beihan, who have distinct characters and build personas vastly different from younger internet celebrities. Many young people have come to draw experience and expertise from them, while many older audiences find content they could resonate with. Some older residents in the Taikang Home Changshou community also own self-media accounts, and the content they create is of much value, such as Ms. Niu with her Song Ci poetry analysis and Mr. Chen with his sharing on Mars exploration we talked about earlier. I believe they have the potential to become emerging internet influencers in the era of longevity.

Flexible forms of employment will become commonplace in the future, which economists refer to as the gig economy, when an increasing number of people do not work full-time, and companies tend to hire independent contractors and freelancers. For older persons, this form of work is more flexible, allowing them to concentrate on where their expertise lies. They could leverage their comparative advantage in professional fields that require higher human capital and richer experience and worry

no longer about losing job opportunities because of physical weakness or health conditions.

Technological advances are expected to compensate for the disadvantages faced by frail older persons. In general, compared with younger people, the comparative advantage of older persons lies in their rich knowledge and experience, while their disadvantage is energy and stamina. However, as technology progresses, the decline in productivity as people age will moderate. In some cases, worker productivity might even rise with age. One case in point is BMW. To retain their skillful, experienced veteran workers, BMW remodels the production lines to create an accommodating workplace environment for them to keep working. In 2011, the new production line was put in place in a large new plant in Dingolfing, Germany, a plant entirely run by workers over 50 years old. To adapt to an aging workforce, many physical changes were made online. For example, special smart chairs were installed at workstations to alleviate physical fatigue, and wooden flooring was laid to reduce joint strain.

Management at BMW says that the older-staffed production line is on par with lines in which younger workers dominate in terms of productivity and even gets ahead. This shows that with the right changes, the experience that older persons possess will help them improve productivity. Major automakers such as BMW, Audi and Volkswagen are experimenting on wearable robots called exoskeleton vests, an attempt to increase the productivity and competitiveness of older workers by reducing joint strains and boosting strength. In knowledge-intensive industries, there will be more such cases. Long-term experience and training produces higher human capital, richer experience, hence more valuable employees. The human capital advantage of the elderly will play a larger role in the future, and this will facilitate prolonged participation in the labor market of elderly individuals. Of course, maintaining a high human capital advantage would also require constant learning and updating the knowledge structure to better adapt to future changes.

Harnessing Longevity Human Capital

In the past 30 years, as information technology advances, knowledge has been more readily available, and the efficiency of accumulating human capital has continued to improve. In the future, as technology further develops, there will be many more diverse and efficient ways to obtain knowledge.

The digital data age will enable people to acquire knowledge in an easier way to improve human capital. Technology and industries are experiencing rapid updating at present. In the era of longevity, one might live through multiple industrial and technological innovations in their lifetime, so lifelong learning and constantly upgrading the skills will be imperative. However, the traditional way of education that was born in the industrial age and characterized by imparting knowledge by subject will be increasingly inadequate to meet people's needs for knowledge and skills in the digital data age. The digital data age creates the problem, but it also presents a practical solution. The old education model is a "one-size-fits-all" approach; however, in the digital data age, people will come up with a new way of learning that integrates online and offline channels and that is tailor-made and well-targeted, based on

each person's real problems and characteristics. The content will extend beyond textbooks written by professional institutions, covering specific skill training, industry know-how education and a package solution to specific problems.

Older persons could better take advantage of human capital accumulated over the years and disseminate knowledge and experience. We have seen that many traditional manufacturers abroad have taken actions such as remodeling production lines and creating an enabling workplace environment to guarantee that skillful and experienced older workers could continue to work. In recent years, China has seen the engineer dividend pay off and release its potential to drive growth. The engineer population that produces the dividend will be the first generation to enter the era of longevity along with demographic changes. The engineer dividend, coupled with the era of longevity, could provide sustained growth momentum for China's economy. Older persons could start their own businesses, giving full play to their human capital accumulated throughout their lives and creating more value for society. According to studies conducted by Oxford Economics and the AARP, the population aged 50 and over has the highest rate of entrepreneurial activity in the U.S., nearly twice the rate of those in their 20s. From 2005 to 2015, the 50-plus cohort started nearly one out of every three new businesses in the United States.

After a lifetime of human capital accumulation, the older population has much more knowledge and experience than the younger population. In the American film *The Intern*, the old man played by Robert De Niro, after his retirement, misses his past work life and decides to return to the workplace. So he becomes an intern for the CEO at a start-up. In the film, the old man, although an intern, manages to help the young CEO deal with a myriad of conflicts and difficulties in her work, life and family because of his life-long accumulation of experience. He ends up being a long-time friend of the CEO, and the start-up has soared. The film underscores the advantage older persons have in human capital and clearly shows that older persons could create value for companies by imparting their knowledge and experience.

Apart from human capital, physical capital such as real estate property accumulated by older persons in their lifetime also provides opportunities for them to participate in longevity economy. As adult children move out of their family of origin, vacant rooms in the house where the elderly live are more than often not put into good use. In recent years, the rise of homestay online booking platforms represented by Airbnb has laid the foundation for the elderly to make full use of their houses to earn more money. Kenichi Ohmae mentioned in the book *Low Desire Society* that a friend of his purchased a house in Hakone-machi during the bubble economy. The friend stays there for only a handful of days during a year but has to pay high maintenance fees and fixed property taxes. Later, he puts the house on Airbnb to take homestay reservations, which adds an annual income of 900,000 yen for him. With the cost of 300,000 Japanese yen on cleaning deducted, there is still a surplus of 600,000 Japanese yen that could be used to improve his life quality. Old-aged persons are in a better place than younger people in terms of assets, which could help them better adapt to the longevity economy.

The Era of Longevity Provides a Better Consumption Environment for Seniors

In the era of longevity, seniors will also have a significant influence on the economy through demand. First, in the era of longevity, seniors, with a growing proportion in the overall population, will have a larger say in economic activities, which further drives the development of the senior consumer market and provides room for growth for related companies. American scholar Harry Dent pointed out in his book *Demographic Cliff* that the main trends brought by an aged population are concentrated in ten major areas, including autonomous medical care and health, nursing homes and assisted living facilities, health and life insurance, retirement and financial planning, home maintenance services, convenience stores and pharmacies, medicines and vitamins, townhouses in downtowns, dynamic retirement communities, and RVs, which will in turn propel companies to adapt to new trends and provide better services for seniors.

The above trends have been reflected in the micro behavior of companies. Aeon Mall in Edogawa, Tokyo, Japan, is one such company. This mall was established in 1982. In 2013, to accommodate the aged population, the mall rebuilt the fourth floor into a one-stop experience center for shopping, leisure and fitness for elderly individuals. To receive seniors who get up early for morning exercise, the mall opens at 7:00 am, and the group fitness class starts at 7:15 am. Seniors can choose from various courses. After the course, they can punch in for points, which can be exchanged for gifts. There are also stores for knee pads and walking sticks on the same floor. To improve the shopping experience for seniors, AEON's trolley has been specially designed. The weight of the trolley is at least 30% lighter than that of ordinary ones. A hook is designed next to the push handle, which is readily available for seniors to hang bags. The food in the supermarket is mostly packed in small portions, with less oil and less salt, which is mainly tailored to the declining appetite of the elderly and their problems of high blood pressure, glucose and lipids. Earphones and mopeds for seniors are also sold there. In addition, the mall has a rehabilitation center that provides targeted services for seniors in need of rehabilitative physical therapy and cognitive assistance. Musical instrument performance rooms and sports rooms are provided for seniors. Music lovers come to learn to play instruments, making up for what they missed when they were young, which in the meantime spurs business of the musical instrument shops nearby. Aeon Mall is a typical case for us to ponder because its transformation is more than a few changes in a shopping mall. Aeon and all its products and services have brought together a large number of companies and people, which reflects the multifold impacts of increasing senior economic activities on the economy.

In regard to the development of consumption, seniors' ability and desire of consumption will continue to grow in the future. According to studies on the United States and Japan by investment institutions, the consumption characteristics of a country are usually closely correlated to the economic level. When the per capita GDP is less than 5,000 US dollars, consumption is mainly to meet demand, and consumers do not pay much attention to the brand or quality. When the per capita GDP is 5000–20,000 US dollars, it is in the stage of branded consumption, where consumers tend to care more about quality and place more emphasis on brands. When

the per capita GDP exceeds 20,000 US dollars, consumption returns to rationality, and people will pursue quality, personalization and cost-effectiveness. This process is quite relevant for China. Previously, we had a stereotype about senior consumers, believing that their spending power is not strong and the effective demand is insufficient. This stereotype may stem from our observation of the older generation, who spent most of their lives in an era of relatively low levels of economic development and material supply. They are prone to suppressing their demand to a certain extent. However, in the future, the new generation of seniors will pay more attention to their own consumption needs. At the same time, due to the accumulation of wealth and the improvement of labor participation, their consumption ability will also be relatively higher.

At present, this trend has emerged in China. A research report by AgeClub, a business research institution focusing on business innovation in the senior industry, shows that retirees born in the 1950s and 1960s have shifted their focus from family to themselves, and they have enough time to develop their own interests and hobbies. Their relatively ample financial reserve allows them to pursue happiness without worries. Not only are they able to accept new lifestyles such as online shopping, but they also show willingness and ability to pay for micro activities such as dancing and calligraphy. According to the “Consumption Upgrade Data of the Silver-hairs” released by Alibaba, 60% of women over the age of 50 buy cosmetics online, and the average frequency of purchases is six times a year. Each year, five silk scarves are purchased per person online for various occasions. Another report released by Alibaba, “2019 National Day Holiday Consumption Report”, pointed out that on the three days before the 2019 Chinese National Day holiday, the number of middle-aged and senior people who went to medical institutions for oral care and cosmetic surgeries nearly doubled compared to 2018. It is safe to say that seniors have shown relatively strong spending power in many fields.

In addition, the adaptability of seniors to information technology will also significantly improve in the future. At present, seniors are often seen as difficult to adapt to information technology. This is because most contemporary seniors are “digital immigrants”, and it is difficult for them to learn and adapt to information technology. However, such adaptability will be greatly enhanced in the future because the next generation of seniors will be exposed to information technology from an early age. This generation can be regarded as “digital natives”, thus leading to a decrease in the cost of learning and adaptation. At the same time, along with the improvement of the overall education level of citizens and the increase in the availability of knowledge, it will be faster and easier for seniors to learn new technologies and to adapt to the new changes in the data age, which helps them to fully express their needs in the era of longevity. In addition, the technology itself will continue to evolve and will be easier for people of all ages to use. For example, non-text operations have greatly reduced the cost of learning new technologies for seniors. According to the first report in the series “The Hidden Value of China’s Aging Society” released by Wavemaker in 2019, in the past three years, the number of Tmall users over the age of 60 increased by 1.6 times, the number of Alipay diamond members over the age of 50 in 2018 increased by 1.6 times, and the number of platinum members increased by 159%

over the previous year. An increasing number of seniors have become proficient users of various mobile Internet services.

The data age will comprehensively enhance the ability of society to meet the needs of seniors at all levels. In the 1940s, Abraham Maslow, an American psychologist, proposed the hierarchy of needs theory based on human motivation. Maslow's theory states that our actions are motivated by physiological needs. It is often represented by a pyramid of needs, with the most basic needs at the bottom and more complex needs at the top, namely, physiological needs, safety needs, love and social belonging needs, esteem needs and self-actualization needs. For the sake of simplicity, we categorize the first two as basic needs and the last three as advanced needs. We believe that the data age will better meet both basic and advanced needs of seniors.

In the data age, the basic needs of seniors, such as food, clothing, housing and transportation, will be better accommodated. What stands out most is the fact that patterns of transportation and housing that were formed in the industrial age may change. Access to autonomous driving technology will make travel more convenient for seniors. With the decline in the proportion of the young population, elderly drivers continue to rise in number. However, as seniors tend to take a longer time to respond, driving safety cannot be ignored. According to data from a Japanese research company, as of the end of 2018, there were 5.63 million senior drivers over the age of 75 in Japan, and it is estimated that the number will increase to 6 million by 2020. Traffic accidents caused by elderly drivers continue to increase. In 2018, there were 460 fatal accidents caused by drivers aged 75 and above, reaching a record high. Autonomous driving technology will be an effective solution to this problem.

In terms of housing, smart homes will be more widely used in the daily life of seniors to improve their life at home. Currently, smart homes based on voice interaction have achieved success to a certain extent. With smart speakers as a starting point, traditional home appliances have been transformed into smart home appliances by installing smart switches. Lights and appliances already can be controlled through voice recognition. When seniors return home, the appliances can be controlled via just a few words, which is of great convenience to seniors. In the future, more appliances can be repurposed for the aged. For example, seniors tend to fall asleep sitting alone on the couch, which may cause harm to their health in the long term. The smart couch will monitor the state of elderly individuals. When they have fallen asleep for a certain time, the pressure monitor will set off an alarm and remind them to return to bed.

In addition, the data age can also better address the demands of seniors for entertainment, education, medicine, and care. In the era of longevity, not only will the life expectancy of seniors increase, but their pursuit of a better life and self-improvement will also become more prominent. The service supply for seniors' spiritual and cultural needs is falling short of the soaring demand. According to data from the China Association of Senior Universities, as of the end of 2018, there were more than 62,000 senior universities and schools for the elderly at all levels in China, with an enrollment of more than eight million students, accounting for approximately 3% of the population aged 60 and above. There have even been cases of elderly people queuing up overnight to grab a slot at the university. In fact, the elderly's need for

entertainment and self-improvement is a major driver for the development of senior colleges. In the data age, access to online courses can better meet the rapidly growing entertainment and learning needs of seniors. Through social networks, they can set up chatting groups to communicate about experiences in classrooms and daily life. Colleges can also use methods similar to video conferencing to break geographical constraints, which can further expand the channels for seniors to fulfill their spiritual demand.

“Breaking the cycle” in the Longevity Economy

From a broader perspective, the concept of the longevity economy goes beyond the senior group. The longevity economy will also trigger a series of economic activities, including financing and education investment in seniors for their pursuit of achievement, which will further expand the radiation of demand from seniors to younger people.

A prosperous longevity economy will not emerge out of thin air but will require efforts from the entire society. Currently, either psychologically or financially speaking, we are not fully prepared for the era of longevity. Taikang and Nielsen Consulting conducted a survey on China’s middle- and high-net-worth individuals. The results show that the average pension fund required by middle- and high-net-worth individuals to maintain a quality life after retirement is approximately RMB 10.6 million, while their own expected wealth reserve is only RMB 4.37 million. The overall pension is significantly insufficient. Therefore, once people reach old age, they have to reduce expenditures and compromise the quality of life, resulting in an obvious “60-year-old phenomenon”; that is, expenditures in pursuit of quality life fall sharply when they turn 60. The survey shows that the average annual expenditure on quality life of 60-year-olds is RMB 53,000, which is RMB 120,000 lower than that of 30-year-olds; the average annual expenditure of 60-year-olds is RMB 220,000, which is nearly 60% lower than that of 30-year-olds at RMB 540,000. However, as the era of longevity gains more awareness, people of all ages will be motivated to work hard to prepare themselves for old age, and such fundraising and other economic activities derived from this will also become a very important part and a solid foundation of the longevity economy. In addition to financial foundations, developing a longevity economy also requires tapping into talent reserves and promoting lifelong study. As we have mentioned before, the life model of “study, work, and retire” will be broken in the future. As people may experience multiple rounds of industrial and technological changes in their lives, they need to constantly update their knowledge reserves to adapt to the ever-changing world. Humans will enter a new phase of lifelong study and continuous self-improvement, and we must prepare for this change in advance. It is conceivable that the new education industry that adapts to the multistage work-study model will be a constant drive for the longevity economy. Revolutions in the education industry are looming. Instead of traditional subjects, people can obtain more comprehensive interdisciplinary knowledge, work experience, industry insights, etc. Online and offline teaching methods will also be better integrated due to the more extensive demand for knowledge at a higher frequency in the era of longevity.

5.3 Pioneers of the Longevity Economy: America's Retirement Community

In Chap. 4, we discuss why Japan's longevity economy has yet to reach its full potential. From a global perspective, the United States is an early bird in developing the longevity economy, and its retirement community is the most representative of the longevity economy in the United States. Retirement community-related expenditures take up a large amount of durable consumption for American seniors, similar to houses and cars taking a big chunk on the middle-aged. Therefore, retirement communities are an important window to observe the longevity economy. The elderly care community in the United States started early, and currently, an industrial system covering a variety of service types has taken shape. For seniors who are still in good health, dynamic retirement communities are designed for them to live. The idea of a dynamic retirement community originated from the real estate market and was once considered a segment of the real estate industry. Therefore, its business model is similar to that of the traditional real estate industry. Developers make profits by selling houses after construction is completed. However, unlike traditional residences, the dynamic retirement community also provides targeted supporting services for seniors, such as leisure, entertainment, and shopping, to help them spend their retirement life in a dynamic way. The rise of such communities has provided the huge middle class in the United States with a quality option after retirement. It has upgraded the consumption level of seniors and promoted the development of the longevity economy. The famous Sun City and the Villages are among such dynamic retirement communities. For seniors who are older and may not be able to take care of themselves in the future, there are also communities in the United States that provide various elderly care services, which is called the facility-based community. According to the different levels of living and care services provided, this type of elderly care can be divided into different categories, such as independent living, assisted living, memory care, and nursing care. If a community includes both independent living areas and professional areas such as assisted living, memory care, and skilled nursing, it is called a Continuing Care Retirement Community (CCRC). CCRC addresses the growing needs of care for seniors as their ages advance and provides one-stop nursing services for them after retirement. A major feature of this facility-based community lies in the provision of targeted elderly care services. Its business model is distinguished from the traditional dynamic retirement community, which relies on profit from sales of real estate properties. Generally, a facility-based community involves two groups of people: property owners, who obtain profit through real estate appreciation, and operators, who obtain operational income by providing various elderly care services. Of course, some institutions choose to be both.

Overall, retirement communities have become a major destination for seniors in the United States after retirement. According to the data of the National Investment Center for Seniors Housing & Care (NIC), as of 2019, CCRCs that boast more professional elderly care services and reach a certain scale arrive at 3.14 million

units, with more than 4 million residents. As the baby boomers in the United States have all passed the 55-year-old threshold, according to relevant data, more than 4 million families in the country will buy or rent properties in dynamic elderly care communities in 2020, and the total number of residents will reach 6–7 million. Therefore, the number of residents in retirement communities in the United States is estimated to be approximately 10 million, accounting for nearly 10% of the total population of 55-year-olds and above in the United States in 2020.

Investing in a dynamic retirement community is similar to investing in ordinary real estate in the United States, and its returns depend on fluctuations in the price of the real estate market. In terms of investment in facility-based communities, the returns come from two sources: one is from asset value appreciation, and the other is from operational services. Coldwell Banker Richard Ellis (CBRE), an American commercial real estate service agency, calculated the income of these two types of investment in the United States. The results show that the investment income of facility-based communities in the United States is generally higher and more stable. From 2004 to 2018, the average annualized return on investment of facility-based communities was 14.6%, which was higher than that of commercial residences such as apartments, office buildings, and hotels, reaching the highest among all real estate categories. In terms of composition, the investment income of the elderly care community consists of two parts: asset value appreciation and operational income. From 2004 to 2018, the average annualized returns of the two were 7.6% and 7%, respectively. Among them, asset value was mostly related to the overall trend of the American real estate market, which experienced significant fluctuations before and after the financial crisis. The annualized rate of return in 2006 was as high as 26%, but in 2009, after the financial crisis, it nosedived to -9.3%. In recent years, it has remained stable at 7% to 10%. In contrast, the return of operational services stands at 5–7% year round, becoming a stabilizer for investment in American elderly care communities. Compared with other assets, the performance of facility-based communities is generally better. They are more stable than stocks and commodities, and the yields are higher than bonds.

Sun City, A Model of a Dynamic Retirement Community in the United States

Sun City, the earliest and most famous dynamic retirement community in the United States, is located in Arizona, where the climate is hot, dry and sunny, thus the name “Sun City”. In the 1950s, the area where Sun City stood was still a semidesert cotton field. Real estate developer Del Webb saw an opportunity to turn this area into a place for people from the cold north to spend their vacation, so he set out to build a community for seniors. As the dynamic retirement community was not yet a well-known term at the time, Webb initially launched only a small number of community residences, as well as a shopping center, an entertainment center, and a golf course as supporting facilities.

Sun City opened in 1960. Before the opening, Webb had expected that 10,000 people would come to visit, but the turnout was far beyond expectation. On the opening day, 100,000 people came, and the traffic jammed due to the flood of people. Webb also made cover of Time Magazine. After years of development, Sun City has

continued to expand. Building on the original Sun City community, Sun City West, Sun City Grand and Sun City Anthem and Sun City Festival were established. As of 2019, these communities boast a total of 105,000 residents.

I visited Sun City in 2010. Upon arrival, I was attracted by its beautiful scenery. In the community lined with trees, you can hear birds chirping and smell the fragrance of flowers. There are many outdoor swimming pools where seniors can exercise or relax on the shore. This is very different from the Chinese nursing homes where what seniors do all day are just eating, taking medicine and sleeping. There are many types of residential buildings in Sun City, mostly detached villas and townhouses, as well as multistory apartments, independent living centers, assisted living centers, care centers, multifunction apartment houses, etc. Detached villas rest close to golf courses, where people can enjoy fresh air, beautiful view, and play golf right outside their houses.

To accommodate the various needs of seniors, Sun City has built a large number of living facilities, including seven entertainment centers, where seniors can go swimming, play tennis and do other activities. There are also two libraries, two bowling alleys, eight golf courses, three country clubs, one art gallery and one symphony hall. Senior activity centers and country clubs are not only large in number but rich in a variety of activities. There are gyms, computer rooms, and handicraft rooms in the activity centers. During our visit, we saw assorted event promotions posted all over the wall in the community, including dance, music, and painting. There was also a calendar marked with events held in the community that month. At the same time, Sun City and local universities have established the Lifelong Study Institute to provide learning opportunities for elderly individuals. In Sun City, senior people can enjoy leisure time, entertainment, and shopping, which is in striking contrast to the condition of Chinese elders who are struggling over trivial issues in everyday life. It gave me a great shock. On the wall of the corridor in Sun City, it reads “We Build the Place, You Build the Life”, which gives a vivid description of the senior’s life in Sun City.

To address the medical needs of seniors, Sun City has endeavored to provide quality medical services for the elderly right from the very beginning. Construction of the hospital in the community started in 1969, and the first two buildings opened in 1970. Subsequently, the hospital continued to expand and increase services and facilities to facilitate medical services to seniors. In 2008, the hospital completed a major upgrade and expansion to improve care in and out of Sun City. At present, Sun City’s hospital ranks among the top 100 hospitals in the United States, and its medical facilities are also first-class in the country.

Sun City’s dynamic lifestyle touches not only the senior residents but also the staff. Sun City has a wall of honor specially set up for employees, on which the outstanding employees of the month and the year are commended. The photos of the outstanding employees of the year are placed in the center of the commendation wall. The staff told me that the employees here have a strong sense of honor, and they do not regard their work as a nine-to-five job. Instead, they are committed to dedicating their life to the community. The residents here have also established a close relationship with the staff. In years of mutual companionship, this relationship

has gone beyond the one between service provider and receiver. They have gradually become friends and family. The seniors appreciate the service provided by the staff, and the staff also obtain a sense of value and satisfaction from this job. When I visited Sun City, it had been in operation for 50 years since 1960. The operators have come to the third generation. Children of some staff members also grow up in the community and eventually choose to continue working there. To them, this is an honorable and worthy job.

The Dynamic Villages

In addition to Sun City, another exemplary retirement community in the United States is the Villages in Florida. Florida is located in the southern part of the country, with plenty of sunshine and a pleasant climate, which makes it an ideal destination for retirement. Harold Schwartz, founder of the Villages, acquired a large piece of land at very low prices in the 1970s and was therefore able to sell the property at relatively reasonable prices. In the 1980s, following the model of Sun City, his son Gary Morse began to build a retirement community here, and the community also provided recreational and medical facilities, which all contributed to the growing population of the Villages. By the end of 2018, the population of the Villages had exceeded 120,000, among whom approximately 30% are seasonal migratory retirees, and the other 70% are permanent residents. Dwellers there are from all walks of life, including engineers, computer scientists, designers, and architects. Data show that in 2018, the average annual income of Villages' residents was 43,000 US dollars, which was higher than the national average of 36,000. There are four large activity centers, 390 small communities for independent living, and more than 680 assisted living or memory care beds and over 250 professional nursing beds.

In 2017, I visited the Villages and was warmly received by the management board. The community is run by the Morse family, which is well known locally. When we visited, Harold Schwartz, founder of the Villages, and his son Gary Morse had passed away. Schwartz's grandson and two granddaughters took over the community's operation, sales, design and construction. The fourth generation in the family has also engaged themselves in community work. All members of the management board dressed casually, and it was difficult to distinguish them from the residents and staff of the community.

On the very day we arrived at the Villages, we were invited to attend routine event-polo matches. Polo fields are built in the Villages, where polo matches are held, and the senior residents can watch the game. Since the founding family loves polo, holding polo matches has become a tradition in the Villages. While watching the game, I also learned that one of the players who was riding a horse and wearing a helmet turned out to be the child of one of the management members. I was struck by how integrated it was between community operators and residents.

The next day, my team went to the office of the Villages for a meeting. The Villages are a huge community covering three counties, with an area of 100 km². There are 36 golf courses in the community. The paths between the golf courses run diagonally, dividing the whole community into different areas. The staff here told me that golf is a very popular sport in the United States, and playing golf on a regular

basis is an ideal retirement life for many Americans. Seniors in the community are full of vitality. They are active drivers, and many choose to drive a golf cart, which is both economical and safe. There are 80,000 golf carts in the whole community. The residents are active on various golf courses and clubs during the day. At night, they sing and dance in the three central squares in the community. Every day, from 5 to 9 pm, they have fun and enjoy different activities.

We learned that the Villages also have well-established medical facilities, including a small hospital with 50 beds, a general medical team with 5 clinics and nearly 50 doctors. UnitedHealth, an American medical insurance company, set up three medical service centers in the community. The residents of the Villages have formed a self-government mechanism by establishing committees to handle public affairs and formulating the code of conduct to maintain public order. This bottom-up approach can also be seen everywhere in everyday life. Residents spontaneously establish various clubs, the total number of which stands at approximately 3000. They also organize activities on a daily basis to enrich residents' lives, which is helpful to reduce the sense of loneliness and improve the happiness of seniors.

In addition, the Villages run many media platforms to report the affairs of the community and strengthen the sense of belonging of the residents. The circulation of newspapers in the community reached 56,000, and 93% of the residents could read the newspapers issued on the same day. The community also publishes a monthly magazine documenting urban life, with a circulation of 43,000 copies, covering almost every household. The city's TV station can reach 130,000 rooms in the community, and the radio station broadcasts daily city news. In recent years, with the rise of online media, the Villages has also established various social media platforms of its own. I was deeply impressed. Given the right platform, the amount of energy and vitality that seniors can release is tremendous.

The Villages have also played an important role in promoting the local economy. In an interview with Bloomberg in 2018, local government officials said that the Villages have become the engine of the local economy in terms of employment, local economy, and tax income. In the future, as more residents move in, the government also plans to sell more land to the Villages, and the planned area may reach 2000 acres (approximately 8 km²). It is fair to say that the Villages have developed a longevity economy that fully meets the various needs of the elderly and served as a stimulator in the local economy. Many seniors will sell their properties after retirement and enjoy their old age in sunny places such as Florida or Arizona. This desirable lifestyle, from a commercial point of view, can be a kind of ultimate consumer product targeted to seniors.

Erickson, an Exemplary Case of CCRC

Erickson Senior Living, founded by John Erickson in 1981, has now become a representative CCRC provider in the United States. Erickson manages more than 20 communities in 11 states (Colorado, Florida, Kansas, New Jersey, Maryland, Virginia, Pennsylvania, Texas, Massachusetts, Michigan, and North Carolina) in 2021, with more than 15,000 employees serving over 27,000 residents, of whom more than 3000 require continuous care.

Unlike Sun City, which mainly relies on house sales for income, Erickson charges an entry fee plus a monthly service fee. Most residents sell their existing houses to cover the entry fee and pay a monthly service fee using their social security and pension. Erickson has not disclosed its overall financial data, but its operations at two CCRCs in Maryland and Pennsylvania are publicly available. Data show that from 2018 to 2019, the EBITDA ratio (the ratio of earnings before interest, tax, depreciation and amortization to operating income) of the two CCRCs mostly stood between 15 and 22%, and the overall operating conditions were relatively stable.

Erickson boasts an edge in medical services. It provides seniors with a full spectrum of support and care services, including independent living, assisted living, memory care, skilled nursing, and more. Each resident is assigned a social worker in the community who, on a regular basis, reports to them, introduces them to community resources, completes risk assessments, and implements crisis intervention. When a resident's health deteriorates, the social worker will help the resident access higher-level care services available in the community. When residents need services such as memory care and professional nursing, Erickson will also give professional training for nursing staff to provide tailored services to seniors with cognitive impairments such as Alzheimer's disease and people who are completely unable to take care of themselves. In addition, Erickson has a security team with Emergency Medical Responders (EMR) certifications to respond to emergencies in a timely manner. The Erickson community has a 24-h security and emergency response service, and the average response time of first responders is approximately 4 min, which is conducive to reducing accidents among senior residents.

Like all types of dynamic retirement communities, Erickson offers a variety of service facilities. The community is well equipped with restaurants, fitness centers, swimming pools, convenience stores, barber shops, libraries, and creative art studios. Well-designed facilities and attractive common areas make it easy for community members to stay active, engaged, and healthy. The community also provides a shuttle service for its residents to travel between various facilities within the community.

The Erickson Senior Living publishes an original tribune dedicated to seniors, covering recent news about seniors, as well as a variety of feature articles, columns, blogs and contests. The newspaper, which targets retirees in more than a dozen states and has a circulation of approximately 500,000, has enriched the spiritual life of seniors. In addition, Erickson plays an active role in philanthropy and social service. In 2017, community residents raised a total of 3 million US dollars in scholarships to help more than 1400 students across the country; in 2017, more than 9000 volunteers provided services benefiting dozens of local charities and organizations.

Erickson has had some ups and downs along the way, but its model is still pretty successful. In 2009, Erickson filed for bankruptcy protection due to the impact of the financial crisis and was later acquired by Redwood Capital. After the financial crisis, Erickson overcame the difficulties with its strong operational service capabilities accumulated over the years, returned to the track of accelerated development, and further expanded its operation. It has now become the largest CCRC operator in the United States, with an average of more than 1000 beds per community, much higher than the national average of 200 beds. Larger communities help reduce fixed costs,

allowing Erickson to offer more elderly care programs and facilities than smaller competitors, thereby attracting more residents. From this perspective, large-scale operations are very important for elderly care communities.

One thing stood out to me when I visited Erikson. John Erickson, founder of Erikson Senior Living, was giving me a tour around the community, and many residents greeted him and said, “Thank you for providing us with such a wonderful senior life.” It struck me that Erickson, as a market-oriented private company, is so appreciated by the residents of the community. Business should bring progress to human society and improve people’s living standards and quality of life. Only in this way can it truly become a great cause.

Another Look at the American Retirement Community Model

On the whole, as an important representative of the longevity economy in the United States, the elderly care community in the United States started earlier and provides various services for seniors. It’s safe to call it a typical sample of the longevity economy. The dynamic retirement community provides a new way of retirement for seniors, while the CCRC provides a one-stop solution for the living, medical and nursing needs of retirees. In China, where the era of longevity is approaching, the growing aged population has created huge demand for elderly care, which also means that the retirement community will have vast room for growth. However, it should be noted that the American retirement community is not equivalent to the entire longevity economy. Although such communities have addressed some of the problems of seniors in the late industrialization era, many areas are in need of reflection and improvement.

The longevity economy segment, as we have observed in the current retirement community, could be a dynamic community or a CCRC, all emphasizing quality life, entertainment, and medical care. This kind of consumption creates a sense of superiority. People may feel that their years of hard work have finally paid off. Such a booming model is also inseparable from the strong economic strength, large size of the middle class and the pension system of the United States. The arrival of the era of longevity will pose a challenge to this traditional model. We said in our previous analysis that, on the one hand, people’s life expectations have been greatly extended, while pensions are at a risk of depletion. Relying solely on the accumulation of wealth may not be enough to support a quality lifestyle in old age. On the other hand, quite a number of seniors are not willing to be completely segregated from society after retirement. Instead, they hope to continue to participate in social production and value creation. At the same time, the data age will also change production methods, expand the territory of the longevity economy, drive the upgrade of the longevity economy, and provide the possibility for seniors to continuously participate in social production and wealth creation. As such, we believe that the future retirement community may become a new type of community that combines consumption and value recreation.

The site selection and construction of American retirement communities are also worthy of further reflection. These communities are often located far from the city and equipped with comprehensive facilities. In addition, most of the residents are over 65 years old. Over time, it is easy to form a relatively closed internal culture. For

residents who are unwilling to be completely separated from society, especially city life, living in a community means a trade-off and compromise. We believe that elderly care communities should seek a certain balance between an independent location and maintaining contact with society. A better natural and cleaner living environment is important to seniors. However, the community cannot be too far away from the city, as separation from family and the social environment they were familiar with may lead to self-isolation.

5.4 China's Experiment on the Longevity Economy: Taikang Community

Compared with the United States, China's longevity economy is still in its cradle. However, as an emerging market, China has a larger potential for growth. With the boost of the senior population in China and the increase of their wealth, the market demand of seniors has continued to expand, triggering the rise of senior consumption in various industries. The market has turned its eyes to seniors. Although an increasing number of senior consumers are pouring into the market, the deepest needs and pursuits of seniors have yet to be discovered. What kind of life do seniors truly need and desire? To enter the elderly care industry, in 2007, Taikang launched a global study that lasted for years. What we saw in the elderly care community in the United States completely uprooted our perception of traditional senior life. These communities provide almost all the services and products that seniors need in life. The senior-oriented approach is reflected in every aspect of community operations, and seniors can start a new life in these communities. After returning to China, Taikang started the CCRC elderly care community in China. We analyzed every detail we saw from Sun City, the Villages and Erickson and integrated the American longevity economy into local communities in China.

Taikang's first longevity community, Yanyuan, was launched in Beijing in 2015, and Shenyuan opened in Shanghai a year later. These two communities were early comers in the entire domestic elderly care industry. After more than five years of operation, they have become mature communities. As of the first half of 2021, the number of residents, whose average age is above 80 years old, exceeded 3000. They come from all over the world and from all walks of life, each bringing a different life story, and the age difference of the residents surpasses 40 years. The senior community presents no less diversity or vibrancy than young communities such as university towns and the Silicon Valley. In such a place where wisdom and experience are gathered, we can better accommodate the needs of seniors. At the same time, we have brought out their potential for value recreation in various ways and jointly explored a new supply path for seniors in the longevity economy. Taikang Community, which is under Taikang Insurance, is practicing a new idea of elderly care and has become a pioneer in developing the longevity economy in China, which will be different

Table 5.1 Basic information of Yanyuan and Shenyuan (as of May 2021)

	Basics			Number of residents by services			
	Date of opening	Area (m ²)	Medical services	Independent living	Assisted living	Professional care	Memory care
Yanyuan	June 2015	311,000	Level 2 rehabilitation	1034	132	91	30
Shenyuan	July 2016	220,000	Level 2 rehabilitation	713	23	115	42

Source: Taikang Insurance Group

Note The construction area of Yanyuan Garden in the table includes the above-ground construction area of Phases 1–3, and the construction area of Shenyuan Garden includes the above-ground construction area of Phases 1 and 2

from the American version. Let us explore the possibilities of the Chinese longevity economy through a detailed introduction to Yanyuan and Shenyuan.

Tailored Services to the Needs of Residents

Yanyuan and Shenyuan are the two communities with the largest scale and the largest number of residents that Taikang has put into operation. At present, they have been developed into the flagship communities of Taikang (Table 5.1). Scale is very important for the operation of a longevity community. On the one hand, a large-scale community can help reduce operating costs and ensure stable and continuous operation of the community. More importantly, a sufficient number of residents can amplify community services and form a miniature society that brings a sense of belonging to seniors. The feeling of “home” is the key to distinguishing the dynamic senior community from traditional nursing homes.

In terms of the design and site selection, Taikang’s longevity communities, including Yanyuan and Shenyuan, have their own set of standards, such as the location should be in the suburbs of the city, clustered around large-scale vitality centers. However, the most important feature lies in the integration of medical care and elderly care. When we conducted market research on China’s elderly care industry in 2007, we noticed that for elderly individuals, elderly care cannot be separated from medical care. Most of the time, what seniors need most is not the high end technology to treat severe cases but the timely medical response and meticulous medical care. Therefore, when the design of Yanyuan was off to start, referring to the idea of equipping hospitals in dynamic elderly care communities such as Sun City and the Villages, we established a specialized rehabilitation hospital for seniors next to the community to provide its residents with timely and direct medical services.

It may not occur to many people who could realize that in the era of longevity, the span of old age is very long, and 40 years could mean two generations apart. At different stages of physical and mental health, seniors may have completely different needs for medical care services, which the current social medical system and home-based care model are not sufficient to facilitate. Yanyuan and Shenyuan introduced the CCRC model, providing four service categories, including independent living, assisted living, memory care, and professional care, to meet the specific needs of

residents at different stages in the community. In addition, Yanyuan and Shenyuan have come up with various originating services. It is safe to say that such services are tailored to senior needs in the era of longevity.

The visit to the United States opened up our horizons. Taikang has established its own values and solutions in answering the question of what kind of life seniors desire. We divide the needs of Taikang residents into basic and advanced demands, which are also in line with the five levels of Maslow's demand system. The longevity community allocates resources and provides customized services. The key to devising a more dynamic and healthier lifestyle and giving full play to creativity and self value for seniors lies solely in the accommodation of their diverse demands.

Nutritious Food

A nutrient diet customized for seniors is the most basic item in the elderly care service. Both Yanyuan and Shenyuan have several characteristic restaurants integrated into the local food culture, and the menus are designed by professional nutritionists in the community. The community provides more than 50 varieties of dishes every day, and more than 30 dishes are refurbished every week. For residents with chronic diseases and residents in care areas, Yanyuan and Shenyuan provide targeted catering services, such as low-salt, low-sugar, low-purine, and easily digestible food, tailored set meals and delivery services. In the catering management system of the entire Taikang Community, more than 4000 dishes covering cuisines from many countries and regions are included in the menu. With a large number of dishes being prepared multiple times a day, Taikang is establishing a more advanced approach to senior meals in China.

Food culture is not a small issue for Taikang. All communities should integrate food into the local culture. If golf courses are the cultural symbols of Villages and Sun City, then food will be the symbol of the longevity community in China. The catering centers of Yanyuan and Shenyuan continue to carry out various food events, such as food and cultural exchanges, festival activities, and nutrition lectures in the community (Table 5.2). Every festival is an aftertaste of culture and memories. The quarterly rotation of chefs between communities allows residents of Yanyuan and Shenyuan to taste the most authentic cuisines of Beijing, Suzhou, Guangzhou, Sichuan, and Hubei. On the one hand, these activities can help residents manage their own nutritional intake and healthy diet; on the other hand, they also strengthen residents' perception of "home" in the community. On New Year's Eve in 2019, 66 tables of "family dinners" were held in Yanyuan. Taikang residents, their families and staff gathered together to celebrate the festival. The bustling scene at the dinner table is still fresh in my memory. If seniors are willing to invite their family members to have a New Year's Eve dinner at Taikang Community, it can be regarded as the utmost trust and encouragement.

Three Basic Guarantees

In addition to a nutritious diet, we believe that for elderly individuals, another basic demand is the provision of guarantees, which mainly include the guarantee of daily life, physical health and property security.

Table 5.2 Yanyuan's various dietary activities (first half of 2021)

Activity	Times	Description
Solar term festival	12	Food dedicated to traditional solar terms
Spring festival (the Chinese New Year)	7	Introduced smoked food originated in Beijing, adding festivity of New Year. On New Year's Eve, six themed events were held during the Spring Festival serving food with regional characteristics
Lantern festival buffet	1	Held a "Chinese and Western Fusion Buffet Lunch", allowing residents to experience fresh food through on-site production
Barbeque	1	Catering to tastes of more residents, a barbeque buffet was held with consideration of the environment
Traditional festivals	6	provided residents with corresponding festive food, so that residents can feel the joy of the festivals including 2nd Feb of lunar calendar, Mother's Day, Father's Day, Tomb-sweeping Day, Labor Day, Dragon Boat Festival
Stews	3	In summer, stewed dishes are served, while in autumn and winter, soups are served, because temperature can be maintained for a longer time and residents can enjoy the food in mouth and feel the warmth at heart
Thai food	6	Residents interact with chefs on site. Chefs would explain food culture, nutritionists introduced nutrition ingredients, and residents could watch cooking performances on the spot
Food festival	5	Food festivals launched in celebration of the 100th anniversary of the founding of the Communist Party of China and the 6th anniversary of Yanyuan
Lectures on nutrition	4	Guiding residents to choose nutritious food and understand daily dietary planning
Sunny kitchen	2	Get a closer look at the daily management, food safety, and standards of their kitchen to ensure residents of the quality and safety of food
Food for care areas	12	Meet the needs of elderly in the nursing area, live interactive performances, and experience the joy of food on the spot

Source: Taikang Insurance Group

In terms of daily life, the four categories of CCRC provide different levels of guarantee for residents with various health conditions. Most of the seniors in the community are in the condition of independent living, but there is a blind spot. When seniors can take care of themselves, what kind of assistance do they need in their daily life? That is why Yanyuan and Shenyuan have arranged a “butler” for each resident, who is responsible for responding to residents’ demands around the clock. They are also resource coordinators, risk monitors, and guides and protectors for residents’ living networks. Taikang residents affectionately call these “butlers” their “children”. From the trivial work of butlers (Table 5.3), we can catch a glimpse of some realities that are often overlooked in seniors in China: they need frequent visits and safety confirmation, companionship and communication; they need someone to answer their questions, to accompany them to the hospital, and to relieve them of heavy physical work. Yanyuan and Shenyuan have great advantages in solving these problems. They replace decentralized services with a centralized approach and provide more efficient and comprehensive daily life assistance for seniors. In addition, Yanyuan and Shenyuan also provide “1 + N” services, where butlers and social workers assume the responsibilities of case managers and coordinate with multidisciplinary professional teams to proactively identify and intervene in the problems encountered by community residents. In Yanyuan, dozens of cases of this customized program are implemented every quarter of the year.

In terms of medical services, the rehabilitation hospitals in Yanyuan and Shenyuan have established electronic health records for more than 3000 Taikang residents, among whom nearly 70% suffer from chronic diseases and 50% suffer from high blood pressure. The proportions increase as the residents age. For chronic diseases, the public medical system in China puts most of its resources in diagnosis and treatment, instead of prevention, health care and rehabilitation, the latter of which, however, are precisely the key to cost reduction and pain relief of patients. Rehabilitation hospitals in Yanyuan and Shenyuan set up a triple-tier defense system: first aid, chronic disease management, and rehabilitation, which covers the whole

Table 5.3 Partial service items and frequency of the Yanyuan Butler program (Q1 2021)

Butler service	Frequency	Butler service	Frequency
Emergency assistance	3.3 times/day	Response to pull string alarms	8.52 times/day
Medical escort	5.6 persons/day	Consultation and assistance	100 + times/day
Receipt of delivery/distribution of newspaper	830 pieces/day	counseling	12–15 persons/day
Daily visit	80–100 persons/day	Family visit reception	55 persons/day (160–170 persons during holidays)

Source: Taikang Insurance Group

chain of physical examination, prevention, health care, diagnosis, treatment and rehabilitation. The community also adjusts its health management service according to residents' physical examination conditions. The chronic disease management team is composed of full-time family doctors, butlers, and nurses in the community hospital to provide daily chronic disease care for senior residents. In Yanyuan, the rehabilitation hospital has established a 24-h on-call system. In 2020, it provided 31,000 outpatient services to community residents (mainly medicine prescriptions for chronic diseases), responded to nearly 1000 emergency calls, and discharged 499 residents. Yanyuan also cooperated with the nearest tertiary hospital to establish a green channel to facilitate the timely transfer of patients to the hospital. In Shenyuan, the rehabilitation hospital implements a two-level family doctor system. For every 300 residents, the community assigns a general practice family doctor who is responsible for the health management of the dynamic area, as well as a part-time doctor who mainly manages the residents' emotional and psychological issues. Ninety percent of low-risk residents are followed up more than once every 3 months, 7% of intermediate- and high-risk residents are followed up more than once a month, and 3% of high-risk residents in the acute phase are followed up more than once a week. In the era of longevity, health is no longer just about disease but about how people maintain their ability to live a normal life. The services provided by the longevity community for residents cover diet, safety, physical and mental health care, and daily assistance. In the era of longevity and health, medical care has shifted its focus from the treatment of diseases to health protection during the whole life cycle.

It is worth noting that during the epidemic in 2020, with the joint efforts of community staff, residents and their families, six senior communities, including Yanyuan and Shenyuan, ensured zero infections among the 3400 residents, making it the safest "fortress of life" during the outbreak. Some family members had brought seniors home before the Spring Festival. When the pandemic broke out, they brought seniors back to the community before they received the notice of lockdown. This is also the best demonstration of how the longevity community provides all-round protection and lives up to the trust of the residents.

In terms of property protection, professional institutions carry a great responsibility, and the value they can create for seniors is also more considerable. Chapter Three has analyzed the features of the financial behavior of seniors. Although they hold a large amount of money for retirement and medical care, their ability to make sound financial decisions independently is impaired, and their ability to identify various new types of financial fraud is also declining. When conducting research on Taikang residents, we can feel the residents' strong financial needs and concerns about property. The top three concerns include financial investment risks, physical inconvenience and impaired memory when handling financial services, as well as disposition of property when accidents occur. Thanks to Taikang's years of intensive development in life insurance, long-term and stable investment is Taikang's expertise, and the self-operated longevity community has created a platform to serve the comprehensive financial demands of seniors. Taikang's asset management subsidiary established offices in Yanyuan and Shenyuan in 2015 and 2016, respectively. It

provides lectures on financial knowledge for seniors and assumes the major responsibility of protecting the “wallets” of residents. In the meantime, they offer financial options with relatively low risks and stable returns. In terms of service support, investment professionals in the community provide offline services on a regular basis, and community staff also help residents carry out online financial activities to ensure their property's safety. As of April 2021, Taikang Asset Management has launched more than 20 wealth management products for residents in Yanyuan and Shenyuan, with an asset scale of nearly RMB 70 million. It is Taikang and all its subsidiaries' wish that its residents can enjoy a longer, healthier, and wealthier life.

Recreation, Study, Social Interaction and Spiritual Home

For seniors, spiritual life is as important as physical and mental health. If physical and mental health is about maintaining the basic quality of life, then spiritual quest is about pursuit of happiness. When we visited the United States, a staff member of an elderly care institution said, “We must maintain the fire of life in seniors.” We can see from scientific research and numerous cases that when the needs and pursuits of seniors are suppressed, their physical functions and cognitive abilities will decline rapidly. We often hear that seniors use “old” as an excuse to refuse new things. Self-abandonment in old age is a long, helpless and sad process. As a leader in the elderly care industry, Taikang is responsible for encouraging seniors to study for life and to try new things with a brave heart. We position the longevity community as “a warm home, a quality medical care center, an open university, an elegant dynamic center, and a home for the minds and spirits of seniors”. The purpose is to ensure the physical and mental health, and on top of this, to meet the higher and richer spiritual pursuits of seniors.

Driven by this ideal, Yanyuan and Shenyuan both established Letai College, with the philosophy of maintaining a nourished mind, self-cultivation, family regulation, self-achievement, and prospects for the whole world. The college launched more than 100 quality courses for Taikang residents, which allowed seniors to promote physical, mental and social development in their study. In the first quarter of 2021, Letai College in Yanyuan offered as many as 32 courses, four of which enrolled more than 100 students (Table 5.4). These courses, updated on a regular basis, encourage residents to study for life, keep up with society's development, and make continuous progress. In addition to daily courses and lectures, residents have also organized dozens of interest clubs and hobby groups, where they can make friends with people of similar interest. The community has enriched the life of residents through various festivals, outings, and special events. To ensure that the activities are suitable for seniors, the community has specially designated a position, which is the cultural and recreational event planner. Since the community opened five years ago, more than 550 events of various types have been held. The residents often say, “Open the door, and you will see smiling faces. Wake up in the morning, and it could be just another festival.” Social isolation is one of the culprits for the decline in the physical function and cognitive ability of seniors after retirement. The longevity community helps residents integrate into the community, improve their mental health, and live a healthy and happy life by creating an all-weather study and activity atmosphere. In

Table 5.4 Courses of Yanyuan Letai College (Q1 2021)

Course	Description
Professional/Interests	Chorus and Vocal Class, Piano Class, Sudoku Class, Smartphone Application Class, Yanyuan Lectures, Photography Class, Music video class
Appreciation	Chinese Music Record, Documentary, Selected Movies, Weekly Concert, Ballet
Sports and health	Sports and fitness open classes, anti-fall courses, Baduanjin qigong, meridian exercises, dance class, Letai Chinese dance, nutrition lectures, ballet, hand reflexes, music therapy workshops, health seminar
Culture and Art	Xing Calligraphy, History: A Journey back at the Song Dynasty, Yanyuan Science and Technology Class, Intangible Cultural Heritage Handicraft Class, Silk Mesh Flower Making, Chinese Painting Basics

the community, many residents started their second stage of life and participated in Letai College and Letai Club, where they can go modeling, singing, playing piano, photographing, and swimming. The Yanyuan croquet team's average age is over 80 years old, and the male and female coaches are above 90 years old. They enjoy the game on the winter court, and their healthy and positive state is very encouraging.

In addition to lifelong study and continuous social interaction, Yanyuan and Shenyuan also encourage residents to draw up dream lists, participate in the "Dream Chasing Program", and take the initiative to realize every dream in the new stage of life. "Chasing" is a state of life that moves forward with expectations, and the process of "chasing dreams" will give residents a sense of ritual, achievement and happiness. Yanyuan and Shenyuan's cultural and recreational event planners and butlers will codesign the dream pursuit plan with the residents and even the family members. As the staff know more about the seniors during this process, the needs and thoughts of the residents will gradually surface, and the vitality and potential of seniors will be released once again. 2021 is the third year of the implementation of the Dream Chasing Program. During the three years, with the help of community staff, residents held art exhibitions, served as hosts, published books, journeyed back to childhood and even held weddings, materializing one dream after another in the list.

Hospice Care and Reshaping the Outlook on Life

When Yanyuan just opened, a senior couple said to Yanyuan staff before moving in, "The last stop of our life is entrusted to you, Taikang." The staff felt the enormous pressure laid on him. At that time, although Taikang put forward the concept of serving the whole life cycle of customers, they were not mentally prepared to face the final journey of the residents. As five years flashed by, Yanyuan and Shenyuan both experienced development and accompanied hundreds of residents in their final journey of life. During this process, Taikang staff, including me, have been constantly influenced by these residents who are older, wiser and more peaceful than us. Every journey to the last forms a precious part of Taikang Community and its residents' outlook on life. I believe that every staff member of Yanyuan and Shenyuan will have

their own most unforgettable “farewell”, and the most unforgettable farewell for me is Ms. Cui Kexin, a Yanyuan resident.

Professor Qian Liqun and his wife, Ms. Cui Kexin, were among the first dwellers of Taikang Community. In 2018, Ms. Cui was diagnosed with pancreatic cancer. The doctor said she had only four months to live. She did not seem panicked. With her years of medical expertise, she made a decision not to do chemotherapy or surgery but to live in Yanyuan Rehabilitation Hospital to receive pain treatment and hospice care. Professor Qian would walk from the community to the hospital just to keep her company every day. Ms. Cui said that she would make the best out of this last period to do something meaningful. She wanted to take control of the last journey and to complete her unfulfilled dreams. In more than eight months, she made four unexpected accomplishments. The first was to sing a “farewell song” at the Spring Festival Gala in Yanyuan. She wanted to keep her “eternal beauty” in the world. The 83-year-old, wearing a white dress, stood on the stage and sang. Everyone was amazed by her beauty and her positive attitude toward life. The second was to clean up the house, leaving no trouble to her family. The third was to plan the funeral herself. She wanted no memorial service, no eulogy and no wreath but a small farewell ceremony. She carefully selected an elegant photo of herself for the funeral. The last thing was to compile her own commemorative collection “My Affection for You”. Professor Qian believes this is to leave a memory for a group of friends who used to know her. After Ms. Cui fell ill, I visited her four times, and each time she and Professor Qian would talk and laugh heartedly, without the slightest sign of sadness from an incurable disease. Their care-free attitude toward life and death gives them spiritual wealth. This is how the eternal life should be. Professor Qian once said, “Since you have to pursue the meaning of life, you should pursue it to the end. Even at the last moment, you must strive for the quality of life.” I think Ms. Cui and Professor Qian both have noble souls, and they are the epitome of how people should face the last journey of life.

Yanyuan and Shenyuan have done a lot of homework when preparing the last journey of their residents, some of which are overlooked in China and even by their own family. The end of life is an inevitable and crucial stage. Many seniors around us have faced this alone in the dark night. I hope Taikang Community can take these heavy thoughts out under the light and let its residents feel the warmth. We believe that “respect” and “rescue” are equally important. The communities and hospitals of Yanyuan and Shenyuan provide residents with legal aid and hospice care with respect to their personal wishes, and Taikang’s Memorial Park helps residents prepare for death in advance. The hundreds of partings have helped us remember the temperature of life. Taikang’s values are “respecting life, caring for life, and praising life”. These values come from life and are again embodied in life. It has never been a mere slogan but a belief that we practice every day with actions.

American Retirement Community Taking Root in China

Since 2015, Yanyuan and Shenyuan, drawing on the ideals and services created by the American dynamic retirement community on the consumer end and integrating the reality of China and local culture, have become pilot projects in longevity

economies with Chinese characteristics. It is fair to say that Taikang Community is a trailblazer in the industry and took the first step when there is no actual large-scale elderly care community in China.

Professor Zhang and his wife, Professor Li, made quite an impression on me. Before retirement, they traveled all over the retirement communities in the United States but could not find a suitable choice. After returning to China and having visited Yanyuan, they believed that it was better than the American retirement community, so they chose to return to China. When I went to visit the couple in 2016, I saw a carefully decorated home in Yanyuan with objects displayed in every corner, reminding them of past days. We had a joyful conversation, and Professor Zhang even impromptu sang the song “Yanyuan, our lovely home”. Professor Li initiated Yanyuan’s first ballet club. She had been away from her beloved ballet for decades when she moved into Yanyuan, and it was only after seeing Yanyuan’s dance studio that made her regain the enthusiasm and take the initiative to be the choreography teacher. Since 2016, Yanyuan residents have organized ballet classes on their own. The average age of the dancers is 73 years old, and the oldest is 83 years old. Their dances have been performed in major events such as Taikang Community anniversaries. The silver hair and confident smiles on the stage are a portrayal of Taikang residents and the best demonstration of their recognition of Taikang Community.

In 2019, Taikang Community organized a senior management visit to the United States again. In comparison, we believe that the extension and depth of services provided by Yanyuan and Shenyuan not only reached the level of their American counterparts but even surpassed them in some aspects. In Yanyuan and Shenyuan, we pay more attention to the combination of medical care and basic demands, including providing exclusive butlers and family doctors, providing healthy meals and case packages, carrying out exercise and fitness guidance, conducting regular home security inspections, and providing personalized financial and legal services. In terms of entertainment and social interaction, there are various courses and activities integrated with local culture, which is more in line with the spiritual needs of Chinese seniors. The corresponding public facilities are generally in better condition than those in the United States. In terms of assisted living, nursing care, and memory care, Yanyuan and Shenyuan not only provide professional and comprehensive care and treatment services but also equip the communities with full-time case managers, who are also event planners. In this way, residents can maintain physical and mental health at the same time. In addition, Taikang’s medical and memorial services provide support to the entire life cycle of the residents. Taikang offers professional hospice care for seriously ill residents and accompanies them during the last journey of life, which is also a path less traveled by American elderly care communities.

In the meantime, in the data age, we are also building the longevity community into a smart community. Taikang’s Shenyuan Phase II, Yanyuan Phase III and other upcoming communities will implement a series of smart technology services, which will be fully integrated into security, health, life and other aspects. In terms of safety, various systems ranging from wireless alarm positioning to activity track monitoring and from physical radar and bed exit alarm to facial recognition will effectively prevent seniors from tripping and being lost. In terms of life, the application of

interactive large screens and service robots will bring convenience and fun to their life. In terms of health, through smart technology, residents can enjoy services such as health records, chronic disease management, remote consultation, and customized services. These have become the new business cards of Taikang, displaying its smart medical and health care integration. We build more senior-friendly facilities through the application of technology and bring more convenience and vitality to community residents through digital technology, thus gradually building Taikang's longevity community into a pilot case that can empower residents in a centralized manner in the data age and longevity age.

It is a milestone for Taikang Community to incorporate the American elderly care model in China and provide customers with quality services at a lower cost. However, as mentioned above, it is not enough to simply define seniors as consumers. The consumption-led longevity economy will inevitably lose vitality as the population continues to age. Only through providing a platform for seniors to participate in social production and wealth creation can a new supply model be born under the longevity economy, which is also the mission in the future for Taikang Community and its residents.

Value Recreation by Taikang Residents

Today's seniors are healthier and more energetic than their peers at any time in history, and they will maintain this state for a longer period. American scholar Joseph Coughlin once pointed out that the future of the longevity economy depends, to a large extent, on the actions of seniors, which is also the philosophy upheld by Yanyuan and Shenyuan. The average age of residents in both communities is over 80 years old, among whom 380 people are over 90 years old. The eldest resident has reached 103 years old, making it a true "longevity" community. They are the first and second generations of builders of China, including more than 20 principals and academicians, who have made great contributions to the development of the country and society. Most of them are energetic with a sound mind and rich in experience with philosophical thoughts about life. Among dwellers in the community, there are great minds, such as Professor Qian Liqun, who has retired but continues working and creating value for society, and there are also experts from all walks of life who are at the top of their fields. Needless to say, they are a huge treasure in our society.

The Accomplishment of Taikang Residents

As residents enjoy a rich life in Taikang Community, they also usher in a new stage of life and share their wisdom and experience with more people, thus recreating value and becoming a driving force for the supply of the longevity economy. At the same time, Yanyuan and Shenyuan staff also endeavor to encourage residents to try new things, recreate value in a more flexible way, impart knowledge, skills and experience within or outside the community, personally participate in community management, and create their own "third demographic dividend".

In Yanyuan and Shenyuan, as of May 2021, more than 350 residents have served as lecturers, club leaders, event planners and other kinds of volunteers. A total of 3400 h of classes were held. Residents of the communities, including Professor Qian Liqun, have published nearly 30 books on various topics, making Yanyuan and Shenyuan a

true “value creation center”. To establish a platform for such cultural inheritance and promotion, the community has specially created an intellectual property patent of a “friendly neighborhood”. Under this IP, a series of resident-led lectures involving all walks of life are organized, inspiring constructive and heated discussions every day.

The creative achievements of community residents not only become an important carrier to enrich the cultural life of the community but also a channel for seniors to reconnect with society and create value, which is an important feature of the upgraded longevity economy. We have reason to believe that under the blessing of new technologies in the data age, the influence of various activities created by Taikang residents will not be limited to the community but will be widespread through short videos, live broadcasts, and official accounts.

Mr. Feng recorded his four-year life in Shenyuan into a book called “Impressions of Shenyuan”. He also initiated and planned the “Talk about Life” program with Professor Yu, which brought the unique Shanghai culture to Shenyuan. Mr. Feng’s wife, Ms. Xu, picked up piano that she enjoyed when she was young and often wears qipao (cheongsam) with her friends in the community to show the unique charm of Shanghai-style women. Their shows are often performed at events in various Taikang communities. Mr. Lu, who was the head coach of the bridge club, is an amateur film critic and film collector. He set up a film screening room after moving into the longevity community to play his classic collections and gives film introductions and reviews, which are quite popular in the community.

In Yanyuan, a number of residents, including Ms. Chen and Mr. Zhao, held a personal art exhibition in the community. The exhibition received raving reviews, and the viewers were very enthusiastic. As a professor at Tsinghua University and Peking University, Professor Ge still stood on the podium after he came to Yanyuan, teaching quantum physics to the residents. His professional insights were applauded by the dwellers. Mr. Hou, the retired head coach of the national team, used to participate in international competitions as a national team swimmer. After retirement, he fell in love with the swimming pool in Yanyuan. Under his coaching, some residents in their 80s learned breaststroke and freestyle and even butterfly strokes. This makes him very proud of his career dedicated to sports. These dynamic stories are still being played in Yanyuan and Shenyuan...

Building a Longevity Community with Taikang Residents

Taikang residents’ lifetime wisdom and experience are of great value. That’s why we have put them into use, and established a “Letai Council”, to tap into their wisdom to improve the management level of the community. The council can carry out in-depth research on comprehensive and forward-looking issues that are of common concern to residents, put forward reasonable suggestions, and assume the role of a bridge between residents and operators. Many of these suggestions are very enlightening, and one suggestion from a Shenyuan resident stands out to me. He said that the “Shanghai-style culture” developed in Shanghai in the twentieth century once led a way of life in China, and today we can create a new fashion of “Shanghai-style dynamic retirement” in Shenyuan. What a creative and valuable suggestion.

Since then, the creation of Shanghai-style elderly care has been integrated into the operation and construction of Shen yuan.

In fact, at the end of 2014, the Letai Council was already established. At that time, it was still six months before Yanyuan opened, and the management board spent nearly three days discussing with its future residents what Yanyuan should look like in the eyes of customers. In addition to the Letai Council and its committees, there are many forms of organizations in the community. As of May 2021, 42 residents have joined Yanyuan's first branch committee of the Communist Party of China, and all of them are veteran CPC members who have worked hard all their lives. Yanyuan is also a gathering place for alumni associations of major universities, boasting more than 100 Peking University alumni and 60 Tsinghua University alumni. These college alumni associations are active organizations in the community and have become spiritual harbors for residents.

We know that the real leader of new demand and the real creator of new supply in the longevity economy should be this group of wise and inclusive seniors. What companies can do is adapt to their needs, generate demand and build a platform. Talk with seniors on an equal footing, avoid making decisions on their behalf without their consent, and give them a sympathetic ear, sufficient understanding and respect. This is generally overlooked in society, but it has been implemented into the operation of all Taikang communities. Because of this, Taikang has nurtured a sense of identity and belonging among the residents, and an increasing number of people are willing to proudly declare as "Taikang residents" to the outside. Recognition of the "Taikang resident" identity by seniors shows that the longevity community has truly assumed the role of "home". It is believed that "Taikang residents", a senior group all across the country, will gradually get known and play a unique role in the creation of a longevity economy.

The Letai Council currently has a sound charter and operational procedures. For example, the second Yanyuan Letai Council was established in May 2019, and as of April 2021, 14 council meetings have been held. It is expected that in 2021, the Letai Council National Federation will be established, and we hope that the directors of Yanyuan, Shen yuan and other communities will take another step forward to contribute to this mighty cause of reform in the elderly care industry on the platform of Taikang Communities in China.

"Time Bank" Landing in the Longevity Community

While Taikang advocates value recreation to its residents, Yanyuan and Shen yuan also introduced a "time bank" mechanism to encourage residents to help each other, invest in personal and community management, and strengthen the connection with the outside world. "Time Bank" originated in Japan and was developed in the United States. In the beginning, it referred to a group of volunteers who organized social welfare programs featuring mutual assistance. Volunteers deposit the time they participated in social welfare services into the time bank and withdraw time of services from it when they encounter difficulties. Now, we integrate this model with the realities of Chinese society and the Taikang longevity community and create a Taikang version of Time Bank. Residents accumulate Letai coins in their "time bank accounts" by

Table 5.5 Time Bank Credit Point Items in Yanyuan and Shenyuan

Credit point item	Description
Social services	Lecturer, serving as a volunteer lecturer at Letai College Event support, providing support on-site at various events organized by the community Volunteer in service projects, such as accompanying Alzheimer's patients, those who have lost their only child, etc. Club managers, responsible for the establishment of the club, the organization of daily activities, etc. Council work, serving as a member of the Letai Council General, Branch or Professional Committee Teambuilding, serving as the floor/building manager/and assisting in carrying out various floor activities Introducing resources, such as events and teaching resources, etc.
Lifestyle	Dynamic elderly care: participating in various group activities, clubs, sports check-in and step counting, community courses/competitions etc. Health care: completing nutrition tasks, rehabilitation tasks, self-monitoring tasks of blood sugar, blood pressure and blood lipids, purchasing paid care, etc. Cultural elderly care: holding exhibitions, publishing works, holding theme events, etc. Love my family: visiting relatives and friends, participating in activities with relatives and friends, recharging and spending in the community for residents by relatives and friends, etc.

participating in community building, supporting community activities, self-health management, or even using their own capacity to help introduce social resources into the community. These credit items cover all aspects of the new supply of the longevity economy mentioned above (Table 5.5). Residents can withdraw Letai coins to pay for daily consumables, food and health services when needed. This method gives full play to residents' abilities and releases their vitality. Many residents feel that they have realized the true meaning of being "useful, knowledgeable, and happy" in the community.

This mechanism was officially launched in Yanyuan and Shenyuan in 2019. The closed-loop management of the whole process requires the joint participation and cooperation of Taikang's "1 + N" team and all residents. As of May 2021, 73 residents established time bank accounts in Shenyuan and accumulated over 4000 h of service. As a new, unique experimentation, the Time Bank enables seniors to become suppliers, create value and provide services for community operators. They can deposit in the form of "Letai coins" in exchange for future services. It blurs the identities of consumers and suppliers in the longevity community, improves the efficiency of value exchange, and makes the community a more organic community.

We have provided a new path for the longevity economy by encouraging residents to recreate value, build a community together, and introduce time banks. This is where we believe Yanyuan and Shenyuan are more advanced than the American elderly care community. To create an effective market supply for seniors, we need to reconstruct the traditional "study-work-retire" model in the industrial society, blurring the line,

and decentralizing the structure to ensure that seniors can enjoy flexible conversion between lifelong study, elderly care, and value recreation. Social enterprises should create more flexible, customized value creation methods for seniors, which is also one of the important ways to address social problems in the era of longevity.

Taikang's longevity community is constantly incubating new supplies and new demands tailored for seniors in the longevity economy. I believe that Taikang's longevity community led by Yanyuan and Shenyuan is an innovative attempt. It is a small star in the vast sky, but it might be the brightest one. The Taikang longevity community led by a new concept is also an important part of Taikang's development of the life insurance industry chain and the layout of the big health ecosystem. It is elderly care services of the longevity community that inspired Taikang's innovative insurance product "Happiness Guide" and created a new career "Health Wealth Planner" that meets the needs of people's health management in the future. The three together formed Taikang's new business model. In this model, Taikang has been able to connect virtual insurance and physical medical care services, provide customers with full life cycle services, and create an overall solution from financing to service in the era of longevity. I believe this will become one of the mainstream forms of the longevity economy. It is hoped that this plan can be promoted throughout industry and society and become a beacon that inspires changes in the consumer, capital, and service markets so that we can have a clear picture of the vast longevity economy.

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Chapter 6

Case Study: The Road to Corporate Innovation in the Era of Longevity



Taikang's decision to enter the elderly care industry stems from its years of insights into China's demographic change and social development trends. When China is rapidly stepping onto the track of aging and ushering in the era of longevity, intuition tells me that Taikang, as a life insurance company, should make a difference and take the lead in this era.

Since we decided to enter the elderly care market in 2007, we investigated the domestic elderly care market and made several attempts in this area. At the same time, we have organized delegations to visit the United States to learn the CCRC model. Later, Taikang Community was established, and the site was selected, designed, and constructed in China. After more than 10 years of research, digestion and localization, we finally make this unique elderly care model take root in China. Looking at the era of longevity from the perspective of entrepreneurs, it is our opinion that the pinch point of the era is that the longer-than-expected life expectancy will put forward higher requirements for elderly care, health and wealth management. However, society today has yet to find an ideal way to resolve this issue. From the perspective of supply and demand, society needs to provide more efficient health and elderly care services and at the same time help people accumulate and expand wealth in various periods to match the equivalent elderly care and health services. From insurance to medical care and then to general health management, Taikang has found the way to integrate insurance and medical care, which is based on its insights into the trend of the times.

This chapter will introduce the case of Taikang's revolution in the context of the era of longevity, that is, how Taikang, inspired by the innovation and entrepreneurial spirit of the international life insurance industry, has explored and completed the "from cradle to heaven" industrial chain for seniors. Taikang sums up business principles of "innovation, compounding, chain and leverage" and ultimately comes up with the Taikang solution, which makes it a leader in global life insurance industry reform as well as the era of longevity. It is hoped that this chapter can inspire more entrepreneurs, serve as a useful reference for enterprises to innovate and embrace the new age, and lead world development in the era of longevity.

6.1 Case Background

In the process of founding and operating Taikang, I was also observing the development of the global insurance industry. The life insurance industry is a mature industry with a history of 300 years. A great number of Fortune 500 companies are from this industry. However, in recent decades, this industry has shown a decline. Its market share in the fields of pension and health insurance has been continuously taken over by fund and health insurance companies. The reason behind it, I think, is that American life insurers did not anticipate people's increasing demands in health, retirement and wealth management and failed to grasp opportunities in the potentially huge pension and health insurance market. That's why they missed out on becoming mainstream in the era of longevity. In view of this, the international life insurance industry has gradually combined payments with medical and elderly care resources, providing inspiration for Taikang's revolution in elderly care.

In my opinion, the best business model should meet two conditions. First, it should be enough to change people's way of life, and second, its innovation in technology and model should enable more people to enjoy a better life, as Henry Ford and Steve Jobs did. Business idealism and entrepreneurship make ideals come true and are an important engine to change the world. Revolution in the elderly care industry shares the same idea. To create a revolutionary business model, the introduction of the American CCRC model is only the first step. It also requires a series of independent innovations in products, sales, services and even theoretical systems to support.

Exploration of “Payment + Service” in the Life Insurance Industry

While the world is entering the era of longevity, the life insurance industry has attempted to extend the business toward elderly care based on people's needs for longevity, health and wealth and embarked on the path of the “payment + service” model. In this process, developed markets represented by the United States, Europe, and Japan have brought new ideas to the industry. However, the integration and synergy between the main insurance business and the physical elderly care business needs further development.

American health insurance has accommodated the financing demand of medical expenses in an aging society through in-depth integration with service resources. The combination of health insurance and medical service resources is a natural result of development: the payment of health insurance depends on the health and medical conditions and guided intervention. Health insurance customers have a high demand for medical resources, requiring quality, reliable and convenient medical resources. For example, Kaiser Permanente, a pioneer in the innovation of payment + service as early as the 1930s, achieved a balance between service costs and efficient medical services through self-built hospitals and self-operated doctors. United Health used medical technology, drug management, and self-built/acquired medical centers to improve health insurance capabilities. There are many successful cases of combining health financing with medical resources, such as the acquisition of Aetna Insurance by the largest pharmacy company, CVS Health Corporation, as well as Pittsburgh

Medical Center launching life insurance business by relying on existing medical resources.

Compared with the United States, the United Kingdom is older in terms of population, and the insurance industry has also explored the layout of medical and elderly care services. For example, Bupa Insurance in the United Kingdom meets the needs of insurance customers through senior services and elderly care communities and copies its experience to Spain, Australia, New Zealand and other countries through global operations. Bupa began to acquire and build its own medical service capabilities from the 1960s to the 1970s and then extended to hospitals, outpatient clinics, dentistry and other medical service institutions. Later, in line with the adjustment of the United Kingdom's regulatory environment and policy incentives, Bupa came into the elderly care industry in the 1980s, providing home care, day care, and dynamic and comprehensive elderly care communities. Bupa currently has 130 elderly care communities in the United Kingdom with a total of 7700 nursing beds. Compared with China, the British financing mechanism for elderly care services is relatively advanced, and a mechanism has emerged with various payment methods corresponding to various elderly care service institutions.

Japan entered an aging society as early as the 1970s. With the encouragement of government policies, the Japanese insurance industry has a number of elderly care entities, including Nippon Life, Meiji Yasuda Life, Sompo Holdings, Tokio Marine Nichido, Mitsui Sumitomo Insurance Group Holdings, and Aioi Nissay Dowa Insurance. The most representative example would be Sompo Holdings, which is now the second largest operator of senior communities in Japan. At present, Sompo boasts more than 25,000 nursing beds and nearly 700 elderly care facilities established in various places. The insurance business of Sompo Holdings is embedded in the community in long-term interactions with customers, gradually develops the life insurance business, and meets the nursing needs of seniors in an aging society. Its service covers home care, senior-friendly facilities and the provision of nursing beds.

While the United States, the United Kingdom and Japan all made innovative steps in medical care services via the "payment + service" business model within the insurance industry, issues still exist. For example, American insurance companies did not combine payment and services. This is because the growth of the middle-class population and the aged population are not at the same pace, and the insurance industry has failed to see the elderly care demand resulting from an aging society in a timely manner. In addition, the elderly care service industry in the United States witnessed early and rapid development, and there is no space for insurance companies to step in. Unlike the United States, Japan has combined insurance and elderly care services because Japanese insurance regulations clearly prohibit commercial institutions from paying for medical institutions and intervening in medical services. That is why Japanese insurance companies did not start from the medical field. In addition, it is difficult for commercial insurance institutions to replace the relatively complete and mature elderly care insurance payment mechanism, and those institutions have not been able to form a commercial solution that matches the insurance company's own products and service resources. While Bupa Insurance in the United Kingdom has both medical and elderly care capabilities, this cannot be copied directly to China,

as the United Kingdom has a complete financing mechanism for elderly care services and a relatively mature pension system, which enjoys many advantages in itself.

Today, China has become the world's second largest life insurance market and faces unprecedented demographic challenges. Whether it is elderly care or medical financing, it is necessary to find new solutions that are more suitable for China's national realities rather than copying experience from other countries directly. Looking back on Taikang's practice of becoming an ecological health enterprise, it is a process of actively absorbing overseas mature experience, combining China's national conditions, embracing elderly care and health, and bringing new solutions to the world through repeated exploration and innovation.

Business Idealism and Entrepreneurship Changing the World

In the era of longevity, the extension of life expectancy and the sharp increase in the number of seniors will bring about expanded demand and supply pressure of health and elderly care services which requires the joint efforts of the government, enterprises, individuals and families. Entrepreneurs coexist with the modern enterprise system and are the direct allocators of production factors. They seek the optimal allocation in accordance with the laws of the market and formulate business solutions to social problems through enterprise innovation, which can play a conducive role in at least three aspects. The first is to create wealth and bolster the foundation for payment. The second is to expand supply and revitalize the industry. The third is to innovate the business model, improve the efficiency of resource allocation, and even create new demand.

Entrepreneurs are born in response to the call of the times, and their achievement, in turn, makes the time they live a glorious history. The Oil King John Rockefeller, Steel King Andrew Carnegie, and Car King Henry Ford are the most typical examples of the industrial age. At the end of the nineteenth century, they all grasped the pulse of the times and launched industry changes, which enabled the United States to quickly enter a mechanized, industrialized and modernized society. The country created a development miracle and became the world leader. When entrepreneurs get a whim of where the society would go, they will actively seek new business opportunities to meet social challenges and seize the opportunities of the times.

Two great companies, Ford and Apple, are the most typical examples. They are representatives of business idealism and entrepreneurial spirit. They have brought ideals into reality and changed the world. Henry Ford's dream back then was to allow his workers and everyone in the world to drive a Ford's car. He proposed mass production of cars, which would have the simplest and most practical design and the lowest price, so that they could be affordable for every ordinary family, and consumers could enjoy the car with their loved ones. Because of this idea, he led the standardization revolution at the beginning of the industrial age, improved the production model of the assembly line, increased production efficiency, and reduced production costs, which made cars accessible to ordinary middle-class families and turned his business ideal into a reality.

Steve Jobs returned to Apple in 1997, saving the company from crisis. Like all new tech heroes who started from scratch in Silicon Valley, dreams were the brightest

beacon of that era. The difference between Steve Jobs and many Silicon Valley heroes lies in his dedication and even madness to business ideals—"To live is to change the world." He has a genius sense of where the industry would go and has an almost devil-like taste for perfection for products and technical details. He created a new market pattern and consumer demand. After personal computers and the Internet swept the world, Steve Jobs led the era of mobile Internet and became an important force in changing the world.

If Ford's cars represent the industrial age, it brings business ideals into reality through technological innovation. Then, Steve Jobs' Apple represents the postindustrial age and the information age, combining technology and art, so that business idealism can unleash unparalleled power, bring surprises to consumers, and make the world a better place. Apple and Ford also represent the two most important aspects of business-induced social change: one is to change people's way of life, and the other is to reduce costs through innovation so that more people can enjoy a better life.

To seize the opportunity of history means to follow the trend of times. The era of longevity will shape the world outlook ahead, and the longevity economy will become a new trend in the development of human society. The world needs leadership of companies with business ideals. Entrepreneurs must continue to practice and innovate business models to provide practical business solutions to challenges that human society is about to face. I firmly believe that as China has the largest number of seniors, such companies will inevitably be born in China, and they will launch an elderly care revolution on this vast land.

In China, entrepreneurs are leading the change. The 40 years of reform and opening up is a magnificent history of the development of Chinese entrepreneurs—may it be the entrepreneurs of the "1984s", "1992s", "internet gurus returned from abroad" or those who start businesses today. Among them, the "1992s" is a term I coined, which refers to the group of entrepreneurs who went into business at the same time as me. Our group demonstrates the very distinct characteristics of the time. First, the year 1992 is when China's elites went to the business field. Second, this group of people are entrepreneurs who truly understand the market-oriented modern enterprise system, and they are the leaders of modern Chinese enterprises. Over the past 40 years, China's entrepreneurs have experienced development, and a group of quality leaders are coming in place. Any entrepreneur who is persistent, steady and down to earth and who can be admired, imitated and learned by others must be a practitioner of business idealism. With the advent of the era of longevity, I believe that Chinese entrepreneurs will be the groundbreaker of the longevity economy.

6.2 Taikang's Road to Innovation and Entrepreneurship

Founded in 1996, Taikang Insurance Group Co., Ltd. is a leading insurance and financial service provider in China. Its core businesses include insurance, asset management, and medical care. Taikang has five subsidiaries, including Taikang

Life Insurance, Taikang Asset, Taikang Pension, Taikang Health Investment and Taikang Online. The Taikang Insurance Group has been among the world's top 500 since 2018.

In 1996, the Taikang Insurance Group was formally established. As the founder of Taikang, I led this traditional insurance company into the elderly care industry in 2007 and continued to explore the field of medical care and health in the past 15 years. At present, our longevity community, rehabilitation hospital, medical service and memorial park constitute a network of “medical care, elderly care, rehabilitation and end-of-life care”, which makes Taikang stand out from other insurance companies in China. By integrating insurance, asset management and medical care, Taikang has developed an innovative business model to provide customers with “cradle to heaven” products and services, which covers the whole cycle of life. Its practice is quite inspiring, which is why Taikang's elderly care revolution was listed as a successful business case in Harvard Business Review in 2020.

Origin and Exploration of Elderly Care

For years, while expanding and strengthening the life insurance business, Taikang has also been observing the trend of China's demographic changes and the future path of life insurance. One of the main risks faced by life insurance companies is longevity risk. With the development and maturity of the insurance business, Taikang has furthered its understanding of longevity and life. How to expand the life insurance industry chain beyond traditional life insurance and how to seek weaker cyclical and more long-term investment opportunities to allocate capital are the questions that the company must answer in the process of development. With the advent of the era of longevity, is there any other way for insurance companies to participate in elderly care projects other than paying products such as personal annuities and pensions?

In March 2007, an employee wedding banquet turned out to be the opportunity for Taikang to enter the elderly care industry. Inspired by the success of the Home Inns chain model, Taikang's founding team discussed setting up a chain of service agencies through a custody model in the wedding. Through study and research, we found that this home inward model came us nowhere. Later, we studied the national policy and decided that home care is the largest market. In January 2008, we conducted a trial run of a nursing care center in Wangjing, Beijing, to provide home-based nursing services for the elderly in residential communities. It was not a big investment. This experiment also failed due to a number of issues, such as locations. The most important reason, however, is that the asset-light business did not have synergies for the long-term capital of the insurance company, nor did it empower our main business.

To find solutions to elderly care issues, since 2007, Taikang's senior management team has launched large-scale overseas research and visited institutions in Europe, Japan, the United States, Taiwan and other countries and regions (Table 6.1). I was deeply impressed by a number of communities, including Sunrise in Charlotte (North Carolina), Willow Valley (Pennsylvania), and Erickson Retirement Community in Riderwood (Maryland).

Table 6.1 Partial itinerary of Taikang's delegation

Time	Country/Region	Visit
Oct 2007	Taiwan	Changgeng retirement community/Runfu retirement community
Dec 2007	Japan	Retirement communities under Panasonic and Watami
Feb 2008	The United States	Erikson, Aldersgate, Sunrise, Willow Valley
Apr 2008	The United States	retirement community in Hawaii
Oct 2009	The United States	Erikson, Sunrise, Willow Valley
Apr 2010	The United States	Sun City
June 2016	The United Kingdom	Bupa House HQ
June 2016	France	Orpea retirement homes
Oct 2016	Germany	Kaiserswerther Diakonie
Apr 2017	The United States	retirement community in Florida

Source: Taikang Insurance Group

What truly caught my eyes was in April 2010, when I led the Taikang board members to conduct a 10-day visit to the United States. We went to the Sun City retirement community in Phoenix, Arizona. Sun City, founded in 1959, is the first retirement community in the United States. After 50 years of development, it has become the most famous retirement community in the world, with more than 100,000 senior residents. When we visited the community, there happened to be an old man who had just turned 100 years old. Wearing a nurse hat with a red cross on it, she looked healthy and cheerful. I held her hand and felt her firm handshake. It was the first time in my life that I saw a 100-year-old with such energy.

In the end, I was attracted by the new American concept of CCRC. The American retirement community has subverted China's traditional "family" model. The core of its business model is to build a new and open society, or community. It profits come from the sale of real estate or through the provision of elderly care facilities and services with charges of membership fees. After several rounds of visits and inspections, Taikang Insurance Group's strategy has been formed, which is to set off an elderly care revolution, change the opinions of Chinese seniors toward life, and create a brand-new lifestyle that is unique to Chinese seniors. This is also Taikang's original intention to enter the elderly care industry.

(1) Elderly care Revolution in China

Taikang's elderly care practice has been implemented rapidly under the guidance and support of national policies. At the end of 2008, the General Office of the State Council issued "Several Opinions on the Promotion of Economic Development by Current Finance", which pointed out that "relevant insurance institutions should be supported to invest in medical institutions and elderly care entities." At the end of 2009, after several rounds of reports with the former China Insurance Regulatory Commission, Taikang became the first insurance company to obtain the qualification to invest in retirement communities. In 2012,

Taikang Community, Yanyuan, was launched in Changping, Beijing. In 2014, the State Council issued the “Several Opinions on Accelerating the Development of the Modern Insurance Service Industry” and once again proposed “supporting qualified insurance institutions to invest in the elderly care service industry and promoting the integrated development of the insurance service industry and the elderly care service industry”. Yanyuan and Shenyuan were officially put into operation in 2015 and 2016, respectively, and Taikang became the first insurance company to successfully invest and operate elderly care facilities in the insurance industry. From a dream in 2007 to the booming operation of Yanyuan in 2015, it took a decade to come to where we are today.

During the construction of Yanyuan, we established a national strategy and a clear roadmap. At the end of 2012, the Taikang longevity community settled in Shanghai, successfully initiating the strategic layout in the Yangtze River Delta region; in 2013, Taikang set foot in the Greater Bay Area; in 2014, Taikang entered the second-tier city Suzhou for the first time; in 2015, Shuyuan and Chuyuan were established in Chengdu and Wuhan, the new first-tier cities; and in 2016, Taikang came to Hangzhou, improving its development in the Yangtze River Delta. At present, Taikang has opened 10 communities in 9 cities and has been planning to expand to 24 cities across the country. In 2021, Taikang set up a second community in Shanghai, making the city the first in China to have established an elderly care network. By the end of 2021, a total of 10 communities in Beijing, Shanghai, Guangzhou, and Chengdu were put into operation, and more than 5000 seniors were enjoying their vibrant senior lives in Taikang Community. In the next 3–5 years, Taikang plans to open 25–30 communities across the country to achieve a nationwide network and promote municipal networks in developed cities.

Globally, there are large elderly care enterprises in Europe and the United States. In 2020, Orpea, the leader of the industry, boasts a capacity of 100,000 beds. Korian comes second with 80,000 beds, and Brookdale ranks third with 70,000 beds. In the future, the Taikang Community, with a capacity of 55,000 beds upon full operation, will become the leader in China and will undoubtedly be among the world’s leading elderly care providers.

Taikang’s practice has allowed the longevity community with international standards of “continuous care, migratory chain, and combination of medical and nursing care” to take root in China, and a brand-new elderly care model has officially started in China. This kind of elderly care is based on the business philosophy of “dynamic and cultural elderly care, combination of medical care and elderly care, and technology-based elderly care”, which meets the seven core needs of elderly individuals: “social interaction, sports, food, culture, health, financial management and spiritual belonging”. It also provides residents with a five-in-one lifestyle, i.e., a warm home, quality medical care center, open university, vitality center, and a home of the heart and spirit.

In the process of Taikang’s advanced exploration of the elderly care industry, we have accumulated valuable practical experience for society and industry. On the one hand, we can address the elderly care issue through innovative business

models and market economy methods. However, we give full play to our social responsibility. By promoting Taikang's decades of experience in elderly care services, the Big Health Industry chain and the supply chain to society, we have empowered local governments, private institutions and families. The "Yicai Qianjia Nursing Homes" public welfare program, established by Taikang in 2018, has now become an exemplary case of "targeted poverty alleviation" and "professional empowerment" in the subsector of elderly care and poverty alleviation. Through the program, we have funded more than 100 institutions across the country, benefiting 30,000 elderly people. Building on funding for capital and equipment and the improvement of hardware facilities, we are also trying to move toward public welfare and carry out elderly care training in poverty-stricken areas such as "Three Regions and Three Prefectures"¹ and have trained more than 15,000 elderly care practitioners. In addition, we also help elderly care institutions establish information management systems and provide technological empowerment to improve the management capabilities of various institutions and provide better care for low-income seniors. These public welfare practices focusing on the elderly care industry are of great value. I also call on companies in the field of big health to jointly take responsibility to achieve substantial improvement of the overall elderly care in society.

(2) Happiness Guide

In 2012, the first insurance annuity product in China's insurance industry connected retirement communities. Happiness Guide was officially launched. This innovative product combines virtual insurance products with physical retirement communities through a "confirmation letter", providing customers with a package of solutions covering financial planning and living arrangements after retirement and connecting insurance customers with retirement services. Customers can enjoy the professional financial management services of insurance companies by purchasing elderly care insurance when they are young, live in Taikang Community when they retire, and use the insurance money to pay for their living expenses. What excites us is that An Appointment with Happiness is well received in the market as soon as it was launched. In 2013 alone, more than 3000 products were sold. This high-net-worth annuity product directly pushed up the growth of Taikang's high-end customers and the New Business Value (NBV). Before the introduction of this product, the average premium of Taikang insurance products was only more than RMB 4000, and after 17 years, there were only 5600 high-end customers. At that time, there was no clear concept of high-end customers in the insurance market. In the nine years since the launch of Happiness Guide, the number of Taikang's high-end customers has grown faster and exceeded 140,000 by the end of 2021. The total number of products sold also surpassed 130,000.

¹ The "three regions" refers to Tibet, four prefectures of southern Xinjiang-Hotan, Aksu, Kashi, and the Kirgiz Autonomous Prefecture of Kizilsu, and the areas of Sichuan, Yunnan, Gansu, and Qinghai provinces with large Tibetan populations; the "three prefectures" are Liangshan in Sichuan, Nujiang in Yunnan, and Linxia in Gansu.

After the successful launch of the annuity product, in 2020, Taikang further innovated and upgraded the product, focusing on youth under the age of 18. The overall premium for the teens is significantly lower than that of the adults, which allows customers to start saving at an early stage of their children's life and plan ahead to arrange their future pension funds and community occupancy rights. By prolonging the accumulation time of the compounding and reducing the overall premium amount, the compounding will bloom over time. More customers with long-term planning awareness can also enjoy the new lifestyle advocated by Taikang. Since its launch, An Appointment with Happiness targeted for teenagers has experienced continuous growth in sales, thus providing an alternate path for the elderly care industry. In the future, it may no longer be just about providing financial support by the younger generation for the older generation but could be the other way around. In this way, the wealth of individuals and families will be continuously accumulated and passed down through the series of products of happiness, and the compounding will continue to display between different generations.

Taikang's first happiness appointment customer, Mr. Cao Yuanzheng, a famous economist, once shared his understanding of this product. "Planning for retirement has become a social issue and a common phenomenon. It is not an accidental phenomenon but an inevitable product of China's economic development to this stage and the changes in the population structure. To support the elderly requires collective effort, which is an important turning point in China's elderly care industry. Taikang has provided such a support."

(3) The new career of the health wealth planner is unveiled

While exploring the combination of insurance with medical care, we have created two competitive products: one is a quality franchised longevity community, and the other is Happiness Guide series. Both products can provide service to the growing middle class and help them cope with the coming era of longevity. How to better deliver these two products to customers, what kind of sales team should be built, and what kind of sales system should be established to connect products and customers are questions for my team and I to think about.

When we have the four-in-one series of happiness appointment products and Taikang Community, which leads the way of retirement life, the customers are no longer individuals seeking traditional life insurance products. An increasing number of high-end customers similar to those of private banks are drawn to our products. Just over a year after the launch of Happiness Guide, the sales volume exceeded 3000 orders. Such a growth rate shows that the product and service system provided by Taikang precisely meets the needs of China's high-net-worth individuals.

To build an A-team that can connect Taikang Community and An Appointment with Happiness with customers, in July 2013, we held a small certificate awarding ceremony and officially established the F1 club. "F1" represents both future and fortune. Finally, in 2017, we launched a profession on the basis of

the F1 club—Health Wealth Planner (HWP). HWPs are positioned to be professionals who serve the full life cycle and the full wealth cycle of high-net-worth individuals to further help people cope with challenges in the era of longevity.

Since its launch, this new profession has responded to the call of the longevity era and the urgent needs of customers and has become a promoter of Taikang's one-stop health wealth management solution. By the end of 2021, the number of HWP members exceeded 7400. Meeting the requirement of Taikang's four-in-one business model, HWPs are a new profession that combines the roles of junior general practitioners, insurance agents and senior financial advisors. They are committed to formulating all-round solutions tailored for individuals in the longevity era. To equip this team with the highest professional standards and knowledge, we jointly organized training programs with Wuhan University on medical care, health, wealth management and other disciplines in the era of longevity. The purpose is to cultivate professionals with determination and devotion to lifelong study, lifelong service, and lifelong practice. In January 2020, HWP was officially approved as a professional qualification by the Ministry of Education, filling the gap between professional training and certification in health wealth management. While providing an enabling environment for talent, it also made every choice they make a transcendent achievement.

(4) Toward a Big Health Industrial system

While building a big health ecology, we are also working actively in putting a network of medical specialties in place. Inspired by Bupa, which successfully operated a dental clinic chain in Spain, we acquired the controlling interests of Bybo Dental Group (later renamed Taikang Bybo Dental) in 2018, which operates more than 200 dental hospitals and clinics in more than 50 cities in China. As people's living standards improve, they start paying more attention to medical specialties, such as dentistry, cardiovascular and brain. By establishing strategic investment relationships with specialized hospital chains such as Bybo Dental, we are constantly enhancing our capabilities in resource integration in the Big Health ecology. In medical and health services, we have been exploring integrating medical services and insurance products into a new business model to create stronger synergy. For example, in 2019, Taikang Group launched a corporate dental insurance plan for corporate employees through Taikang Bybo Dental. In 2020, a "Dental Care Ambassador" program was launched jointly by Taikang Bybo Dental and Taikang Insurance. As a part of Taikang's closed loop of health services, the closed loop of dental insurance came into an early shape.

Explorations were also made in the specialty of rehabilitation. As early as we were planning the longevity community business, it was made clear that rehabilitation hospitals should be built within longevity communities. The goal is to meet the needs for rehabilitation and health management of seniors and people with chronic diseases, and to truly integrate elderly care and rehabilitation. In our efforts to build a Big Health ecology, one of the key priorities was building our brand and expertise of rehabilitation. Another priority was to wield the power of chains and the network of facilities, including both facilities within Taikang's own system and the ones acquired

externally. Moreover, we invested in Donglei Brain Doctors Group in 2020. Such an investment in a new medical specialty was Taikang's another endeavor in the building of the Big Health ecology.

In the transformation toward a Big Health ecology, we are working hard to improve our own network, build connections with external partners and strengthen cooperation with top medical institutions. Taikang's network of medical care and insurance services, "Jian Bao Tong" ("health, insurance, connection" in Chinese), includes over 700 physical examination centers, 2,000 public hospitals, 30 private hospitals and 10,000 senior doctors. Taikang has been making great efforts to jointly build a Big Health ecology for cooperation to provide medical and health management solutions both online and offline. To ensure clients have easy access to Taikang's health management services, various functions have been built into Taikang's smartphone apps, "Taikang Life" and "Taikang Doctor". In these apps, users can make reservations of services such as physical examination, cancer screening, vaccination, genetic testing, dental health care and medical consultation. In the future, more new technologies, such as digital medical care, artificial intelligence (AI) and the Internet of Things (IoT), will be adopted and applied to Taikang's medical care, health and elderly care services. With the aid of technologies, Taikang strives to improve the quality of services while lowering the costs of services, sealing our promises of being "more secure, more convenient and more affordable" into every inch of Taikang's Big Health business territory.

With over a decade of down-to-earth firsthand frontline business experience in the Big Health Industry, Taikang has built a primal industrial layout consisting of medical care services, professional teams and the ability to integrate resources. Shortly after the COVID-19 outbreak, epidemic prevention supplies were in shortage everywhere in China. Under such circumstances, Taikang, as a leading enterprise in medical care and the Big Health Industry, made a donation of epidemic prevention supplies to approximately 1,300 elderly care facilities across China. With business sensitivity built on our long-term research into population, elderly care and medical issues, Taikang quickly recognized the importance of developing research on public health. We immediately established a Public Health Fund for designated purposes, which are to support the building of a basic health system and an epidemic prevention and control system. A donation was made to the State Key Laboratory of Virology at Wuhan University to support the research. All the actions demonstrated Taikang's undertakings and a strong sense of social responsibility as a leader in the Big Health Industry in the Era of Longevity.

A "From Cradle to Heaven" Product Portfolio

Taikang's main business has expanded from insurance to the elderly care industry and to the Big Health ecology. In such practice, we keep developing new products and improving services. From the early innovative annuity product "Happiness Guide", our product and service portfolio has developed into the current "Four-Sphere" system of products and services, integrating "Vigorous Elderly care, High-End Medical Services, Excellent Wealth Management, and Superior Hospice Care".

Through the Happiness Guide product and high-quality elderly care services provided by Taikang Community, the lifestyle of “vigorous elderly care” has been introduced to the middle class. This lifestyle meets their needs for elderly care and security, and it reflects the human solicitude in insurance. The popularity of the Happiness Guide proved the fact that people’s rigid demands are no longer food, clothing, housing and transport, but entertainment, education, medical care and eldercare.

Quality medical services have also become a rigid demand for the middle class. While building longevity communities, Taikang launched a “High-end Medical Care” insurance product based on the combined network of Taikang’s own medical resources and services and the ones we are in cooperation with partners. “High-end Medical Care” products aim to provide clients with high-end personalized diagnosis and treatment services and satisfy their demands for health management and health care throughout a full life cycle. Meanwhile, having noticed the demands of the middle class for professional and diversified wealth management, we developed “Excellent Wealth Management” products relying on our capability to allocate assets globally and the mature system of wealth management covering insurance, funds and asset management. The “Excellent Wealth Management” products aim to manage capital investment in a professional way to gain compound interest and add value to the wealth of our clients.

Different from the above three products, which are the fruits of our longstanding R&D in insurance products, the launch of “Superior Hospice Care” was an inevitable extension of Taikang’s value and view on life. At that time, I was reading *Being Mortal: Medicine and What Matters in the End*, and the ideas within that book were perfectly consistent with the elderly care lifestyle Taikang was actively advocating for. The book reflects on the lifestyles of our parents’ generation and explores how decisions should be made in spending one’s later years. From reading it, I realized that what medical treatment could offer is limited and that people request the last dignity toward the end of life. I was inspired to think about what are truly important and meaningful for people in the last phase of life. Through Taikang longevity communities, we aspire to change how Chinese people’s look at old age lifestyle and elderly care. We also hope to change Chinese people’s views on death and their attitudes toward life by building memorial parks and providing palliative care and hospice care.

By the end of 2021, we completed the construction of four memorial parks in China. We incorporated elements of traditional Chinese culture in these parks, and they are operated as memorial parks/tourism spots. We hope that it would make it easier for people to accept memorial parks. The parks are all surrounded by mountains and rivers, but each of them was built with different cultural elements and landscapes. Each park represents the local culture of its location: “Zen Yard” for the Zen culture cultivated south of the Qinling Mountains; “Bamboo and Tea Garden” for Shu Yuan (Chinese Schools in ancient times); “Wetland Garden” for the Jing-Chu Culture (traditional State Chu culture in ancient times, near Hubei Province today); and “Memorial Woods” for the New China Revolution Culture. These memorial parks celebrate the beauty of life with unique cultures from different regions of China and encourage people to channel their commemoration of individual lives into the

appreciation of nature and culture. In the “Bamboo and Tea Garden”, people could sit in tea ceremonies performed in the same way as in the Song Dynasty or work as tea farmers for an old-time tea farmer work experience. In the “Zen Yard” in Luofu Mountain, people could study meditation and read Buddhist scriptures or take their children to spend a day with their deceased elders in the memorial park. Some young people even decide to hold their wedding ceremonies there—which, I think, is the perfect proof for the ongoing changes in people’s views on life and death. Additionally, our medical and elderly care teams are starting to provide palliative care and hospice care services. Palliative care and hospice care wards are set up in Yan Yuan and other longevity communities to provide better hospice care and continuous palliative care for patients with incurable conditions, bringing comfort to the living and peace to the deceased.

“Vigorous elderly care” is a continuation of our initial intention of starting a revolution in elderly care services in China, that is, to change the life philosophy and lifestyle of older people. The purpose of “superior hospice care” service is to change people’s views on life and death. It will become another culture-leading brand in Taikang’s product portfolio covering the full-life-cycle chain. With “Superior Hospice Care” being put in place as the last sphere of our “Four-Sphere” system of products and services, Taikang has truly built a “From Cradle to Heaven” product portfolio.

The “City Name Card” Program Serves people’s Livelihood

As longevity communities, rehabilitation hospitals, general hospitals and memorial parks were established one after another, I gradually realized that these entities we set up are of great significance to the local economy, culture and public life. As urbanization progresses, cities are going through constant changes. Infrastructure construction will add to the inner growth momentum of cities, and higher quality of public space will elevate cities’ levels of civilization.

In the Era of Longevity, a city should not only have good primary and middle schools to educate the youth but also prestigious universities and enterprises to attract and keep talent. A city should also have high quality elderly care facilities with supplementary medical care, rehabilitation and palliative and hospice care facilities, so that people who have dedicated a lifetime to the building of the city can have a place to spend their later lives healthily and happily. These facilities are the infrastructure of modern services in the Era of Longevity, and they can improve urban functions, build momentum for the longevity economy and will become a city’s name card. From 2020, we started calling this city-based regional compound layout the “City Name Card” program. Cities are built for people, and the civilization level of cities is usually reflected by how people treat elderly individuals. The signature of a city should in no way be the cold, concrete and steel buildings, but a picture of people living and working in the city in peace and content, sharing the joys in life and living the golden years of their lives. In an era where the livelihood of people is valued more than anything, Taikang’s strategy is to invest in the construction of clusters of facilities in major cities in China, including insurance, medical care, elderly care, rehabilitation and superior hospice care facilities. Taikang will introduce this new

business model to cities and incorporate our commercial innovation and practice into cities' key livelihood projects in the future.

Two decades after Taikang started its business, the Taikang Insurance Group was established in 2016. It marked the transformation of Taikang from a traditional life insurance company into a conglomerate of insurance and financial services with three core businesses, i.e., insurance, asset management, and health and eldercare. At that time, we already owned subsidiaries such as Taikang Asset, Taikang Pension, TK.CN, Taikang Community and many others, which provided much more room for Taikang to join key livelihood projects. In 2018, Taikang landed on the Fortune Global 500 for the first time and remained on the list for the following four years consecutively. Taikang spent 30 years pursuing our business ideal, and Taikang's rise is an epitome of Chinese entrepreneurs in the Reform and Opening up.

Continuous Innovation

In a signed article published in *Economic Daily* in December 2019, I wrote, "Innovation is an eternal theme. The innovations of technologies, services and business models will create new opportunities. After four decades of development and accumulation, Chinese private enterprises have developed past the phase of imitating innovation and entered the phase of independent innovation." Since its foundation in 1996, Taikang has gone through three large waves of innovation, and we are now surfing on a fourth one. From all the experience, we have gained a very deep understanding of the evolution process of innovation.

In our early days, Taikang Life studied from the advanced experience overseas for inspirations and then transformed and landed our learning in China based on China's reality. The saying "Innovation starts with imitation" perfectly summarizes our first wave of innovation. Taikang Life was founded in 1996, and by that time, the life insurance industry had been developing globally for 300 years, and it was already a mature, sizeable industry. There was once a time that there were 50–60 life insurance companies on the Fortune Global 500 list. Shortly after Taikang was founded, I led a team of Taikang's executives and employees to visit over 20 top insurance companies in Taiwan, Japan, the US and Europe. In these trips, we learned in-depth about almost everything in these companies. In China, we have a saying about imitation that goes "drawing a water ladle by looking at a gourd" (in old times, gourds were cut in half to make water ladles). I called our early study "drawing a water ladle by looking at the finest gourds in the world". Our efforts laid a solid foundation of "professionalism, standardization and globalization" for Taikang's future development. Since its founding, Taikang started as a high-level company that set its benchmark toward global leading players.

A lot has happened since then. Companies that have survived brutal market competition and remained vigorous have all, with no exception, gone through localization and independent innovation. In 2001, I observed the growth of the middle class and sensed that they would become the major consumption force and target clients of wealth management. Therefore, Taikang Life took the lead in proposing the concept of "New Life", where "Car, House and Insurance" are the three most important purchases in modern life, which was followed by the launching of the "One Insurance

Policy for the Entire Family” plan. This “New Life” wave was arguably Taikang’s second wave of innovation, which aimed to provide insurance services following the realities in China to the growing middle-class families.

The third wave of innovation came along after Taikang entered the elderly care industry. Taikang combined virtual insurance with health and elderly care services, established Taikang Community, started receiving Taikang residents, launched the “Happiness Guide” product and created a new occupation, health and wealth planner (HWP). Step by step, Taikang gradually completed the restructuring of the traditional life insurance model. In Taikang, the connotation of innovation has been evolving constantly. We started with imitating innovations, and now we are on the path of independent innovation. The Big Health Industry has many subindustries, and building a Big Health Industrial system imposes much higher requirements on enterprises in terms of their integration, network coordination and cost control. To achieve our goal, Taikang will embark on our journey of studying again to learn from global leaders in the Big Health Industry.

The business philosophy of the Taikang Plan is reflected not only in its model innovation but also in efficiency improvement. On the basis of BMI, enterprises must persist in cost reduction and efficiency improvement through intensified technological empowerment, which will enable more people to enjoy the brand-new lifestyle brought by the innovations. On the one hand, Taikang expanded its scale of business by building a top longevity community chain and reduced costs and increased service accessibility continuously through intensive management and improved operational efficiency. On the other hand, in the context of an era of data, we are also building intelligent longevity communities and reducing costs through 5G, sensing, robots, AI and other technologies so that more people can enjoy a quality life. Moreover, we have given full play to the leverage effect of insurance payments, integrated resources and invested in key livelihood projects to create value for society. As an increasing number of enterprises follow in our footsteps, the competition formed thereby will stimulate more innovations and reforms. The pressure of health and wealth in a longevity society will be eased, social costs will be reduced, and the overall social welfare will be improved.

Adhering to the philosophy of “Knowledge-Action Unity”, Taikang has turned the idea of “From Cradle to Heaven” into a practical business model through continuous innovations and practice. Taikang made payments and services more secure, convenient and affordable, and people’s views on elderly care, health, life and death have been evolving. In the future, through professional operation, Taikang will take advantage of the sizeable chain and introduce cutting-edge technologies to lower the costs of elderly care services, maximize the effect of compound interest through business model innovation, and help solve problems people may face in elderly care financing in the future. As its medical care model matures, Taikang will further expand its elderly care service ecology from elderly care facilities to home care and community elderly care so that more people can enjoy a quality elderly life.

6.3 Taikang's Business Model and the Business Philosophy Behind the Elder Care/elderly Care Revolution

A new era's arrival brings along the inevitable iteration of industries. In the Era of Longevity, each industry should take proactive measures to accommodate changes in people's needs. Only through continuous innovation of systems, technologies and business models can industries turn challenges into opportunities, lead epochal trends and make a contribution to human society. Taikang's business model, which came into shape after many years of practice and exploration, should be of some reference value for life insurance companies in coping with the Era of Longevity. Through channeling virtual insurance with real health care and elderly care services, Taikang reconstructed the traditional balance sheet of life insurance business, extended both upstream and downstream of the industrial chain, and better satisfied the needs of clients for longevity, health and wealth throughout a full life cycle. In this process, we created the Taikang Plan, a complete set of ideas and solutions. It covers all links from financing to services to help companies cope with challenges in the Era of Longevity. The Taikang Plan is the product of an enterprise's active practice facing the Era of Longevity, and we hope its value could reach beyond business itself to provide solutions for mankind in the Era of Longevity. We also hope that this Plan could serve as a modest spur to inspire our peers to come forward with their insights and explorations of the Era of Longevity, and that it could encourage all walks of life to jointly explore the infinite potential and charm of the longevity economy. The main points of the Taikang Plan are summarized and shared in this chapter.

The Taikang Plan: A Corporate Solution in the Era of Longevity

As a business enterprise, Taikang saw the trend that mankind is about to enter an Era of Longevity, took the lead in practicing our theories in China, and summarized and proposed the corporate solution for the Era of Longevity—the Taikang Plan. It is a combination of a virtual insurance payment system and service systems of real health care and elderly care, and it provides products and services covering the full life cycle to meet people's needs for longevity, health and wealth.

The virtual insurance payment system in the Taikang Plan refers to various insurance products we provide to clients, including life insurance, health insurance and accident insurance, as well as pension products, corporate/occupational annuities, wealth management products, etc. The payment system covers medical care and all three pillars of social security, and it provides efficient financing for people to enjoy all kinds of eldercare and medical care services in the future. The system of real medical care, elderly care, rehabilitation and end-of-life care and services refers to our longevity communities across China, supplementary rehabilitation hospitals within the communities, key general hospitals located in East, West, North, South and Central China, Taikang Bybo Dental hospitals and clinics in nearly 50 cities, memorial parks with unique cultural elements, and a service network to support all the Taikang facilities. Our system and network are still expanding to provide high-quality elderly care and medical care services to more clients in more regions. In addition, the synergy between the payment system and service system created a closed-loop

business model: funds accumulated in the payment system will be invested into the real economy, providing sufficient financial support for the construction of the service system while gaining long-term, continuous and stable returns to accumulate compound interest for clients. In turn, the high-quality services provided by the service system will add benefits and value to the payment system, which supports the development of new products and maintenance of clients on the payment end.

In summary, the Taikang Plan commits to providing a full range of health and wealth management services to our clients in the Era of Longevity. By building the three closed loops, one of longevity, one of health and one of wealth, Taikang invented a brand-new “Four-Sphere” business model containing “Vigorous Elderly care, High-End Medical Services, Excellent Wealth Management, End-of-Life Care” in the contribution to building a Big Health Industrial ecology.

(1) Building three closed loops of longevity, health and wealth

The three closed loops of longevity, health and wealth are essentially a combination of insurance payment and health care services. In the course of building the closed-loops, we rediscovered the value of the funding system, the elderly care industry and the health industry (Fig. 6.1). To put it simply, the closed loop of longevity enables clients to enjoy elderly care services under the protection provided by Taikang’s life insurance and annuity products; the closed loop of health enables clients to receive medical care services as needed under the protection of Taikang health insurance products; the closed loop of wealth enables clients to enjoy tailor-made financial and wealth management plans to ensure that there are sufficient funds to support their needs of elderly care and health care in a long life. The closed loop of longevity includes life insurance, elderly care, rehabilitation and end-of-life care: clients could enjoy the protection of Taikang’s life insurance and annuity insurance and spend their later years in Taikang longevity communities. As a 100-year life draws near in the Era of Longevity, people need to plan for a prolonged life as early as possible to accumulate sufficient resources for their old age. Therefore, on the payment end of this closed loop, we provide individual clients with comprehensive life insurance and annuity products. Taikang helps clients make professional and long-term investments with their funds and accumulate compound interests on a long-term basis to maintain and increase the value of their wealth. On the service end, a chain of migratory bird-type longevity communities is put in place and operated across China. There is a rehabilitation hospital built in each longevity community that can fully meet the health needs and elderly care needs in the Era of Longevity and enable residents to enjoy quality old-age life. In addition to elderly care products and services, within this closed loop, Taikang provides various elderly care products and services, such as long-term care, rehabilitation, and palliative and hospice care, to serve older people throughout the elder life chain. The Taikang Plan is changing not only older people’s attitudes toward daily life but also their views on life and death.

The closed loop of health is composed of health insurance and medical services. Clients can enjoy full-life-cycle health services within Taikang’s multileveled medical service network under the protection of Taikang’s health insurance. With

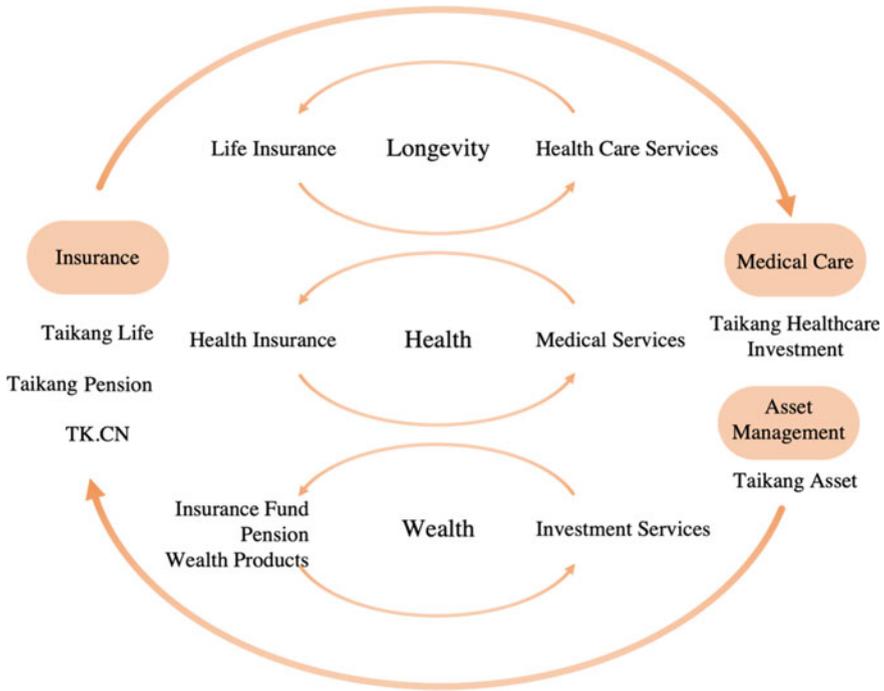


Fig. 6.1 Taikang corporate plan

the change in the human disease spectrum in the Era of Longevity, people's main health concerns will shift from disease treatment and postoperative recovery to health management and disease prevention. On the payment end, we have participated in the building of a system of health insurance products and services that covers all provinces and cities across China which fully supports multidimensional medical security plans of the government, enterprises and individuals. Given that medical expenses are mainly paid through governmental medical insurance within this system, Taikang set up a designated business line to provide services in handling or undertaking governmental medical insurance in our pension subsidiaries. At the service end of the closed loop of health, we put most resources in the Beijing-Tianjin-Hebei region, Yangtze River Delta and Pearl River Delta. There are both Taikang's own general medical centers and medical service institutions Taikang invested in or cofounded, covering general, specialized, public and private facilities. We have actively deployed business along the Big Health industrial chain and formed a full-life-cycle, full-process health service system. It provides services both online and offline, covering all links from disease prevention to rehabilitation. It aims to meet health management needs, especially chronic disease management, so that people can enjoy better health and higher quality of life in the Era of Longevity. We believe eldercare and medical care are inseparable and have been making active efforts to drive the integration of the two. In addition to the rehabilitation hospitals built within

the longevity communities, we also provide the residents with medical and caretaking services, including medical services and rehabilitation services. By attending to both short-term treatment and long-term caretaking needs, Taikang has enabled the elderly to live more comfortably in the community instead of traveling between their homes and the hospitals back and forth. In regions where conditions are mature, Taikang is also building brand-new longevity compounds that incorporate medical care, elderly care and rehabilitation. These new compounds will focus on old age chronic disease treatment and management and further promote the integration of health care and elderly care, which essentially drives the integration of the closed loops of longevity and health.

Closely related to the other two closed loops, the closed loop of wealth acts as a cornerstone in the Taikang Plan. It is a closed loop of the wealth management plans and our professional capabilities in institutional investment. Through annuity, pension and wealth management products, Taikang maintains and adds value to customers' wealth through long-term and stable institutional investment to accumulate sufficient funds for them to pay for elderly care and health expenses in a long life. On the product end, we provide a variety of insurance and wealth management products to individual clients, such as annuities, investment-linked policies (ILPs), public placement and private placement; we also provide occupational annuities and corporate annuities to governments and enterprises to support building funding channels for the three-pillar social security system. On the investment end, relying on the excellent investment capabilities of Taikang Asset, we are able to maintain stable and excellent performance for a long time and provide a full range of wealth allocation options and strategies to achieve long-term sustainable investment returns. Taikang's closed loop of wealth strives to gain compound interest through long-term investment rather than short-term profit. Within the closed loop, individual clients can optimize their funding plans to meet the challenges in the Era of Longevity, especially the ones after retirement: they can use the fund accumulated by insurance and wealth products long-term to pay living expenses while investing the remaining asset to maximize the value of their wealth or even choose to pass their wealth on to their offspring in the future.

The three closed loops of longevity, health and wealth constitute the foundation of the Taikang Plan. Another way to look at it is the circular interactions between the three closed loops form a bigger closed loop where insurance payment, medical care, elderly care, rehabilitation and end-of life care and services are seamlessly connected. The bigger closed loop serves as a platform of longevity, health and wealth and created a whole new dimension of "insurance plus services plus entities". That being said, implementing these closed-loop strategies will require a specific implementation path, which is an important component of our corporate solution. Taikang created five paths to implement these strategies, namely, expanding payment, deploying services, harnessing technology, building ecology and strengthening soft power. "Payment" refers to insurance in the Taikang plan. Taikang Insurance Group's subsidiaries, Taikang Life, Taikang Pension and TK.CN are responsible for expanding payments. While developing as many new clients as possible, they must also maintain the quality of services to existing clients. The goal is to scale up the payment system to

better leverage resources on the service end. In “deploying services”, the services are provided by the system of medical care, elderly care, rehabilitation, and end-of-life care and services from Taikang’s own facilities and the ones Taikang invested in. The subsidiary Taikang Healthcare Investment is responsible for deploying services, such as Taikang (Longevity) Communities, medical care systems and hospice care. The core strategy is to expand coverage of such services throughout China by building intensified networks in major cities. As for “harnessing technology”, the key is to build a Big Health industrial network through the application of various emerging technologies and techniques to improve efficiency and reduce costs for convenience and benefits. “Ecology Building” refers to the building of the Big Health industrial system through investment and collaboration, creating a Big Health ecology for stakeholders and partners. We are also strengthening soft power by building systems of education, public welfare, R&D and branding to empower the Taikang Plan.

(2) Reconstructing the balance sheet of the traditional insurance business

The fundamental logic of life insurance business lies in a balance sheet. The insurance premiums paid by clients are the liabilities, while the investment of insurance funds made by insurance companies are the assets. In a traditional sense, selling insurance is an insurance company’s major business, and it usually operates in debt. By making asset investments with insurance funds, insurance companies need to strike a balance between the safety, liquidity and profitability of assets and ensure the delivery of insurance benefit payments. The investment of insurance funds, from this point of view, is more of a necessary tool to maintain financial stability. From the perspective of an insurance company’s balance sheet, the liability end is its sales end, while the asset end is its investment end. Traditional insurance companies are only connected with clients on the liability end, and the focus of the asset end is improving the investment efficiency of insurance funds rather than providing services directly to the clients. Therefore, the balance sheet of the traditional insurance business does not emphasize the interactions between assets and liabilities. At the same time, due to limited asset categories and targets, the balance sheet usually features in “short-term assets and long-term liabilities”. The Taikang plan we proposed is an innovative plan that started by investing insurance funds in the construction of longevity communities. Clients who purchase Happiness Guide, our annuity product, will receive an access confirmation letter of Taikang Longevity Communities. By turning insurance into a lifestyle, Taikang successfully established connections with clients on the asset end, thus upgrading the traditional asset-liability structure and achieving innovation of the fundamental logic of insurance (Fig. 6.2).

Traditional insurance companies would invest insurance funds in stocks, bonds and real estate. The investment in real estate is usually the acquisition of office buildings, shopping malls, or even sports stadiums and amusement parks, which are especially favored by US insurance companies. The acquired real estate then becomes fixed assets and starts generating profit. Although such profit is not high, it is continuous and stable, which is in line with the nature of insurance funds. However, in Taikang’s corporate plan, only a small portion of the insurance funds would be utilized in the investment or long-term equity holding, and it was to our

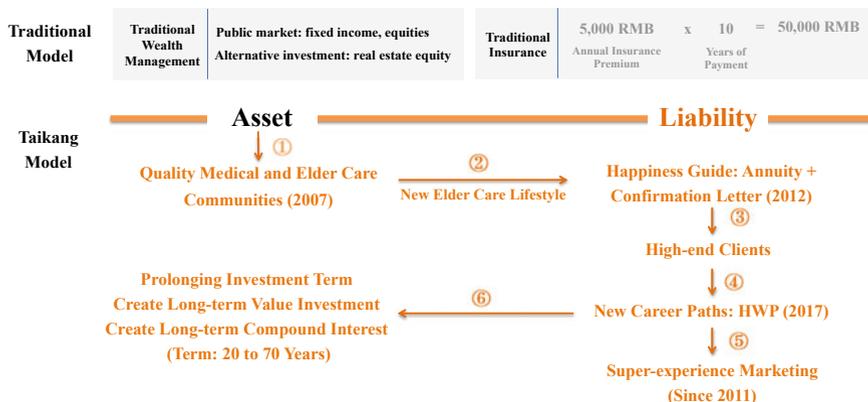


Fig. 6.2 Taikang’s corporate plan to transform the balance sheet of traditional life insurance business

own longevity communities and health and elderly care entities, which provide our clients with real, high-quality health and care services. Taikang’s different approach to real estate investment created a high-quality longevity community chain: Taikang Community.

Happiness Guide was developed for Taikang Community: it is an annuity product that connects Taikang Community with the liability end by an “access confirmation letter” of our longevity communities. This confirmation letter not only represents the access qualification of residence in Taikang Longevity Communities but also a future lifestyle. Traditional insurance products only offer contracts printed on a few pieces of paper, and where the policyholders decide to go for elderly care or to see a doctor has nothing to do with the insurance companies. The difference between Happiness Guide and traditional insurance products is that it materializes insurance policies into real services, which enriches the extension and connotation of insurance products. Happiness Guide has turned insurance from a “cold contract” into “warm services”, and the invisible intangible contractual relationship between the insurance company and policyholders became a service relationship that could be felt and experienced. What the Happiness Guide delivers is not only an investment but also a future lifestyle and a joyous longing for longevity. In this way, Taikang upgraded the liability end in the traditional sense of insurance companies. In the past, the term of a traditional life insurance policy was 20 years at most, and the connection between the company and the policyholder ended with the termination of policies. However, Happiness Guide clients will enjoy the services and companionship provided by Taikang for the rest of their lives.

Taikang’s success with the Happiness Guide created new horizons for the insurance industry to develop medium-to-high-net-worth clients in scale. In the past, one life insurance policy could generate approximately a few thousand RMB of premium every year and probably tens of thousands of RMB of accumulated premium throughout the entire policy term. Happiness Guide, however, started with the clients’

needs for sufficient funds to support high-quality longevity, and the accumulated premium could reach millions of RMB. Undoubtedly, target clients of the Happiness Guide have much higher net worth than traditional policyholders. There were, of course, large policies in the traditional insurance industry, but they were sporadic sales. Before the Happiness Guide, there was no complete system to serve medium-to-high-net-worth clients in the insurance industry in China. Such an operation system was exclusive to private banks, securities companies and wealth management companies. Today, with products such as the Happiness Guide, high-quality longevity communities and our “Four-sphere” system of products and services, Taikang has forged a unique competitive edge in the market of medium-to-high-net-worth clients, built an operation system oriented toward the large-scale development of high-net-worth clients, and gradually accumulated the current high-net-worth client base.

With the Happiness Guide and a high-net-worth client base who are open to new lifestyles, it seemed obvious and only natural that the shaping of a new career path in insurance sales would follow. The connection between insurance products, medical care and eldercare services requires stronger professional capabilities of insurance agents. To meet those requirements, Taikang created a brand-new profession in the insurance industry—“Health and Wealth Planner (HWP)”, which has been approved and certified by the Chinese Ministry of Education as an occupation. We provide multidisciplinary, all-round training programs and field programs ranging from elderly care and healthcare to wealth management for the new HWPs. We encourage them to learn for life, so that they can enhance professional capabilities and expertise. With these resources, we hope they will become planners and life-long service providers for our clients' demands for longevity, health and wealth and ultimately insurance entrepreneurs and Big Health partners in the Era of Longevity.

A new way of sales came into shape following the new HWP profession. Under the traditional life insurance marketing system, insurance agents used to work all alone and often had to go from door to door to develop new clients. With the acceleration of urbanization, the door-to-door sales model became increasingly less effective and was eventually replaced by a teamwork approach of both field agents and administrative support. Now, Taikang is setting up marketing campaigns that offer real experience within communities, hospitals, memorial parks and other entities. By doing so, we created a brand-new sales model in the insurance industry—the “experience marketing model”. Potential clients are welcome to visit our communities and experience the new elderly care lifestyle that we brought into China. They are even encouraged to live there for some time themselves before deciding if they want to make a purchase. After all, seeing is believing, and that was what we did to differ from the traditional insurance sales model.

On the liability end, our new products brought new clients, new jobs, and a new sales model. Hence, the entire liability end is restructured, and a new operation system was formed. Along with the changes on the liability end, the asset end is also changing. In the past, the capital term on the asset end was usually ten to twenty years, but now it is more than twenty years. Longer-term capital will indeed bring challenges to traditional investment strategies, but from a different perspective, it also allows

more flexible asset allocation portfolios and longer-term investments. The structure of investment will change accordingly, and the proportion of equity investment can be effectively improved, which is a practice of the philosophy of “long-term value investment” advocated by Warren Buffett. It is also a full demonstration of compound interest and long slope theory.

In general, the reconstruction of the balance sheet of the traditional life insurance industry made by Taikang’s corporate plan is an innovation that conforms to the Era of Longevity. It enhances the efficiency of the entire operation system and offers clients a full package of plans and solutions to challenges such as funding and services, in a more convenient and affordable manner. Balanced sheet reconstruction is the essence of the innovative Taikang Plan. Innovations may appear easy to accomplish, but major breakthroughs are difficult to achieve. No innovative breakthrough could be made without years of thinking, reflection and accumulation of experience. Innovative breakthroughs require lifelong efforts, and Taikang’s breakthroughs are the result of hard work, great power, and collective wisdom of many Taikang people.

(3) A full life cycle covering payment and services

On the time axis of life, the curves of income and expenditure are intertwined. The expenditure curve runs through a person’s entire life. Taking various transfer payments into account, the highs of the expenditure curve appear in the beginning and toward the end of life because of education expenditure and medical expenditure, respectively. The income curve, however, peaks between the ages of 20 and 65, which is the period when people accumulate their incomes. During this period, the incomes are spent on daily expenses, purchases of a car and/or a home, or on children’s education and eldercare for their seniors. Additionally, in the postindustrial era, the needs for entertainment, education, health and eldercare have inevitably exceeded those of food, clothing, housing and transportation.

People’s lives can be roughly divided into a few phases by the intersections of the two curves. In the working phase, people’s net income is usually positive. This is the phase when funds are sufficiently accumulated, which generates demands for asset allocation to reserve wealth for the future. In the retirement phase, expenditures spent on health, elderly care and medical care continue to rise, and people’s expenditures begin to exceed income. There may also be expenditure on hospice care and inheritance needs prior to death.

People’s needs for longevity, health and wealth run through the entire life. Funding problems appear when there is a mismatch between purchasing power and consumption needs. In the Era of Longevity, funding problems could appear more often than ever. Taikang’s corporate plan is unique in that it provides a system of products and services that covers the entire life cycle of customers through three closed loops of longevity, health and wealth. The Taikang Plan includes not only insurance products but also real services such as medical care, elderly care, rehabilitation and end-of-life care and services, as well as various health services and investment services. As shown in Fig. 6.3, Taikang not only provides long-term life insurance and

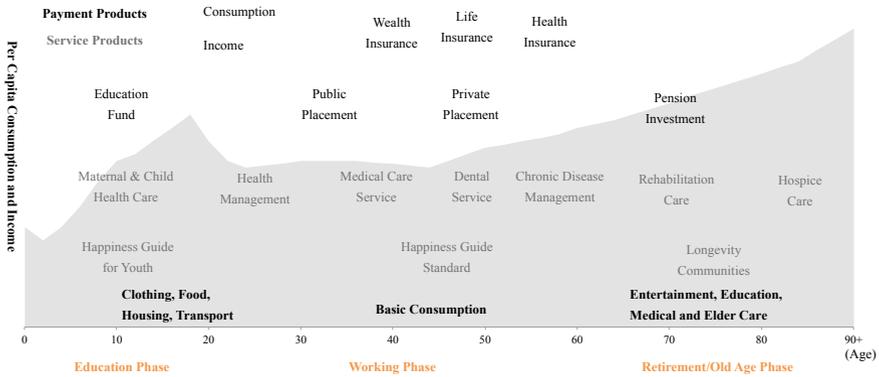


Fig. 6.3 The system of products and services covering a full life cycle

annuity products with longevity community services but also health insurance products and health services, including maternal and child health care, health management, medical services, dental services, chronic disease management, and rehabilitation care. At the same time, we also provide investment services ranging from education funds, public placement management, private placement management to retirement pensions. After income in the traditional sense begins to decline, Taikang clients will be supported by income supplements generated by Taikang’s products, with their income curve lengthened and asset exhaustion postponed.

The Taikang Plan expands the industrial chain of life insurance both vertically and horizontally, with vertical expansion being the core and horizontal expansion as a supplement. Taikang’s vertical expansion is from life insurance to medical care, elderly care and then to Big Health. The vertical expansion aims to build a complete product portfolio through the vertical integration of the three closed loops of longevity, health and wealth. Horizontal expansion provides products and services to clients throughout a full life cycle, horizontally covering the education phase, the working phase and the retirement phase. Figure 6.3 also implies on the level of client base that Taikang has expanded our services from individuals to their families and even to their relatives.

A vivid metaphor I often use on many occasions to interpret the business model of the Taikang Plan is that we are “rolling the biggest snowball in the world on a wide track covered in thick snow from the top of a long slope”. The long slope refers to people’s life cycle. Our “From Cradle to Heaven” product portfolio will serve our clients throughout their entire life. The wide track is our “Four-sphere” system of products and services comprising “Vigorous Elderly care, High-End Medical Services, Excellent Wealth Management, and Superior Hospice Care”, which aims to serve the life value chain. The thick snow refers to our high-quality clients. Our full-life-cycle products and services are designed to closely fit the various needs of our clients in different stages of life. In a sense, Taikang’s products are tributes paid

to each phase of life. This may be the best annotation for the system of products and services covering a full life cycle.

The Fundamental Principle of Corporate Growth

When people talk about innovation, the most eye-catching figure is definitely the “Real Life Iron Man” Elon Musk. Musk’s spirit of innovation was seen in many different fields and industries, and he has launched absolutely disruptive innovative products such as Tesla and SpaceX Dragon. In his well-known interview by TED, Musk claimed that his go-to thinking pattern was “First Principle Thinking”, which originated from the ancient Greek philosopher Aristotle, who defined a first principle as “the first basis from which a thing is known”. A first principle is also defined as “a basic proposition or assumption that could not be deduced from any other proposition or assumption”. For entrepreneurs, whether they aspire to live up to their own ambition or undertake more social responsibilities, the deepest impulse in their vessels is definitely growing their enterprises larger and stronger. What does it take for enterprises to keep up with epochal development and maintain an evergreen status? Referring to the “First Principles”, I believe that there are four basic principles for enterprises to grow bigger and stronger, namely, “innovation, compound interest, chain operation and leverage”. An enterprise may not even need all four of them to grow larger and stronger. The life insurance industry happens to have them all, and the brand-new business model created by Taikang’s elderly care revolution is a perfect example. This business model provides an affordable yet high quality elderly care and brings benefits to clients and enterprises.

Innovation is an eternal driving force for corporate development. It is also a first principle for corporate growth. Innovation is taking the right actions based on insights of future trends, and it requires continuous efforts. Any industry, any business, and any enterprise, whether in traditional industries or of new economic forms, can only achieve continuous growth by forging its core competitiveness from constant innovation. “The Second Curve” is a classic theory often taught in innovation-related courses in business schools. If an enterprise can find a Second Curve that leads to a second take-off while its First Curve (the main business) is still moving upward and achieve growth of the Second Curve before its First Curve peaks, early resource inputs for the Second Curve will be countered, and the enterprise can achieve sustainable and perpetual growth. Bill Gates has a resonating theory that entrepreneurs should never stop looking for a second profit pool. Steve Jobs was also a master of the Second Curve Theory. When Apple launched Macintosh and achieved a huge success, Jobs had already been planning to introduce the music player iPod and enter the commercial music field. After iPod dominated the market, he turned to the design of the iPhone, which was followed by the iPad. Job’s new curves always originated from the existing ones, but they all have very different features. Taikang demonstrated the same logical rhythm on its journey of innovation, adhered to long-term development and avoided making blind actions. Taikang had very similar experiences in innovation as Apple: it started from traditional life insurance, then its innovation expanded to health insurance, pension, Internet insurance, asset management and other insurance fields to elderly care and health care industries. These business decisions may

seem random, but they are actually well arranged and logically interconnected: all of Taikang's businesses are deep digging and expanding the life insurance industrial chain. Each of Taikang's new curves revolves around longevity, health and wealth needs in a full life cycle. Taikang's system of products and services directly interfaces with the government, enterprises and individuals and forms a strong synergistic effect. Fairly speaking, not all innovations are drastic and disruptive, especially epochal and revolutionary innovations: they are breakthroughs made out of long-term accumulation.

Compound interest, known as the "Eighth Wonder of the World", is the fruit of long-termism. It is an exponential method of growth. When quantitative changes are accumulated to a threshold, a qualitative leap will appear. The longer the investment period, the greater the compound interest earned. This is why life insurance can create interests for all three parties involved—clients, companies and agents. I've made a metaphor that there will be appearance of compound interest within a 30-year term, a "blossom" of compound interest within a 50-year term, and "Godly miracles" of compound interest within a 70-year term. The importance of compound interest in pension funding has been fully elaborated in previous chapters: investment of pension funds made as early as possible will accumulate wealth exponentially, thus solving people's problems of having insufficient funds for elderly care and medical care in a 100-year-old life. Through longer-term fund accumulation and the amplification of compound interest, Taikang's Happiness Guide provides our clients with the guarantee of a healthy longevity with the support of sufficient wealth.

Chains are a fast way of business expansion and growth and are also the key to scaling up for enterprises. The most well-known example of chains is probably the McDonald's. In 1955, Ray Kroc spent 2.7 million US dollars purchasing seven McDonald's chain restaurants and their names. Now, McDonald's has become the world's largest food company, and its chain restaurants can be seen almost everywhere in the world. The net profit of McDonald's reached six billion US dollars in 2019. The dominant reason for the success of a large chain such as McDonald's is that it captured a huge market through high-standard management of products and services, cost control, fostering a good reputation, building a good corporate image and enhancing operation efficiency. Before the emergence of online sales platforms, traditional enterprises expanded their customer base by establishing chain stores, branches and subsidiaries, promoting sales of products and services, and increasing the market influence of their brands. In fact, Internet companies also establish branches in different regions for localized operation in an effort to increase their penetration rate in local markets. Their approach could also be considered a way of developing chains. In addition to market expansion, a more important role of chains is to reduce costs through intensive supply chain procurement. In general, chains require a management system of very high standards and excellent management capabilities. Taikang is also trying to reduce its operational and management costs of the longevity communities by implementing chain operations. Taikang has been improving its management system and enhancing its management capabilities over the years, and now they can be shared and refined through continuous replication, enabling us to offer our clients high-quality eldercare in a timely manner.

Leverage, in its nature, is management in debt. Leverage gives a full play to capital. Like chains, leverage is also one of the ways for enterprises to rapidly expand in size and presence. Generally, the debt capacity of an enterprise represents its power or development potential. Banks, real estate and life insurance companies all operate in debt, and they fall naturally under the same category of the leverage sector. The liabilities of life insurance companies are long-term and stable, which presents unique advantages. However, leverage is a double-edged sword. The risk of using leverage for fast expansion is the highest of all: it could bring financial crisis and bankrupt entities. Therefore, enterprises must control their leverage carefully in development. Enterprises should leverage meaningful causes to improve people's livelihood. Taikang invested a part of its insurance funds in building high-quality longevity communities, which changed the liability end and formed a long-term annuity product, the Happiness Guide. It has extended not only the term of the liability end but also that of the asset end. By making full use of the leverage effect of insurance funds, Taikang is able to better meet the needs of clients in a full life cycle and serve Chinese people's livelihood more comprehensively, setting a true example of "from the people and for the people".

Extending the Value Chain of the Corporate Plan

A successful business model not only maximizes the interests of shareholders but also benefits clients, the industry and even the progress of the whole society.

From the clients' point of view, Taikang is striving to change their lifestyles and their views on life and death by providing comprehensive full-life-cycle solutions for them to meet the challenges in the Era of Longevity. In a traditional way of thinking, eldercare means passive acceptance, and "care" implies the need to be taken care of, and all seniors are considered to be vulnerable as a group. Under the influence of such "traditional thinking", society has not been doing well enough to take older people's real needs into account: we rarely see infrastructure or services designed to be senior-friendly; for example, swimming pools in the city seldom open to people over 70 years old, and many travel agencies require that tourists over 70 years old be accompanied by their family members. Products and services in the elderly market can only meet their basic needs for clothing, food, housing and transportation, while some functional products are even harmful to their dignity. A US bestseller, *The Longevity Economy*, pointed out that canned foods for the elderly produced by some US companies were widely unpopular, and the clumsily designed hearing aids were never accepted by the market because the designs of these products were so outdated that people would know at a glance that they were "for old people only". Instead of accepting, senior citizens refuse to use these "old people products" to avoid embarrassment and humiliation in public. In contrast, presbyopic glasses designed to look similar to regular myopic glasses are very well accepted among elderly individuals. In fact, seniors today are healthier and more energetic than older people at any time in history, and they will live in good health energetically for a much longer time. For many seniors, the sixties and seventies are definitely the prime of their lives as their wealth, resources, wisdom and freedom all peak at this age, and they deserve to have dreams again, create value and obtain spiritual satisfaction.

The idea of enjoying old age advocated by Taikang represents a different attitude toward life, and it is an expression of active choice and subjective initiative. Everyone is entitled to enjoy old age. People should be able to make important decisions for themselves rather than depending on others. In our longevity communities, residents share their life experiences, redefine dimensions of happiness, exert their intelligence and create new value for society. Different from traditional nursing homes, Taikang longevity communities are a small society designed for elderly individuals, where every resident is a “new family member” of Taikang Community. While maintaining their own family relations, Taikang Community residents can take part in activities and communicate with their new “family members”, enjoy their life at an old age, and add value to their longevity. Residents in Taikang longevity communities are a new type of residents, and with their help, the communities are becoming pilots of the longevity economy: the longevity communities and their residents empower and inspire each other, educating the whole society to re-understand the needs and value of elderly individuals. The number of Taikang Community residents is expected to grow to 50,000–100,000 after ten years. At that time, we will be working with our residents to develop programs that offer more quality experiences of longevity. Through time banks, seminars, workshops, remote online education, assistance in the operation of owned media accounts and building expert platforms, we will help our residents continue to be productive using their knowledge and experience they have acquired and accumulated in a lifetime to keep creating wealth for society. A “Third Demographic Dividend” starring senior citizens will come into being. The value of life will be explored and enriched in a longevity economy.

From the perspective of the industry, Taikang have changed the development model of the traditional life insurance industry and led its transformation. Global experience shows that the life insurance industry in mature Western markets has encountered a bottleneck. In the US, since the mid-twentieth century, trends that adversely affected traditional life insurance, such as prolonged life expectancy and the prosperity of alternative products, have begun to appear. US life insurance companies then turned to selling annuities to rich people but lost their health insurance market share. Meanwhile, asset management companies and mutual funds emerged and snatched the market share of middle-class savings, which was originally the safety net for the life insurance business. The life insurance industry has been on a decline since then. In 2020, the premium income of traditional life insurance products in the US was over 170 billion US dollars, accounting for only 26% of the insurance industry, while the same figure was 76% in the 1950s. The premium of annuities, accident insurance and health insurance continued to increase and accounted for 43% and 31%, respectively, of the total premium of the industry in 2020, making them the major products in the business. However, most accident insurance and health insurance products are sold by professional health insurance companies, and those sold by life insurance companies account for only a very small portion of the market share. In the pension market, life insurance companies are performing similarly and cannot rock the dominating position of professional institutions such as mutual fund companies. In China, the growth of traditional life insurance products has stagnated in recent years, and the growth of the life insurance industry driven

by health insurance products has also slowed down. However, the core needs of clients have not changed, nor have people's primary demands for managing risks and planning future life through insurance. More importantly, people's real medical needs and elderly care needs still have to be met by real entities. Therefore, in the face of challenges, life insurance companies must fully understand and focus on the changes in the demands of the middle class, make early deployment of medical care entities, and take initiative to integrate insurance coverage needs with health and elderly care services provided by real entities.

Compared with other types of business, commercial insurance companies have unique advantages in building an industrial system in the Era of Longevity. Insurance falls under the financial service industry and more so the people's livelihood industry. Insurance entities truly hope that people can live a long and healthy life, and that they will take initiative to obtain benefits and avoid harm more than any other business entities in any other industry. Therefore, the insurance industry has a natural connection with the elderly care and health care industries. In the Era of Longevity, commercial insurance companies are not only product providers who help individuals and families accumulate funds for health care and elderly care. They are also major participants in the financing of the government's three-pillar social security system, providers of solution packages of medical care and welfare for corporates, and powerful facilitators of innovation and development in medical care, elderly care and health service industries. The Taikang Plan has not only made innovations to products, clients, teams and sales but also accomplished breakthroughs in the industrial chain and created an innovative business model. Through these efforts, we hope to contribute to the development of the global insurance industry. It is gratifying that an increasing number of Chinese life insurance companies are beginning to deploy services in healthcare and elderly care facilities to integrate insurance coverage needs with health care and elderly care services. This will prompt China's life insurance industry to transform along its own development course, better concentrate industrial forces and play a greater role in the Era of Longevity.

From the perspective of society, through innovation, Taikang is calling for more companies to join in responding to and addressing the challenges of longevity. Longevity issues are key matters that have a great impact on the future development of human beings. Ensuing the Era of Longevity, the Era of Health and Wealth will affect not only the elderly but also everyone's life planning of their entire life. How to better cope with the challenges raised by this era is an issue that individuals, governments and enterprises must all consider. Traditionally, business operates for profit, and very few people resort to business for solutions to social problems. I beg to differ as an entrepreneur myself. In essence, the crux of solving social problems lies in how to mobilize social wealth as much as possible and how to match resources more effectively. Business is one of the creators of social wealth, and commercial enterprises pursue the optimal allocation of resources in a market-oriented way. An enterprise with correct values should naturally assume the responsibility of solving social problems. The current elderly care market in China is a diversified market, where as much as 90% of elderly care is home-based care. Community elderly care and institutional elderly care occupy only a small portion of the market. Although

institutional elderly care is not the dominant form, Taikang managed to encourage and guide the elderly to play a valuable role and change people's ideas of the traditional "old age" and nursing homes. It was done by providing quality elderly care services through our own facilities in combination with insurance. The social value and innovative connotation contained in such transformation are vivid footnotes to the longevity economy and have far-reaching significance.

I believe that the Taikang Plan is a more optimized approach. It provides clients with funding and services by marketized means to meet people's demands for elder-care and healthcare in a full life cycle in the Era of Longevity. Specifically, a more optimized approach of funding means that clients can, through professional institutions such as us, make plans of their wealth in advance and manage their wealth in a full life cycle for maximum compound interest through long-term value investment. By entrusting professional and authoritative institutions, the elderly can enjoy various high-quality health care and elderly care services, avoid loss of wealth or dignity, and gain assurance and peace of mind. A more optimized approach of services refers to the Big Health ecology created by Taikang, which incorporates a full-ranged layout of medical care, elderly care, rehabilitation and hospice care facilities, providing clients with our "From Cradle to Heaven" product portfolio to meet their needs. The synergy between medical care, elderly care, rehabilitation and end-of-life care and services, in combination with the connection between payment and service, has reduced costs all-round and realized convenience and benefits. That is the charm of the Taikang Plan and an outstanding contribution to human beings in the Era of Longevity. Through this optimized approach of financing and service, we have truly realized the ideal of serving the people wholeheartedly in a market economy, ensuring our seniors enjoy elderly care, medical care, happiness and a sense of contribution.

The various problems in the Era of Longevity are similar to a "Gray Rhino": they are the challenges the society has to face but also opportunities for enterprises to innovate their business models. Only companies with the ambition of solving social problems will strive to find the best solutions by mobilizing resources as much as possible and making continuous innovation. Throughout human history, all civilizations, Western or Oriental, have been pursuing longevity, health and wealth. People have also been thinking about what the ultimate purpose of human society truly is. I believe it is the harmony of society, the happiness of families and the health of individuals. Taikang's business is closely related to people's lives. Therefore, Taikang made a determined transition from insurance to health care and elderly care and then to the Big Health and eventually came up with the Taikang Plan for the Era of Longevity. Taikang is a forerunner in China's elderly care revolution and a committed practitioner of the Era of Longevity theory. The essence of the Taikang Plan is to initiate an elderly care revolution and change people's attitudes toward life and lifestyles. In the future, the longevity economy will become one of the mainstream forms of the economy, and we believe Taikang will be one of the most active enterprises in the Era of Longevity. We hope that the Taikang Plan will be the starting point for enterprises to explore market-oriented solutions in the Era of

Longevity, that it will lead and inspire more valuable innovation and experiments, that it will stimulate the growth of longevity economy with insightful entrepreneurs of all industries, and that we can join the great cause of the building of a harmonious longevity society.

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Chapter 7

Building a Harmonious Longevity Society



In this book, I regard the Era of Longevity as a “New Normal” that human beings are about to enter, which will press the start button of the Era of Health and the Era of Wealth. The growing needs for health and wealth generated by a prolonged life expectancy will endow the Big Health Industry and wealth management industry with great development opportunities. At the same time, the Era of Longevity and the era of data overlap with each other, and the reformed production factors will bring new ways of organizing production and boosting the development of the longevity economy. The explosion of the longevity economy will bring infinite possibilities to the life of elderly individuals: the potential of their life will be fully explored, the second curve of their life will show unlimited charm, and their life will overflow with glammers.

The bright future of the Era of Longevity may sound exciting, but uncertainties are filled between the realities and our ideal. Similar to the Age of Exploration, when explorers dreamed of discovering a new continent, the reality was the mysterious and unpredictable ocean in front of them. As mentioned in previous chapters, an increased life expectancy does not simply equal a prolonged length of time that a person could live. It also brings risks: the rising cost of support for families and society, funding difficulties in elderly care and medical care, the lack of driving force for economic growth, etc. How will individuals and families bear such a heavy burden if they are not well prepared in advance? How will the government solve the plight if it does not take early caution? How can enterprises maintain and enhance core competitiveness and value if they do not react in a timely manner? These are all serious tests placed in front of individuals, families, governments and enterprises in the future longevity society.

The conflict between the ideal and reality often stimulates and motivates human beings to strive and innovate. As the Era of Longevity draws nearer, our cravings for longevity, health and wealth grow even stronger. Toward this beautiful vision, embracing the Era of Longevity is a natural choice for all social members, including individuals, families, governments and enterprises. Facing various challenges, we should be well prepared to update old ideas of population aging that are passed on

from the industrial age. At the same time, we should embrace our new roles in the Era of Longevity, undertake new missions as members of a longevity society in a longevity economy mindset. As experimental practices and pilots of the longevity economy are further updated and expanded, we will witness an era of longevity of healthy individuals, happy families and a harmonious society together.

7.1 At the Crossroads of the Era of Longevity

Gray Rhinos in the Era of Longevity

A “gray rhino” is a highly probable, high-impact yet neglected threat. People may be well aware of its existence, yet it is ignored anyway. The challenges in the Era of Longevity are similar to gray rhinos: they are easily neglected by individuals, families, governments and enterprises. Only by early identification and taking early precautions will we be able to resolve these potential crises.

Challenges to Individuals and Families

The primary challenge to individuals and families is insufficient wealth reserves. In 2018, Japanese TV network NHK’s special programs recording team made a documentary named *Bankrupted after Getting Old*. US writer Ted C. Fishman also wrote a book entitled *Shock of Gray*. Both the documentary and the book made descriptions of old people caught in old-age poverty, instead of aging in a rich or graceful manner. Old-age poverty impacted their housing, living, medical care, interpersonal relationships and more. “Bankrupted after Getting Old” or “Old and Broke” may sound over exaggerating, but they are true potential threats hanging above our heads and our family.

In Japan, where the problem of population aging is the most severe worldwide, cases of “Bankrupted after Getting Old” or “Old and Broke” are often seen and growing in number. Over the past few decades, the age structure of Japan’s population has evolved into a reversed pyramid shape. The shrinking working population and growing aged population led to an imbalance in pension income and expenditure, and pension benefits continued to decline. Although the Japanese government provides a national medical insurance system and a long-term care insurance system, older people who rely completely on pension cannot withstand too much disturbance or trouble. Any illness or injury can trigger a chain reaction that leads to heavy debt or even bankruptcy.

Even in the US, where the population is relatively young, the phenomenon of “Bankrupted after Getting Old” is hardly surprising. In recent years, medical expenses in the US continue to grow rapidly, as do the out-of-pocket medical expenses that older people have to pay. After paying huge medical expenses, some older people even fell into poverty and became low-income people. In addition to the increasing medical costs, US people’s low savings rate is another important reason for people being “Old and Broke”. If sufficient wealth reserve is not made when a person is working, he or she is more likely to experience financial difficulty in the later years.

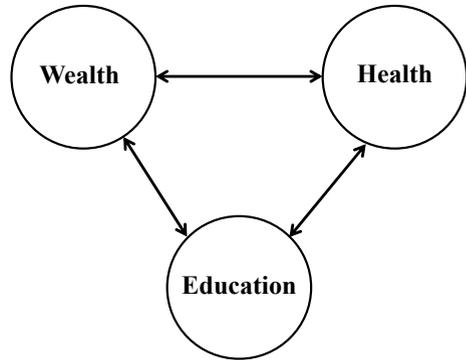
With the aggravated population aging, older people in China are also facing the threat of being “Old and Broke”. Unlike developed countries such as Japan and the US, which have relatively complete social security systems for older people, China’s social security for the elderly is still weak due to a relatively low level of social and economic development. Although China’s current medical expenditure is lower than that of developed countries, its medical care resources are still insufficient, and there are many people who are in poverty or have fallen back to poverty due to illness. Another contributor to the threat of being “Old and Broke” is the downsizing of families: there are more nuclear families or even mini-sized families. Data from the Seventh National Population Census in 2020 showed that the average number of family members per household in China was only 2.62, which is approximately one-sixth lower than that 10 years ago. With the downsizing of families, “relying on children for eldercare” is no longer the mainstream form of eldercare. The resources within families to support older people became scarce, and community elderly care and institutional elderly care, which were once “alternative options”, became necessary. At present, China’s elderly care service is in a pattern of “9073”, which means approximately 90% of the elderly stay at home, 7% rely on community elderly care, and 3% live in elderly care facilities. The latest population census data definitely sent out an alarm for us, and the “9073” pattern may change in the future. Therefore, it is imperative that we make preparations in advance for choosing a form of elderly care and financial planning to avoid being “Old and Broke”.

In addition to financial risks in old age, health risks are also serious challenges to people in the Era of Longevity. Similar to the trajectory of wealth accumulation, health also needs to be managed on a long-term basis. People are investing in health to increase our health capital in every stage of life, but health deteriorates with aging. An unhealthy lifestyle at a young age can lead to irreversible clinical consequences in the long term. The most common examples are smoking, excessive drinking, lack of physical exercise and irregular diets. The impact of these behaviors on health is often highly “insidious”: the harm of these bad habits is not obvious when a person is young and in good health, but with age, they may cause serious and irreversible damage to the body, resulting in poor health in old age.

Without sufficient preparation, the Era of Longevity will have a shocking impact on the health and wealth of individuals and families. Such an impact may even last for several generations, leading to solidification of the social class. The reason is obvious: when older people in a family are poor or ill, their children have to spend more time, energy and money to take care of the seniors at the cost of their own wealth and health capital, which will eventually create a vicious cycle. The inequalities caused by poverty and diseases will be passed on from one generation to the next.

It is worth noting that in the Era of Longevity, situations may vary greatly among different families, with the difference in education level playing a critical role. In the “Golden Triangle” of education, wealth and health (see Fig. 7.1), education is the most important determining factor of health and income. Research in health economics reveals that people with higher education levels are more efficient in healthy production and can achieve better health levels with the same amount of

Fig. 7.1 The interplay between education, wealth and health



time and resources. People with higher education levels could also choose a better career, which brings them higher income.

Differences in education level will lead to different levels of health and wealth in old age, resulting in widely varying personal and family burdens. Among older people of the same generation, those with a higher education level have long been engaged in jobs with higher returns on human capital and have a healthier lifestyle; therefore, they are able to maintain a higher level of wealth and better health. In the longevity economy, they are able to continue working in various forms and earn income even after retirement. The occurrence of degenerative changes in them is also delayed. Thus, it will be a long time before they need to be taken care of by their children or families. In contrast, older people with a lower education level often engaged in relatively heavy physical labor or high-risk occupations when they were young. When they grow old, their physical condition may not be as good, and their needs for caretaking, medical care and pension may appear earlier. Moreover, because of their relatively low education level, the income they earned from their jobs was lower, and they would have less savings when they retired. The insufficient reserve of health and wealth makes them heavily dependent on the support from their children, which will become a heavy burden to the family. To provide the necessary caretaking, their children have to spend more energy and resources, which could have otherwise been spent on their own education and work. Their children's wealth would be affected, and when they grow old themselves, their own children will have to bear the same heavy family burdens as they are now.

In summary, every person and every family are being tested by the challenges of the new era. The challenges range from insufficient wealth reserves to being “Old and Broke”, from out-of-control health risks to being “old and ill”, and from differences in education level to solidification of the social class. To remove these barriers on our way to the Era of Longevity, we need to make early preparations so that we can face them calmly and move forward steadily.

Challenges to the Government

While impacting the health and wealth of families and individuals, the era of longevity also poses serious challenges to the sustainability of the public finance

system. In the organizational structure of a society, the government plays the role of a wealth redistributor to a large extent, obtaining financial revenues by collecting taxes from the most productive sectors and allocating the revenues to public services such as education, medical care and eldercare. In the industrial age, the population age structure was pyramid-shaped: most of the population was providing labor in various production sectors, and only a small portion of the population needed expenditures for education and medical care. Governments back then had sufficient fiscal revenues and little pressure on fiscal expenditure; therefore, sufficient resources could be invested in education and medical care. Into the Era of Longevity, as the population gradually shifts from the production sector to the consumption sector, the population that could generate tax revenues decreases significantly, while the population relying on governmental expenditure increases, putting great pressure on fiscal balance. The fact that Japan tightened its payment of pension benefits is a reflection of how pronounced the problem has become. At the beginning of this century, China started a universal medical insurance system featuring “wide coverage and low benefits”. From 2018 to 2020, although the total revenue of medical insurance funds exceeded the total expenditure, the increase in revenue was much lower than that in expenditure. According to the estimates of IQVIA, by approximately 2030, China’s annual income of the medical insurance fund will be lower than the annual expenditure. In some provinces, the fund of Basic Endowment Insurance for the Urban Working Group has failed to make ends meet.

The increased proportion of the old population raises the proportion of the government’s fiscal expenditure spent on medical care and eldercare, which will inevitably reduce the proportion of fiscal expenditure spent on other public utilities, especially education and other sectors that can generate future productivity. The US is a typical example. In 2016, the federal budget spent 116 billion US dollars on education and vocational training and 641 billion US dollars on medical care for elderly individuals. Since the increase in medical care and nursing spending for the elderly was not curbed effectively, support for young people continued to shrink, which caused general dissatisfaction across society. That was also one of the reasons that the anti-establishment politician Donald Trump was elected president in 2016.

The era of longevity not only brings the risks of imbalanced public finance, squeezing investment in public sectors such as education and jeopardizing the potential of long-term economic growth but also poses a threat to governmental credibility. An alarm for the world is the bankrupted credibility of the Greek government. Greece was a country that used to have the most generous pension benefits in the world. By the end of 2009, the Greek government announced a fiscal deficit, which triggered the Greek debt crisis. The once high pension benefits were wiped from existence. Old people flocked to banks to withdraw their pension benefits, and some older people sat on the ground and cried for not getting them. To solve the debt crisis, the Greek government planned to cut spending, and their first action was to reduce pension benefits and raise the eligibility threshold for receiving them, which caused the elderly to go on marching protests on streets. Young people in Greece lost their confidence in future public pension benefits because of the government’s tarnished

credibility and were not motivated enough to participate in the public pension plan, which made the operation of the public pension plan even more difficult.

For policymakers and public managers, national financial pressure and impaired governmental credibility are serious risk factors. Therefore, it is necessary that we draw experience from the precedence and take precautions to avoid future impacts caused by a lack of sufficient preparations.

The Challenges Faced by Enterprises

In the future, demographic changes will have a significant impact on a series of corporate management actions. Baby boomers provided abundant labor and purchasing power, yet the arrival of the Era of Longevity means that the demographic dividend will gradually disappear. If enterprises choose to neglect the upcoming demographic changes, they will soon fail and cease to exist.

Real estate is one classic example of an industry that is sensitive to the population age structure. We mentioned the example of Japan's real estate bubbles in Chap. 5: a series of demographic factors led to the protracted slide of housing prices in Japan. Despite occasional fluctuations, the oversupply was never fundamentally changed, and almost every market recovery was short-lived. Labor-intensive industries are also sensitive to demographic dividends. In China, the processing industry once prospered along the southeast coast. However, they are now having difficulties recruiting workers due to the lack of labor.

The arrival of the Era of Longevity will bring about changes in production factors, consumer demands and industrial structures as well. Enterprises need to gain insight into those changes and adjust themselves in the business environment, especially those that have formed a huge organization and a stable corporate culture since the industrial age. As discussed in previous chapters, in the face of emerging technologies such as the Internet and mobile networks, the obstinate persistence to the Japanese spirit of craftsmanship and conservative character cost the country many commercial opportunities. If enterprises don't carry out internal reforms, they may become stiff and rigid in their business inertia and eventually become an extinct species in the Era of Longevity.

The insurance industry is the most typical example. Judging from the experience of Japan, Europe and the US, with the emergence of demographic structural problems, interest rates and government bond yields would be maintained at very low levels for a long time. For example, the interest rates of Japan's monetary market dropped nearly to zero after 1995 and became negative in 2015, and even the yield of long-term government bonds fell below zero. The declined interest rates will exacerbate the market condition for financial institutions, including insurance companies. For insurance companies, a prolonged period of low interest rates is a risk of losing interest margin. However, to maintain their market share, Japanese insurance companies kept launching products with high predetermined interest rates extensively even after the economic bubble burst, causing the entire industry to suffer serious loss from the difference of interest rates after the 1990s. Their actions directly led to the bankruptcy of 7 life insurance companies and 2 property insurance companies from 1997 to 2001. At present, most insurance companies in Japan are still sticking to

their traditional business model. They failed to explore systematically beyond their traditional business, and missed out on the opportunities for scaling up when elderly care and health care needs appeared around insurance products. Today, insurance companies are rarely seen among the top ten largest companies in Japan, which is a stark contrast with what I saw in Japan 30 years ago.

Clearly, the disappearance of the industrial age's dividends and faltering internal reforms are challenging to the survival and development of enterprises. However, these challenges are also urging enterprises to enter the Era of Longevity with an innovative attitude.

New Opportunities in the Era of Longevity

The Era of Longevity has begun, and it might be the ultimate challenge to human society. However, challenges always come with opportunities. If we can successfully seize these opportunities, we may be able to turn this "Gray Rhino" into a unicorn.

With the advent of the Era of Longevity, industries such as the Big Health Industry are becoming heated sectors for reforms. The proportion of the old population will continue to grow in the Era of Longevity. From the perspective of the demand side alone, older people will have an increasing say in economic activities, and older people's consumption will be an important component of the overall social consumption. For example, the average annual sales growth of adult diapers has been higher than that of baby diapers in recent years in Japan, the US and China. Signs of the Era of Longevity are increasingly seen in consumer goods.

China's economy is moving from industrialization to post-industrialization. The former addresses the needs of food, clothing, housing and transportation, while the latter seeks the development of service industries that meet people's demands for entertainment, education, medical care and eldercare. Those new needs are the core driving forces for China's next round of economic growth. Driven by a huge demand for health, the Big Health Industry will be colossal in the future and run through a person's entire life. It provides healthy life solutions in a full life cycle, harbors huge business potential and will become one of the fastest growing industries in the future. Technology tycoons such as Apple and Google have entered the health industry one after another to plan for the future. There are many tracks in the Big Health Industry, and the key to grasping the opportunities is to become leaders in subdivided tracks.

At the same time, with the extensive application of technology and data, the Third Demographic Dividend was released. From the Internet to the IoT and AI, technological advances have extended the functions of human organs to a certain extent, enabling us to see more content, understand more languages, and have more accurate perception and deeper cognition. As these technologies are applied in the Era of Longevity, we expect them to effectively alleviate the problem of weakened productivity among older people and inject new vitality into the group. Taking AI and small robots as an example, elderly care service robots offer not only physical assistance by helping old people lift heavy objects easily but also social assistance by solving communication problems. "Intelligent Elderly care" has gradually entered the sight of older people. Intelligent hardware equipment and software applications provide all-around digital services 24×7 , such as early warning, time alarm reminders, and

instant interaction, to ensure older people live in a safe and good environment. China has recognized the importance of the application of seniors-friendly technologies. To ensure that older people are able to use, know how to use, feel safe to use and want to use them, China's General Office of the State Council issued the *Implementation Plan on Effectively Solving the Difficulties of the Elderly Using Smart Technology* in 2020. In April 2021, China's Ministry of Industry and Information Technology (MIIT) issued the *General Design Specifications for Elder-friendly Internet Websites* and the *General Design Specifications for Elder-friendly Mobile Internet Applications (APPs)*. It is obvious that scientific and technological progress will run along with the Era of Longevity.

A massive amount of data is the foundation for application of technologies such as the Internet, the IoT and AI, and "data" has become another label of our era. It harbors great business potential and opportunities for a longevity society. Big data can better read the needs of seniors in breadth and depth, and seniors could be empowered precisely through insights developed out of data. Future social development may be the superposition of the era of data and the era of longevity. The supply structure of economic factors will change accordingly, and new lifestyles and production methods will follow. Future business opportunities may transcend our existing cognitive and normative boundaries, such as the creation of new consumption patterns and the emergence of new industrial structures. The construction of smart cities in the future will also transform the existing infrastructure and better serve the demands of a longevity society.

In an era of longevity and data, the Third Demographic Dividend is expected to bring economic development as its predecessors did. The Third Demographic Dividend will center on the human capital of the senior population. The essence of the longevity economy is value recreation by elderly individuals. As pointed out in Chap. 5, senior citizens are not only key consumers but also important producers and innovators in the longevity economy. The era of data provided tools and platforms for the elderly to recreate value, and seniors are enabled to drive the longevity economy in a more vigorous direction from both the supply end and demand end. As pilots of the longevity economy, Taikang's longevity communities are blossoming and growing fruits. It is indeed a field of hope.

To cope with the era of longevity, governments have been loosening limits on policy and institutional levels to create opportunities for innovation. Many countries are formulating favorable policies to promote the development and progress of science, technology, medical care and elderly care industries. The various policies established by governments can be categorized into three types: the first type is population policy, which aims to improve the age structure of the population through measures to encourage reproduction and immigration; the second type focuses on addressing the issues of insufficient social and personal wealth caused by population aging, including pension reform, employment incentives and other measures; the third type focuses on addressing the increasing demands for caretaking and medical care brought about by population aging and the insufficient social and individual countermeasures, including medical and health reforms and the combination of healthcare and eldercare.

Japan is the first country in the world to face the problem of population aging. As its population aging exacerbated, the Japanese government adopted a series of reform measures, including developing the nursing business, offering medical and nursing training programs to train more doctors and nurses, and establishing nursing and medical care systems. On the one hand, Japan encourages the application of science and technology to improve the quality of life for the elderly and tries to integrate science and technology into the overall solution to the aging society. On the other hand, it also encourages science and technology enterprises to develop products suitable for elderly individuals, integrate advanced technologies such as IoT into their daily life, use robots for simple needs for caretaking, build online platforms for tele-consultation to solve difficulties in going to see a doctor, etc. By creating a senior-friendly living environment with technology, the Japanese government tried to meet the individualized, diversified and multileveled needs of elderly individuals.

Coping policies by governments in Europe put more focus on social policies. Reforming the retirement system and raising the eligibility threshold for pension benefits are favored by many European countries. In the meantime, these countries are also actively adjusting their policies to encourage the postretirement employment of elderly individuals, including promulgating laws and policies to prohibit discrimination against the elderly in employment, organizing training programs to improve the capabilities of elderly individuals, and designing a stepped pension benefit mechanism to encourage people to work longer. Many European countries have also increased public financial investment to improve infrastructure to create a better living environment for the elderly and encourage them to return to social life in different ways.

The Chinese government has predicted the challenges brought about by an aged population long ago. Maintaining the health of the elderly is an important component of the *Healthy China 2030 Blueprint*. The *Outline of the People's Republic of China 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035* was released in March 2021. It clearly proposed that China will improve the elderly care service system, strengthen health services for elderly individuals, and further promote the integration of elderly care and health care. The active response to population aging has risen to a national strategic level in China. The two national strategies, “Healthy China” and “Actively Responding to Population Aging”, will be the foundation of building a comprehensive system of policy support with unprecedented effort.

7.2 Individual, Government and Corporate Plans in the Era of Longevity

At present, we are standing at the crossroads that none of our ancestors has been to. Along the paths lying before us, it might be thorns, and it may also be flowers. However, the wheel of history never stops at a point, and the human society must strive

to find our way out. An ancient Chinese saying goes “preparedness ensures success and unpreparedness spells failure”. In this chapter, I elaborated on the corporate plan Taikang put forward to cope with the Era of Longevity. However, under a broader framework, individuals, families, governments and enterprises should work together to come up with solutions, maximize their respective advantages, cooperate with each other, welcome opportunities and challenges with a systematic methodology, and eventually succeed in jointly building a longevity society. Here, people are in good health, families live happily together, and society is in harmony. Toward this vision, let us envisage what elements the plan of a longevity society should entail.

Individuals and Families: Prepare for Both Health and Wealth

As the British scholar Linda Gratton described in her book *The 100-Year Life*, in the Era of Longevity, everyone will have a multistage life, and people will choose different lifestyles in different stages. Everyone will need to rethink, identify and discover our value at each stage and adjust our life strategies to deal changes.

First, individuals and families need to put more focus on the accumulation of health and wealth and consider seeking assistance from professional institutions as needed. The era of longevity comes with the era of health and wealth. How should we prolong life with quality? How can we reserve sufficient funds to maintain financial stability at each stage of life? These questions are the most urgent challenges to individuals and families. On the one hand, individuals will value their health more and try to stay healthy for as long as possible. In this regard, the development of life sciences and the transformation of medical models will help people better improve their own health. On the other hand, to cope with increased expenditure on medical care and eldercare, individuals and families will make more efforts to accumulate and manage wealth. People will be more motivated to increase their total wealth and prolong the lifespan of their wealth. The methods of wealth management will also be more diversified, and an increasing number of individuals and families will turn to professional institutions for comprehensive health and wealth management services.

Second, as the Era of Longevity and the era of data overlap, individuals and families will embrace technology and continue to create demand and supply. With the continuous development of digital and intelligent technology in the future, robots will be applied more widely. Some traditional physical work with low efficiency will be gradually replaced by machine work to free people from heavy physical labor and return them to brainwork. This creates good conditions for people to extend their working life and unleash productivity. In the Era of Longevity, a longer working life is likely to become inevitable. At that time, the methods and content of work will be very different from those in an industrial society. The method of work will be more digitalized and intelligent. Aging will not become an obstacle to people’s participation in labor, and the elderly can enter the labor market in more flexible ways, such as by imparting knowledge, experience and skills or even participating in the service business. The elderly will no longer be mere consumers as they always have been. They will participate more in production, play the roles of producers and innovators, and jointly drive economic growth and social progress on both the demand side and the supply side.

Third, the rising return on education will stimulate the accumulation of educational capital, and an increasing number of people will choose actively and willingly to live and learn. With prolonged life expectancy, the income term of education will also be prolonged. As the return rate per unit time spent on mental work rises, people will continue to accumulate human capital, and lifelong learning will become a new normal. Under the “education, working and retirement” three-stage life model in the industrial age, investment in education was mainly concentrated in the early phases of life. In the era of longevity, a person’s life is divided into multiple phases, and people’s strategies in learning and education will undergo major changes. There might be an increasing number of people who choose to return to their academic career after having worked for many years. There might also be people who take temporary jobs in the intervals of education to enrich their social experience and hone skills. The term “gap year”,¹ which was more commonly used among college students, may now be displayed throughout various stages of life in the Era of Longevity and will be endowed with new connotations. The accumulation of educational capital will run through a person’s entire life, and a learning-based life will reap the most dividends. Lifelong learning not only accumulates human capital but also enables people to maintain the ability of long-term learning. With the continuous progress of science and technology, the elderly will be “immigrants” into the field of new science and technology. Strong learning abilities will enable the elderly to better adapt to the advancement of science and technology, improve their adaptability to society, and ease the burden on their families and society. Lifelong learning will also grant people the possibility of mastering multiple skills at the same time and having a “Slash”² life of one’s own in the future.

The Government: Develop the Longevity Economy and Build a Society that is Fair and Elder-Friendly

In the Era of Longevity, with the pressure of public pension, medical resources and public finance, the government needs to make distinguished achievements rather than staying the “night keeper” for the traditional market economy. The government can make a positive contribution to industrial upgrading and restructuring. The longevity economy in the Era of Longevity cannot be formed overnight. It is the result of continuous upgrades and transformation of the existing economic models. The promotion and encouragement of the government are particularly important for corporate innovation during this process.

First, in response to industrial upgrading, the government can formulate policies to promote innovation through close interaction with the industry and rely on enterprises to upgrade technology and business models. Corporate innovation is the driving force

¹ Gap year, meaning a one-year gap, generally refers to a period of free time ranging from 3 to 12 months that Western young people spend before entering school or starting to work after graduation. During the gap year, they often experience a different way of life before entering the next stage of life.

² Slash refers to a group of people who are no longer satisfied with a single career but choose to have multiple careers and identities. Slash comes from the slash mark. These people will use slashes to distinguish their occupations in their self-introduction, for example John Doe, reporter/actor/photographer. “Slash” became their professional life pronoun.

of economic growth. It is also a booster to industrial upgrading and the growth of the longevity economy. In the era of longevity, enterprises need to adapt themselves to new demands and factoring structures, where the government can establish favorable policies to increase compatibility between the transformation of industrial structure and the era of longevity. For example, the government could encourage enterprises to employ seniors and provide conditions for the elderly to participate in economic activities and create social value. Japan became aware of this problem long ago, and in 2001, through the revision of the *Employment Measures Act*, a legal system was established to prohibit age discrimination in employment, as many European countries did. When people choose to begin a new career, the government can also provide some educational opportunities and basic benefits for reassurance. In key industries such as health care, elderly care and finance, the government should be responsible for maintaining a balance between regulation and innovation to enhance the capabilities of individuals, families and businesses to adapt to new challenges and opportunities in the Era of Longevity.

Favorable policies in elderly care and medical care on the supply side could also be the focal points for governments to reduce social costs and improve supply efficiency. For example, Japan promulgated *The Outline of Measures for a Longevity Society* in as early as 1986, the Gold Plan, i.e., *The Ten-Year Strategy for the Promotion of Health and Welfare for the Elderly* in 1989, and the New Gold Plan, i.e., *The New Ten-Year Strategy for the Promotion of Health and Welfare for the Elderly* in 1994, and *The Outline of Measures for an Aging Society* in 1995. Thanks to the government's early planning and actions, before the long-term care insurance system was implemented in Japan in 2000, Japan's elderly care industry had already grown to a considerable size. In China, there coexist both public and private in pension and medical care systems. If the same development space is guaranteed through policies and systems, such a mixture can significantly activate the market and drive the development of relevant industries.

Second, a longevity society must be an elder-friendly society. Governments need to promote the construction of elder-friendly infrastructure, which does not mean elder-exclusive but generally user-friendly. Elder-friendly facilities in many developed countries have been put in place over decades of urban construction. When we walk in the streets in European and US cities, we can see wheelchair lifts everywhere. As China is undergoing the fastest and most extensive urbanization in history, there are inevitable defects and hazards in the existing infrastructure: they are inconvenient for the elderly to live with and travel by. To solve this problem, we will need new designs for future infrastructure construction and transform the existing infrastructure to be elder-friendly. Thankfully, the Internet and digitization also help with elder friendliness. In the digital age, the elderly encounter the so-called digital gulf: while most people enjoy a smart and convenient life brought by technological innovation, a considerable number of seniors are confused and "trapped" by the Internet. We believe that the gulf is not a deliberate result of technology, and that human-computer interaction can be more convenient and user-friendly through continuous iteration of technology. The nature of the digital gulf is in fact the indifference to and even discrimination against the needs of elderly individuals. Therefore, to build

an elder-friendly society, the government needs to make efforts to change people's attitudes toward the elderly first.

Finally, the government can effectively promote equality in a longevity society through redistribution. However, the drawbacks of overly high welfare are noteworthy. The long-term population aging determines that relevant public policies should not be expedient but be made based on considerations of the long-term sustainable development of the economy and society. Financial and service support for the elderly should not be at the expense of increasing the burden on the younger population or depriving the benefits of future generations. The fruits of development should be shared by all social members. The recent viral Internet slang of "laying back" has long been reflected in Japanese society, and one of the contributors is that the country's social security policy pays more attention to the needs of the elderly and neglects the generations in other phases of life. The Japanese young people who are in need are not getting sufficient and desired support. In the long run, this may discourage young people from accumulating health, wealth and educational capital, which may even form a vicious circle and further reduce social vitality.

Governments around the world are taking action against the "Gray Rhino". However, it is also worth noting that the decision-making of some Western governments is prone to falling into deadlocks: their heavy reliance on an industrial path of development can easily lead to a high debt burden on public finance. We look forward to a proactive and capable government that can promote social equality while encouraging industrial development so that all members of the longevity society can join hands in creating a bright future.

Enterprises: Helping Solve Social Problems Through New Business Models

In the Era of Longevity, enterprises are not only producers of social wealth but also sources of innovative business models. In particular, key enterprises can offer solutions and manage to solve the many challenges brought by the longevity era. Various industries, including the Big Health Industry, will embrace major opportunities. Which enterprises will become leaders with the most core competitiveness and highest social value in the new era? The answer to that question would be those who can perform well in their core business track, put forward full-life-cycle solutions to economic and social issues, and satisfy people's longing for a better life.

In the new era, enterprises need to reconsider their strategic planning. For businesses, strategies are above everything else. The first step to a company's success is to find the correct positioning: what business does it do? Who are the potential clients? The answers to these questions are also the starting point of making long-term strategies for the company. Strategic planning of enterprises must be based on the country's economic development, of which the determining factor is "population for long term, structure for mid-term and macro economy for short-term".

"Population for long term" means that it is necessary to keep mindful of structural changes of the population and the changes in demands of the population. In the new era, the proportion of the elderly will remain above 25% for a long time, and their consumption will lead to major changes in the consumption pattern of the entire society. As the restructuring of society, economy and industries progresses,

people's rigid needs have shifted from food, clothing, housing and transportation to entertainment, education, medical care and eldercare. Among them, the latter three are the core needs of people in the Era of Longevity. "Structure for mid-term" means that we need to look for opportunities in the restructuring of society, economy and industries. "Macroeconomy for short-term" means that enterprises need to adjust their short-term goals according to changes in the macroeconomy, although such changes in the macroeconomy usually do not affect the positioning and long-term strategies of the enterprises.

For enterprises, the first and foremost strategy is to seize clients with the strongest potential consumption power and formulate strategies, deploy business and adjust products according to changes in clients' needs. As the new era approaches, enterprises should grasp the chance of entering fields such as health, medical care, elderly care and lifelong education. The more enterprises enter the same industry, the fiercer the competition will grow. However, this fierce competition will reduce the overall cost and better promote the overall social welfare level.

Second, enterprises will need to actively participate in ecology building. Only by establishing an ecological industrial system will enterprises be able to accommodate the diverse needs of customers in the Era of Longevity. Changes in individual needs and industrial structure in the new era will certainly affect every enterprise. A columnar age structure means that the population of each age group is evenly distributed, which will lead to a decrease in market concentration and a diversification of market demands. In this regard, building an ecological model has become an inevitable choice for corporate development. That is why the Era of Longevity is an era of ecology.

Corporate competition in the Era of Longevity is a competition between ecologies. Different from the agricultural age and the industrial age, which are dominated by hierarchical authoritative systems and the specialized competition model, respectively, the Internet era requires enterprises to reinforce their competitiveness by building ecologies. With the development of information technology and the ensuing demand upgrades and innovation attempts, old-fashioned large enterprises are likely to be sieged by smaller yet more sophisticated and more professional entities in subdivided fields. To meet future challenges, large enterprises need to unite with more small entities to form an ecology.

The era of longevity is also an era of sharing. A sharing mechanism could stimulate entrepreneurship, which will then improve the overall social efficiency. The emergence of the juristic person system in the main forms of share limited companies and limited liability companies has promoted social entrepreneurship and innovation. The emergence of the founder and the option system in the Internet age have further boosted economic prosperity. The partnership model, with a wider range of incentives than the former two systems, has a sharing mechanism that is more conducive to corporate development, social entrepreneurship and social innovation, thereby enhancing the overall social efficiency and the creation of social wealth. There are various forms of partnership. For example, the gig economy introduced in Chap. 5 is a people-oriented organizational model and way of working that created a "platform-to-individual" partnership model and sharing mechanism. The elderly can

act as partners of the platform and make the best use of their expertise and experience as online influencers or individual owned media loggers. Unlike this loosely coupled model, the business partner model is tightly coupled because business partners must identify with the organization's values and commit to practicing its principles and realizing its goals. Business partners are actually a team of entrepreneurs within enterprises. Taikang's health and wealth planners are such a team. While adapting to the development requirements of the new era, they are inspired to exert their creativity to share and promote entrepreneurship.

In addition, a multiphase life needs the support of employers. Enterprises' social responsibilities and obligations could be reflected in what they would provide for their employees: it could be a recruitment system free of age discrimination, a flexible corporate culture, an office with elder-friendly infrastructure, or an inclusive and tolerant cultural environment. For example, in 2019, the McDonald's restaurant chain cooperated with the American Association of Retired Persons (AARP). McDonald's not only provided 250,000 jobs for older people but also arranged flexible working hours based on biological rhythms of different age groups, especially respecting the choices of older employees who are more willing to work an early shift. As mentioned in Chap. 5, BMW in Germany transformed its production lines and created a suitable working environment so that older employees could continue to work. In addition to an elder-friendly workplace environment, many companies also advocate an inclusive culture that is friendly to older people. At ABB, a global leader in power and automation technology, at the age of 45, employees will be invited to a three-day seminar to discuss their career development and possible turning points, which gives them a chance to review their career choices, think about future development and prepare themselves for new platforms.

In the era of longevity, enterprises need to place greater emphasis on continuous innovation, which is the source of human progress. Every innovation in human history, whether it is in institution, theory, science, technology or business model, affects the progress of human society. As human history progresses, such an impact is becoming increasingly significant, which keeps changing the production model and lifestyle of human society. Institutional innovation builds basic frameworks of the organizational system of human society. Theoretical innovation explores the frontier of human cognition, which is the foundation of scientific and technological innovation. Technical innovation is an extension of scientific and technological innovation. Ultimately, the innovation of business models transforms technological breakthroughs into goods and services, making people's lives more convenient and affordable and gradually changing the lifestyle of human beings.

7.3 Taikang Plan's Chain Reaction in a Longevity Society

As a representative figure in actively responding to new challenges in the Era of Longevity, Taikang has launched a corporate plan based on long-term practical exploration and continuous innovation to cope with the new era. We believe that

the Taikang Plan is not only an innovation of business models but also one of elderly care and health financing models. We hope it will inspire theoretical innovations and expand the frontier of knowledge in practice.

By combining virtual insurance payments with real medical care, elderly care, rehabilitation and end-of life care and services that cover a person's full life cycle, the Taikang Plan launched a new series of products, developed a new client base, created a new occupation, invented a new sales model, attracted a new group of residents, and forged new funding channels designated for elderly care and health care. It is Taikang's corporate strategy, and it also represents a complete package of solutions for enterprises in the new era. This business model can help individuals solve financing problems and ease family burdens, scale up long-term funds in the financial market, and alleviate public finance pressure for the government. The Taikang Plan will broaden the connotation and extension of the Big Health Industry in a longevity society and realize mutual benefit and win-win results with more enterprises, thus stimulating the synergy of individuals, governments and enterprises.

The Taikang Plan provides individuals with an optimized funding option. It maximizes the compound interest through long-term value investment and wealth management by professional financial institutions, thus encouraging early preparation, easing the pressure of raising children and allowing more resources to be invested for the development of human capital. On the other hand, the "Four-Sphere" full-life-cycle product system, together with the nationwide network of real services of medical care, elderly care, rehabilitation and end-of life care and services, protects people's health and wealth throughout their lives, helps individuals and families form a new outlook on life and lives, and improves the quality of a prolonged life. In particular, Taikang Community, as a pilot of the longevity economy, not only provides a lovely home for the elderly but also a platform for lifelong learning and value recreation. Fairly speaking, the plan has been truly integrated into people's longevity.

The explorations made by the Taikang Plan also have a profound influence on public policies and social development. The era of longevity is a long-term issue in global development. As a latecomer, China, through vigorous governmental actions in recent years, has put in place a main framework of policies, including actively responding to population aging and upgrading the Big Health Industry. With the support of national policies and systems, the role of the insurance industry in China's society and economy is undergoing profound changes. In 2006, the State Council issued *some Opinions Concerning the Reform and Development of the Insurance Industry*, which emphasized the functions of insurance in economic compensation, financial integration and social management. In 2014, *Several Opinions of the State Council on Accelerating the Development of the Modern Insurance Service Industry* were issued to encourage insurance funds to enter elderly care and health industries. In 2020, thirteen ministries and commissions of China, including the Banking and Insurance Regulatory Commission, jointly issued *Opinions on Promoting the Development of Commercial Insurance in the Field of Social Services* to encourage insurance companies to provide long-term equity financing for social services and work with the government to jointly lead the reform and development of the medical care and elderly care sector. The practice of the Taikang Plan and the national policies

promoted and confirmed each other. It gives full play to the advantages of commercial enterprises and provides a practical basis for the promulgation of policies.

As a financing plan dealing with the risks of longevity, the Taikang Plan will undoubtedly play a more important role when public finance is under serious pressure. At present, the social security systems of various countries are generally affected by the population aging. The traditional three-pillar pension system relies on continuous financial transfusion from the government, and people will need to be encouraged by huge tax incentives to choose third pillar products for long-term fund accumulation. In contrast, the personal financing approach advocated by Taikang does not rely on government subsidies. It is driven by people's longing for a long and good life. Through the combination of virtual insurance and real services, people can make the best choice for themselves and become a long-termist. This is also the contribution of the Taikang Plan to the sustainability of the social security system.

As a corporate solution to the new era, the Taikang Plan promotes industrial reforms at the corporate level by calling for more enterprises to participate in solving common challenges. The two core demands of a longevity society are to raise funds and provide services, and the Taikang Plan integrates both. Therefore, the track Taikang is in is the main business track of the new era, and it is incredibly promising. The plan will also create a Big Health ecology of cooperation, bringing more corporate solutions together to provide a one-stop experience for our clients.

Inspired by the Taikang Plan, an increasing number of insurance companies and companies in other industries in China are joining us in elderly care, medical care and health care businesses. It is expected that within a decade, China's medical care, elderly care and insurance industries will enter a phase of fast development. By then, national policies will be rapidly refined, capital and industrial structures will be rapidly adjusted, major enterprises will be rapidly entering, and cooperation between the government and enterprises will deepen. The next ten years will also be the best time for China to catch up to or even grow to lead the global eldercare revolution. The idea of combining insurance, medical care and eldercare in the Taikang Plan enriches the connotation and extension of the longevity economy. It expands room for the development of the pension industry and the Big Health Industry, which will definitely become the mainstream economy in the era of longevity. More companies will be attracted to this largest livelihood project to create their own subdivisions of business and inspire more commercial innovation and theoretical thinking.

In response to the new era, all aspects of society are calling for reforms, which require great momentum. The source of momentum could be a chain reaction of interactions between individuals, governments and enterprises, in which every action of any party can cause changes in other parties, finally ushering in a harmonious longevity society. The Taikang Plan has become a power engine for this chain reaction. To a certain extent, the financing model at the core of the Taikang Plan helps individuals take responsibility for their families, improves the efficiency of public finance and makes payments for other businesses under the Big Health Industry. Moreover, as pilots of the longevity economy, Taikang longevity communities are gradually changing people's attitudes toward life and lifestyles. In the future, Taikang will further promote the elderly care revolution, enrich and improve the Big Health

ecology, increase efficiency and reduce costs in a market economy approach and continue innovation so that more people can enjoy a long and good life. Taikang will persist in our philosophy that business should be doing good and become the positive energy for a longevity society to make people healthier, families happier and society more harmonious.

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Conclusion

Shaping the Future

Millions of years ago, when our ancestors were fighting beasts with flimsy tools on the African grasslands, they may not have imagined that in the long process of human history, human beings could break free from nature's constraints one time after another and keep moving forward. Since the Industrial Revolution, after nearly 300 years of industrialization, urbanization, technological progress and continuous population growth, human beings are likely to witness the historical peak of the population in the twenty-first century, which will be the crossroads of human development.

In the Introduction of this book, I wrote about three waves of major epochal changes: the first one is globalization and the change in the global order; the second is the changes in the forms of civilization, ways of production and lifestyles brought about by the development targeted at carbon peaking and carbon neutrality; the third one is the changes in human beings brought about by the Era of Longevity. Fundamentally speaking, through these changes, mankind is about to break away from old rules and evolve toward a set of new rules and a new order.

Among these changes, the impact of the era of longevity is the most significant. People are the main subjects of all economic supply and demand and social phenomena. The reason why many people call the rapid aging of the population a "Gray Rhino" is because it has created new impediments to the development of human society. Industrial civilization has rarely been challenged by population aging and negative population growth. At present, Japan is the only major economy that has truly entered a longevity society. Despite its achievements, Japan has not found the best ways to maintain its economic development under the influence of negative population growth. Regarding how to deal with this challenge, major countries in the world have not yet reached a consensus.

Throughout human history, the largest driving forces of social changes are the changes in people's awareness and concepts. After the inertia of established concepts was broken, a revolutionary new era will come soon with joint efforts of all people.

Such changes in ideology are crucial. The “Era of Longevity” is a proposition about people. Therefore, exploring demographic characteristics and the logic behind them is the prerequisite for meeting challenges and providing solutions. In my opinion, the Era of Longevity could be interpreted from the following aspects.

First, population aging is fundamentally the result of a combination of human beings’ low mortality and low fertility, which are natural trends of human development rather than external factors. Therefore, the Era of Longevity is an unavoidable and inevitable era that will eventually come. This is also the reason that I used the neutral-toned “Era of Longevity” to refer to this inevitable phase of human history: we must face the challenges of this brand-new society with a peaceful mind.

Second, with the extended lifespan and the advent of the 100-year life, a new normal is that people will have to live with diseases for a long time. This is a very important scenario in the Era of Longevity. The reason I deem the Era of Longevity the era of health and wealth is that longevity requires the support of health and wealth. However, health and wealth are not inherent. It takes joint efforts of the whole society to create health and wealth and accommodate people’s most important needs in the Era of Longevity.

Third, prolonged life expectancy will bring changes to the pace and stages of an individual life. In the past, one’s life was staged based on an average life expectancy of 60 years. In the new era, as life expectancy grows, life should be staged based on an average of 100 years. Life was divided into three phases, i.e., education, working and retirement. In the retirement phase, the elderly would withdraw from economic activities and become consumers of resources. In the new era, the previous structure of life expectancy will be disintegrated and restructured. People’s lives will be more flexible, lifelong learning and lifelong working will become norms, seniors can create value again and the potential of the longevity economy will be endless.

Finally, in the Era of Longevity, the political, economic and cultural activities of the entire society, especially the production and consumption in the economy, will be reconstructed to conform to new characteristics of the new era. All parties must prepare for such changes and adjust and adapt in a timely and proactive manner. The most intense conflict in this era is that people need to solve the funding problems for services of longevity and health. Therefore, the form of business that provides solutions to these problems will become the mainstream form of the longevity economy.

Reforms do not succeed overnight. All parties in society, including individuals, families, governments and enterprises, must reach a consensus, follow the development trend and strive to participate in the building of a new era. As the core of economic production, enterprises especially need to anticipate changes to avoid risks, seize opportunities and march farther. Taikang, which I founded, is the most determined practitioner of the Era of longevity theory. The journey of Taikang’s development is also a process of seeking solutions to the Era of Longevity. Taikang’s corporate plan, which is elaborated in this book, is the essence of our thinking and practice over all these years. It is hoped that this book, *Era of Longevity*, can inspire people to join hands and march forward together, thereby contributing to the future of mankind.

Standing at the critical turning point where humans are about to enter the Era of Longevity, we look back as if Malthus were standing at the intersection of the industrial age and the agricultural age 300 years ago. Human beings are always welcoming new changes, which we turn into positive energy for the benefit of mankind. I believe that we will do fine too with the demographic structural changes today. Looking forward to the Era of Longevity, we have ample imagination for the future, which will inspire us, free our wisdom and potential, and allow us to jointly open up a new epoch of mankind.

It will be a wonderful society where everyone can enjoy the gift of longevity.