Building a System for Pharmaceutical Innovation in China

Series Report 3: Multi-Layer Medical Security System to Improve People's Health and Drive High-quality Industry Development

China Pharmaceutical Innovation and Research Development Association (PhIRDA)

R&D-Based Pharmaceutical Association Committee (RDPAC)

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Summary

The health of a nation is an important sign of national prosperity and national wealth. In its “Healthy China 2030” Planning Outline, China has put forward a series of key targets including joining the ranks of high-income countries by 2030 in terms of major health metrics. As its economy develops and its society ages more rapidly, China needs to increase its continuous investment in health to achieve the health goals. International experience indicates that total spending on healthcare in China will likely increase from RMB 6.5 trillion in 2019 to RMB 10.9 trillion by 2025. Medical security expenditure is a key component of health expenditure and one of the main tasks in deepening the reform of the pharmaceutical and healthcare system. The Opinions on Deepening the Reform of the Medical Security System issued by the State Council makes it clear that “by 2030, a comprehensive medical security system will be established, centered around basic medical insurance as its cornerstone and providing a minimum level of medical assistance. The system will also be supported by a mix of supplementary medical insurance, commercial health insurance, charitable donations, and mutual medical assistance.” A multi-layer medical security system requires collaborations across multiple sectors and dimensions with the right collaboration to meet a varied of demand . In order to build a high-quality multi-layer medical security system that is “future-proofed and motivates innovation”, “puts people’s life and health first”, and improves patients’ access to innovative drugs and sense of satisfaction, this report summarizes the recommendations for the development of commercial health insurance (CHI) in China. This report leverages insights from international experience as well as study of current development of China’s multi-layer medical security system. Practical suggestions are put forward for the development and optimization of China’s multi-layer medical security system, focusing on three key CHI issues: the level of coverage, which groups will be covered and the governance model to be adopted.

Globally, commercial health insurance has undergone a long period of development (ranging from fifty years to a century) in countries such as the United States, Germany, France and Australia. All of these countries have gradually optimized their institutional rules via legislation and policy development, resulting in their current regulatory models. In China’s case, development of CHI cannot replicate in whole the experience of one particular country, but the shared features and rules that exist across different countries are worthy of consideration.

Firstly, as an important funding source apart from medical insurance, CHI is expected to be multi-tiered: encompassing a supplemental tier (supplementing the out-of-pocket portion of public medical insurance and the portion not covered by public medical insurance), a complementary tier (providing high-end services, etc.) and an alternative tier (providing an alternative to public medical insurance). This suggests that coverage and development of the supplemental tier is vital plugging any gaps between CHI and pubic medical insurance and lays some of the essential foundations for meeting the basic health or living standards of the general public. CHI in China is currently characterized by a low overall coverage level as reflected in scarce coverage at the supplemental tier and only short-term product plans. Until 2020, the “City Supplementary Insurance” that has been introduced in more than 140 cities proved

a successful first foray into “supplemental CHI”. Though this insurance was rapidly developing , its long-term sustainability is in doubt when multiple aspects such as premium standards, risk selection, and loss ratio standards are considered. To sum up, there remains room for optimization and improvement to attain our goal of developing a multi-layer medical security system in China.

Secondly, given CHI’s positioning for a “multi-tiered” system, the experience of mature markets indicates that the government is expected to provide effective encouragement and “compulsory” policies (such as individual tax incentives, preferential policies and risk compensation for insurers) to ensure the coverage of CHI for high-risk groups (including the elderly and patients with pre-existing conditions). With these policies in place, an organic synergy of the “visible hand” and the “invisible hand” can deliver, both on people’s well-being and the economic interests of the industry. However, a lot of current CHI products in China fail to provide sufficient coverage and protection of the “high-risk population”. In addition, given weak public awareness of buying insurance and lack of experienced of CHI companies, it is challenging to see that policies will have a direct impact on insurance purchase behavior.

Third, foreign governments primarily regulate CHI via legislation, and keep regulatory and actual administration separate to improve management efficiency day-to-day. Since the establishment of a CHI system involves cross-industry and cross-departmental collaboration, the legislative process is usually led by a high-level national decision-making body and entails several rounds of revision to clarify the scope of CHI coverage, collaboration with basic medical insurance, encouraging policies, incentives, or mandatory regulations. Subsequently, in the process of regulation and supervision, the specific legal provisions are implemented and monitored through the active participation of multiple administrative authorities (such as the health administration, medical insurance administration, financial and monetary administrations). In June 2021, the National Healthcare Security Administration published the Healthcare Security Law (Draft for Comments). This is a key move in the process of building a multi-layer medical security system in China. Although this Draft for Comments requires further refinement and improvement, the exploration of legislation is an important step toward a multi-layer medical security system that aligns with international practice, is future-proofed, and truly delivers on protecting public health.

The recommendations on the establishment of a multi-layer medical security system in China accounting for international experience and reflections are as follows:

First and foremost, efforts should focus on strengthening and improving the system’s overarching design. We recommend the enactment of legislation to clarify the positioning, distribution of liability, as well as the partnerships between various departments of the system; such legislation should also provide guidance for CHI on supplementing basic medical insurance. Meanwhile, a description of the structure and responsibilities of government authorities should be provided to promote the integration of medical treatment, medical insurance and medicines supply along with enhanced communication between the medical and health systems and the financial supervisory system to improve CHI regulation and administrative efficiency.

Secondly, a framework of scientific and effective policies should be formulated and rolled out as soon as possible to effectively incentivize market and public support

for the development of CHI; this will undergird its sustainable development. For instance, we recommend that policies make clear that CHI serve the coverage of the “supplementary tier” with a clear coverage scope, regulate and guide the development of city supplementary insurance. Additionally, encourage the public to purchase insurance via tax incentive policies, and strengthen the supervision over CHI products.

Thirdly, BMI funds can be more efficiently tapped to consolidate their position underpinning the multi-layer medical security system. We suggest establishing a value-oriented, scientific, objective, and transparent adjustment mechanism for China's NRDL, and the formulation of scientific, predictable and data-driven guidelines for the use of BMI funds that will pave the way to realizing the vision of “Healthy China 2030”.

Fourthly, we recommend driving integration of CHI and BMI, especially in payments for innovative drugs. Adjust the operational mechanism for reimbursement payment standards and explore a risk-sharing payment model in line with international standards, so as to improve patients’ access to innovative drugs and sense of satisfaction.

In summary, building a multi-layer medical security system is the key to ensuring sustained investment in health and improving public health. Furthermore, such a system is an essential foundation for the development of an innovative drugs industry, which will be of significant value to patients, the healthcare system, and society. Developing CHI as an important pillar of the national healthcare system requires thinking outside the box, seeking truth from facts as well as staying true to our original aspiration. Specifically, policy-makers should make timely adjustments to policies in line with China’s economic development, as its society ages and the health demands of the public change. Under the leadership of the government, we should also leverage the market mechanism in building a harmonious society, delivering tangible benefits to the public, and sustaining innovation, and thus make CHI a driver for stable social development. We also hope that this report can contribute to the development of CHI and optimization of the multi-layer medical security system in China.

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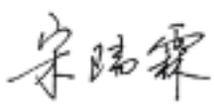

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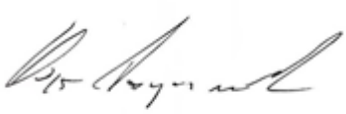

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Background of Multi-Layer Medical Security System (MLSS) Construction

Section I Improvement of the health level of the people in China needs continuous investment in health

People's health is a significant symbol of national prosperity and strength. In the past 40 years since the reform and opening up, China has seen remarkable development in the health sector, with life expectancy per capita increasing to 77.3 years old in 2019 from 67.8 years old in 1981 and infant mortality decreasing to 5.6‰ from 37.3‰[1]. People's health level has been further improved. Promoting the building of a healthy China was first proposed on the fifth Plenary Session of the 18th CPC Central Committee held in October 2015 and "Healthy China" has become a national strategy since then. To this end, the *"Healthy China 2030" Planning Outline* sets out the goal for China of joining the ranks of high-income countries by 2030 in terms of key health indicators, and a series of key objectives, including a 15% increase in the five-year survival rate for cancers. This will require continuous social investment in health sector. Compared with major countries with income above middle income in the world, such as South Korea, Italy and Japan as well as some of the BRICS, such as Brazil and South Africa, China's health expenditure still accounts for a relatively low percentage of the GDP.

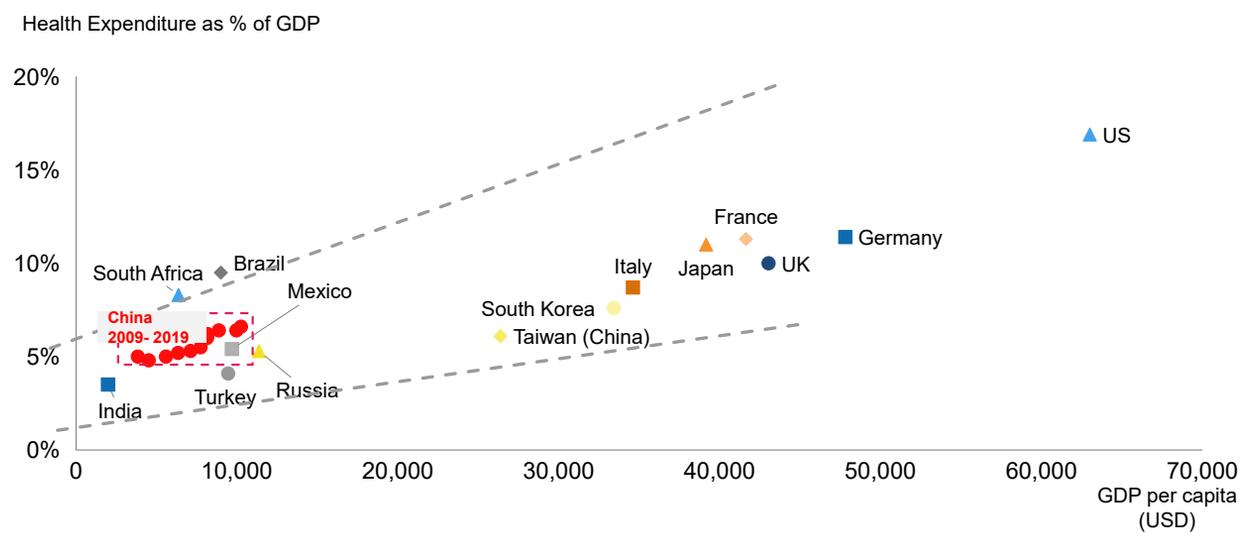
Table 1: GDP per capita (USD) and health expenditure as % of GDP by country/region

Country or region	Country or region	GDP per capita (USD, 2018)	Health expenditure as % of GDP (%, 2018)
BRICS	India	1,997	3.5
	South Africa	6,373	8.3
	Brazil	9,001	9.5
	China	9,977	6.4
	Russia	11,371	5.3
Major developing countries	Indonesia	3,894	2.8
	Turkey	9,456	4.1
	Mexico	9,687	5.4
Developed country or region	Taiwan (China)	26,376	6.1
	South Korea	33,423	7.6
	Italy	34,616	8.7
	Japan	39,159	11
	France	41,631	11.3
	UK	43,043	10
	Germany	47,811	11.4
	US	62,997	16.9

Source: World Bank; relevant health authority of Taiwan (China)

Looking at major countries with income above middle income in the world, the health expenditure is closely related to their economic development level. As showed in Exhibit 1, there is an approximate linear correlation between the health expenditure as percentage (%) of GDP and GDP per capita by country. The linear correlation coefficient for GDP per capita and health expenditure as percentage (%) of GDP in 2019 is 0.85 among the BRICS, Taiwan of China and the 15 countries and regions with GDP per capita above USD 8,000 and a population of more than 50 million. The core driving factors are people's growing medical and healthcare demands with the development of economy and the significant improvement of the construction level of medical infrastructure with the improvement of economic development level.

Exhibit 1: Correlation between GDP per capita (USD) and health expenditure as % of GDP by country/region, 2018



Source: World Bank; National Bureau of Statistics; Health Bulletin

In the past decade, health expenditure as percentage (%) of GDP has also increased significantly from 5.0% in 2009 to 6.6% in 2019 with the economic growth of China. It can be foreseen that the health expenditure as percentage (%) of GDP in China will continue to grow with the continuous improvement of economic level in the future to meet the need of economic development and the increasing medical and healthcare demands.

Table 2. GDP per capita and health expenditure as % of GDP in China, 2009-2019

Year	GDP per capita (USD)	Health expenditure as % of GDP (%)
2009	3,843	5.0
2010	4,520	4.8
2011	5,595	5.0
2012	6,349	5.2
2013	7,124	5.3
2014	7,750	5.5
2015	8,148	6.0
2016	8,189	6.2
2017	8,879	6.4
2018	9,977	6.4
2019	10,261	6.6

Source: World Bank; National Bureau of Statistics; Health Bulletin

Also, the health expenditure is also closely related to the degree of population aging. By comparison of the BRICS, Taiwan of China and major middle-income countries (MICs) and countries with income above middle income in the world, we can see that there is an obvious linear correlation between the health expenditure as percentage (%) of GDP and population over 65 as percentage (%) of total population by country. It means that the growth of aging population results in an increase in people's medical and healthcare demands and the health expenditure as percentage (%) of GDP will further grow with the increase of aging population as percentage (%) of total population.

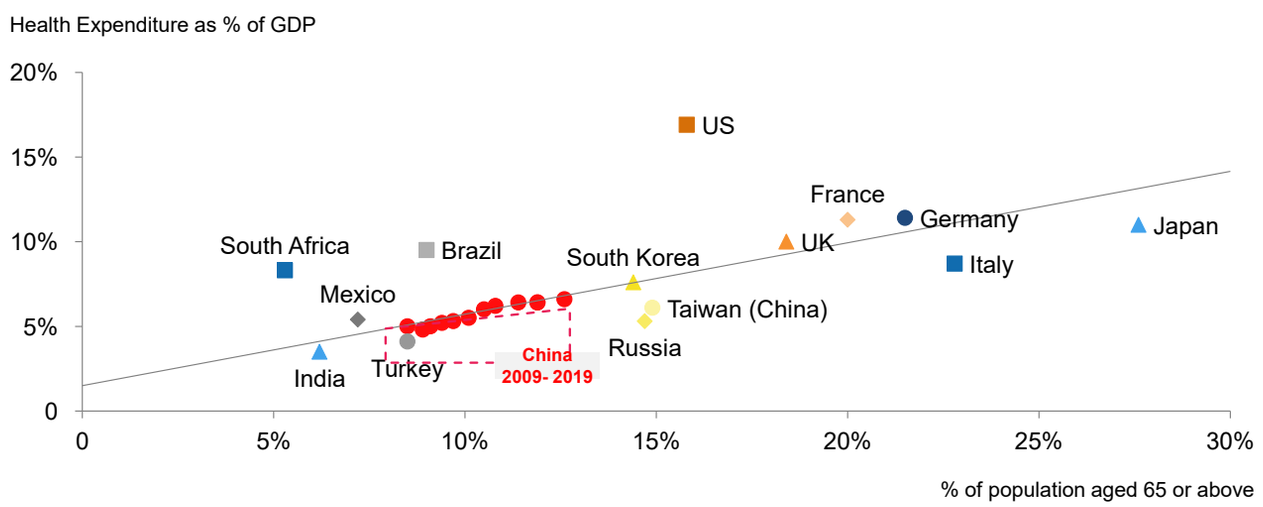
Table 3. Population aged 65 or above (as % of total population) and health expenditure (as % of GDP) by country

Year (China)	Population aged 65 or above as % of total population	Health expenditure as % of GDP	Country or region	Population aged 65 or above as % of total population (2018)	Health expenditure as % of GDP (2018)
China 2006	7.9	4.5	South Africa	5.3	8.3
China 2007	8.1	4.3	India	6.2	3.5
China 2008	8.3	4.6	Mexico	7.2	5.4
China 2009	8.5	5.0	Turkey	8.5	4.1
China 2010	8.9	4.8	Brazil	9.0	9.5
China 2011	9.1	5.0	China	11.9	6.4
China 2012	9.4	5.2	South Korea	14.4	7.6
China 2013	9.7	5.3	Russia	14.7	5.3
China 2014	10.1	5.5	Taiwan (China)	14.9	6.1
China 2015	10.5	6.0	US	15.8	16.9
China 2016	10.8	6.2	UK	18.4	10.0
China 2017	11.4	6.4	France	20.0	11.3
China 2018	11.9	6.4	Germany	21.5	11.4
China 2019	12.6	6.6	Italy	22.8	8.7
China 2020	13.5	/	Japan	27.6	11.0

Note: Comparison of countries or regions including Taiwan of China, major large developing countries and high- and middle-income countries with GDP per capita above USD 8,000 and a population of more than 50 million.
Source: China Statistical Yearbook; World Bank; disclosure by the relevant health authority of Taiwan of China

The population aging process in China is also accelerating. Data of the seventh national population census in 2021 shows that in the past decade (2010-2020), in China, the working population aged between 15 and 59 as % of total population has decreased from 70% to 63%, while the population over 60 as % of total population has increased from 13.3% to 18.7% and the population over 65 as % of total population has increased from 8.9% to 13.5%. Based on data from the China Pension Actuarial Report 2019, it is predicted that the total working population (and its percentage) will decline further by 2025, while the population aged 65 or above as % of total population will increase further to 15.6%, resulting in a serious situation of population aging.

Exhibit 2: Correlation between population aged 65 or above (as % of total population) and health expenditure (as % of GDP) by country/region, 2018



Source: World Bank; National Bureau of Statistics; Health Bulletin

This report predicts the future health expenditure needed in China by comprehensively taking into consideration economic growth trends and aging-related factors. First of all, the GDP target proposed in the *Outline of the 14th Five-Year Plan for National Economic and Social Development and the Long-range Objectives through the Year 2035* is “on the basis of significant improvement in quality and efficiency, we will achieve sustainable and healthy economic development and give full rein to our growth potential. Proposals for the average annual growth of GDP will be maintained in a reasonable range based on the situation each year.” Based on China's GDP forecasts of the International Monetary Fund and other institutions, this report predicts a 6.4% average annual growth rate of China's GDP per capita.

By referring to the linear correlation between economic development level and aging, and health expenditure in other countries, it is expected that China’s total health expenditure may grow from RMB 6.5 trillion in 2019 to RMB 10.9 trillion in 2025, from 6.6% to 7.6% of GDP. The health expenditure per capita will grow from about RMB 4,612 in 2019 to about RMB 7,700 in 2025.

Table 4: Projected aging population as % of total population and health expenditure as % of GDP in China

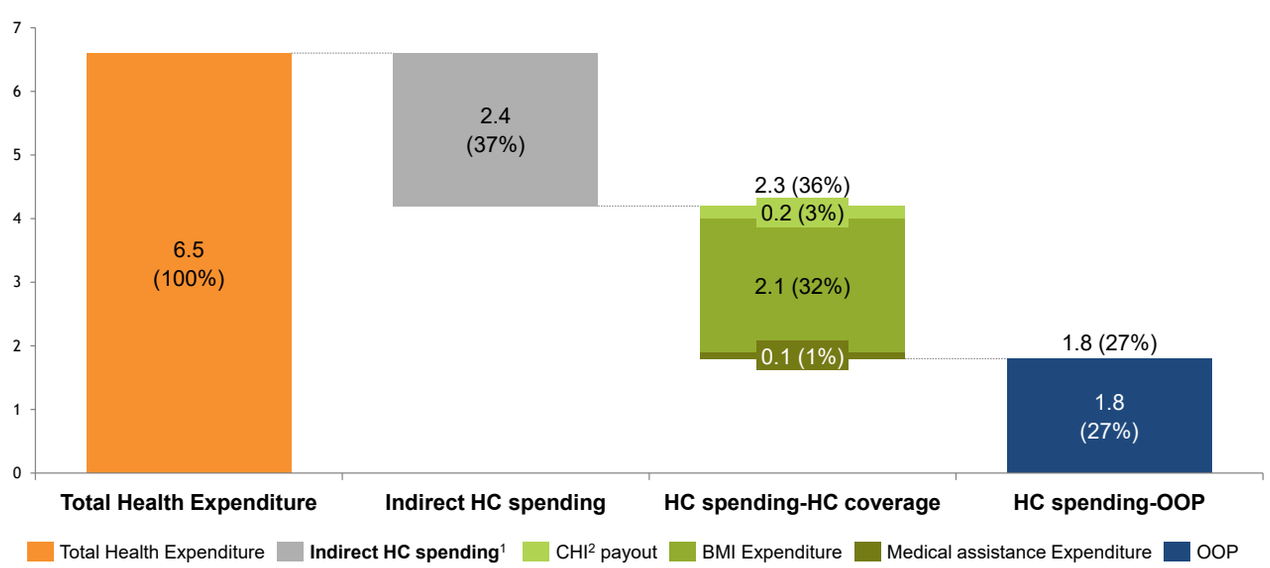
Year	GDP (RMB Tn)	Population (100 million people)	Population over 65 as % of total population	GDP per capita (RMB)	Health expenditure as % of GDP	Total health expenditure (RMB Tn)	Health expenditure per capita (RMB)
2019	99.1	14	12.6%	70,776	6.6%	6.5	4,700
2020	105.4	14	13.5%	75,074	6.8%	7.2	5,105
2021	112.2	14.1	13.9%	79,664	7.0%	7.8	5,545
2022	119.4	14.1	14.3%	84,568	7.1%	8.5	6,021
2023	127.0	14.1	14.7%	89,808	7.3%	9.2	6,538
2024	135.1	14.2	15.2%	95,408	7.4%	10.1	7,098
2025	143.8	14.2	15.6%	101,395	7.6%	10.9	7,706
Compound annual growth rate	6.4%	0.2%	/	6.2%	/	8.8%	8.6%

Source: China Statistical Yearbook; International Monetary Fund; database of CASS CISS; BCG analysis

Section II It is important to foster a multi-layer social security (MLSS) system

China's total health expenditure in 2019 is about RMB 6.5 trillion, of which the direct health care (HC) spending is about RMB 4.1 trillion (deducting RMB 2.4 trillion of indirect HC spending such as investments in public HC providers, premiums for the part uncovered by commercial health insurance (CHI), and basic medical insurance (BMI) fund balance) with the HC coverage expenditure (including BMI and CHI) RMB 2.3 trillion, accounting for about 35% of total expenditure. HC coverage expenditure is a key component of health expenditure and the key to safeguard the healthcare level for the people.

Exhibit 3: Components of China's total health expenditure in 2019 (RMB Tn)



Note: 1. Indirect HC spending mainly includes investments in HC providers, public health expenditure, BMI fund balance, etc.; 2. CHI=commercial health insurance

Source: Statistical Bulletin of China's Health Development 2019; Brief Statistical Report on Healthcare Security Sector 2019; CBIRC data; BCG analysis

However, further analysis reveals that out-of-pocket (OOP) expenditure still accounts for about 44% of HC spending, while the HC coverage expenditure accounts for only about 56% (BMI expenditure about 50%, CHI payout about 5% and medical assistance expenditure about 1%). OOP expenditure is still large which creates great pressure, and the proportion of the HC coverage expenditure in total health expenditure is still relatively low.

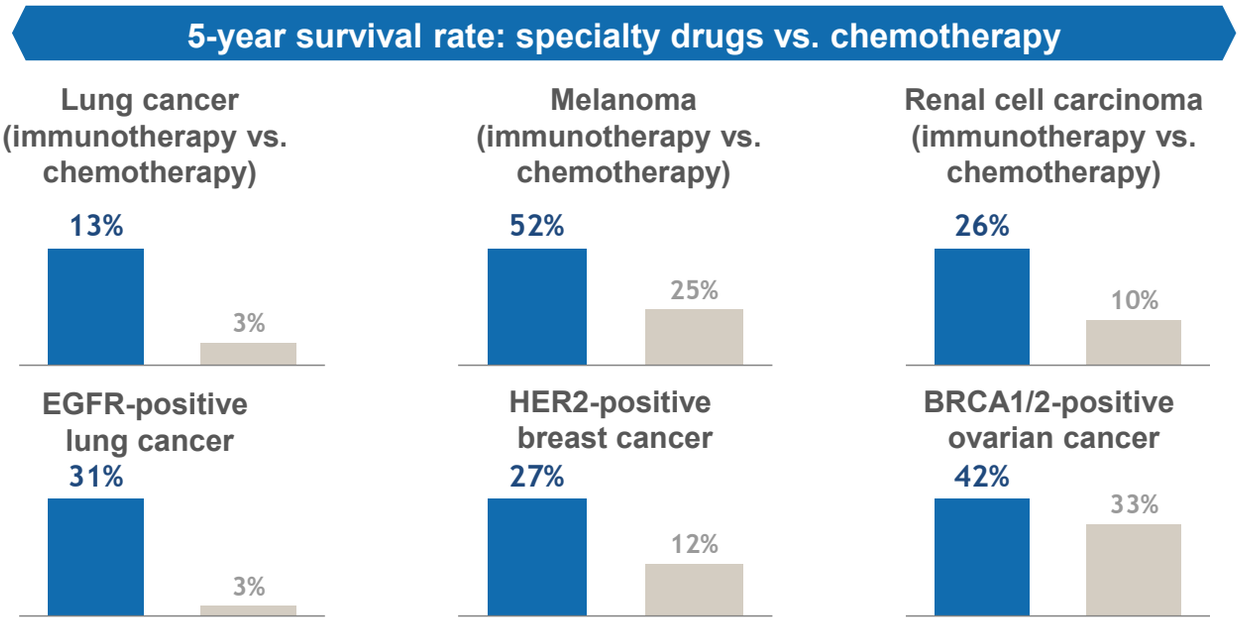
As one of the main tasks in deepening the reform of the medical and healthcare system, HC coverage plays an important fundamental role in safeguarding the health of the people, and the construction of a MLSS system is an important goal. The *"Healthy China 2030" Planning Outline* clearly states that it is necessary to establish and improve a MLSS system with the BMI as the mainstay, supplemented by other forms of supplementary insurance and commercial insurance. The National Healthcare Security Administration (NHSA) issued the *Healthcare Security Law (Draft for Comments)* in June, 2021 which clearly specifies that China shall establish a MLSS system with the BMI as the mainstay and medical assistance as the bottom line, with supplementary medical insurance, CHI and charitable medical assistance achieving interconnection and common development". A stable cornerstone for the construction of a MLSS system has thus been formed from a legislative perspective.

Section III A MLSS system is also the basis of the sustainable development of the innovative drug industry

Enormous value of innovative drugs

Innovative drugs can bring multiple values to patients, the healthcare system and society, represented by increased life expectancy, improved quality of life, disease prevention, reduced medical expenses and promoted economic development, while innovative therapies such as targeted therapies, live cell-derived drugs, immunotherapy, CAR-T cell therapy and CRISPR gene editing offer new possibilities for prolonged patients' life. For example, in the field of tumors, innovative therapies such as targeted drugs and immunotherapy have significantly improved the 5-year survival rate of patients compared with conventional chemotherapy. China has about 4 million new cancer patients each year, and the *"Healthy China 2030" Planning Outline* sets a goal of a 15% increase in 5-year survival rate, so improving the accessibility of innovative drugs will help achieve such goal.

Exhibit 4: 5-year survival rate of selected late-stage cancer patients using innovative drugs vs. chemotherapy



Many innovative drugs have demonstrated to be more cost-effective compared with conventional treatments. Many innovative therapies can help patients avoid surgery, hospitalization, and long-term care, thereby reducing medical expenses. According to the estimation of the Congressional Budget Office of the United States, for every 1% increase in the number of prescriptions of prescription drugs, the overall healthcare service expenditure of Medicare (for elderly people) will decrease by 0.2%[2]. After several rounds of negotiation, in 2020, 90 western drugs of the drugs included into the National Reimbursement Drug List (NRDL) through negotiation were still under patent protection, and the BMI expenditure in the year was about RMB 37 billion. If we make estimation based on the US experience, the inclusion of these innovative drugs has saved about RMB 7 billion for the BMI fund.

Taking the common diabetes and cardiovascular diseases as an example, the medical expenses for a single disease are controllable, however, substandard disease control can result in the emergence of many preventable comorbidities/complications, causing high treatment costs and even death of the patient. Inadequate patient medication compliance, poor disease management, and increased risks and burden of diseases are caused due to factors such as poor efficacy or inconvenient use of conventional drugs. Innovative drugs can improve medication compliance, treatment safety and overall standard-reaching rate, reduce complications (e.g., risk of cardiovascular diseases), and optimize disease management, thereby reducing medical expenses while ensuring patient safety.

The economic value of innovative drugs also extends indirectly beyond the healthcare system. The greater availability of innovative drugs can reduce the social costs of diseases, such as partial restoration of patients' normal working capability and productivity increase. A registry of patients with rheumatoid arthritis showed that the disease caused severe working capability loss, and that patients treated with a biological product worked 31 weeks longer each year and earned an average of EUR 26,000[3] more than those treated with conventional therapy; and taking a psychiatric

disorder as an example, a study published in the *American Journal of Psychiatry* showed that in the United States, although the drug treatment for the disorder costed USD 6.5 billion per year, the resulting savings in terms of other indirect costs amounted to USD 8.7 billion, which exceeded the direct treatment expenditure.

Innovative drug industry development is also an important policy direction of China.

Biopharmaceutical industry has been described as one priority for China's strategic development, and also a new driving force for China's economic development in *Made in China 2025, Opinions of the State Council on Implementing the Healthy China Action, and 14th Five-Year Plan for National Economic and Social Development.* In 2020, there were no Chinese companies among the top 30 pharmaceutical companies in terms of global sales, while there were 11 US companies, 5 Japanese companies and 3 German companies[4], indicating a long way to go for China to develop into a global leader in biopharmaceutical industry.

The *Guiding Opinions on Promoting the Healthy Development of the Pharmaceutical Industry* issued by the State Council in 2016 points out that "the pharmaceutical industry is an important foundation supporting the development of healthcare sector and health service industry. The vigorous development of the pharmaceutical industry is of great significance in deepening the reform of the pharmaceutical and healthcare system, promoting the construction of a healthy China and fostering new impetus for economic development" and strategically indicates that "the global development of pharmaceutical science and technology is rapid and the pharmaceutical industry is undergoing profound adjustment and changes". The document sets out the key objectives of "promoting the enhancement of the core competitiveness of China's pharmaceutical industry and facilitating its sustainable and healthy development" and specifies the main tasks of the Chinese government including "improving price and medical insurance policies and creating a favorable market environment" and "including eligible drugs, medical devices and diagnosis and treatment items with reasonable prices and independent intellectual property rights into the coverage of medical insurance in a timely manner and in accordance with the specified procedures based on the affordability of BMI fund."

The *Opinions on Deepening the Reform of the Review and Approval System and Encouraging the Innovation of Drugs and Medical Devices* issued by Central Committee of the Communist Party of China and the State Council in 2017 points out that "the support for the science and technology innovation of drugs and medical devices is insufficient in China, and there is a gap between the quality of marked products and the international advanced level", and it proposes the guiding opinion of "timely inclusion of new drugs into the coverage of BMI in accordance with regulations to support the R&D of new drugs", which is required to be implemented by all departments concerned in all regions in conjunction with the actual situation.

One of the strengths of our system is that all government departments have consistent goals and concentrate their efforts to accomplish big and difficult tasks. The performance of Chinese Government in combating the COVID-19 pandemic has once again demonstrated the strength of our system that China can mobilize a large number of governmental administrative resources to create a synergy in a short period of time.

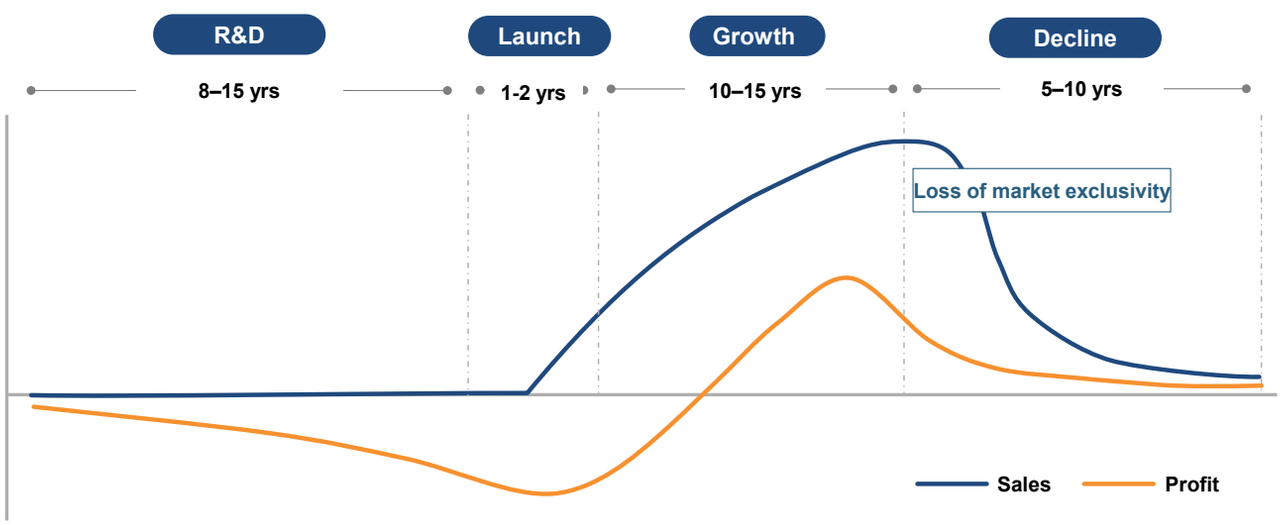
Although public health emergencies like the COVID-19 pandemic once again highlight the strengths of China's system and Government's capabilities, they also reveal the weaknesses of China's biopharmaceutical industry in innovative vaccine technology and drug R&D.

In recent years, Chinese ministries and commissions have been giving full support to pharmaceutical innovation. For example, the National Medical Products Administration (formerly the CFDA) has carried out the reform of drug review and approval to continuously accelerate the drug review and approval; the Ministry of Science and Technology has carried out national science and technology major projects to promote the R&D of new drugs; and unprofitable biopharmaceutical companies are allowed to be listed on the Science and Technology Innovation Board. All of these policy measures have played a positive role in promoting pharmaceutical innovation. A payment system to be constructed for innovative drugs, including the role of the NHSA, should contribute more significantly to the development of China's biopharmaceutical industry.

Sustainable and healthy development of innovative drug industry requires well-matched payment level.

Pharmaceutical innovation and industry development rely on long-term and sustained investment in drug R&D. From the perspective of the fundamental logic of drug R&D, the full life cycle of an innovative drug can be divided into R&D, launch, growth and decline, which is the objective law of innovative drug industry development. Due to the large investments in innovative drug R&D, in the typical mature drug markets, an innovative drug is in the investment period with negative profits before the growth stage, and as the sales of the innovative drug gradually rise, the innovative drug will not reach the break-even point until the middle of the growth stage. As a result, a reasonable price level should be maintained for an innovative drug for a considerable period of time after marketing in order to recover its R&D costs.

Exhibit 5: Pharmaceutical product life cycle in mature markets



Source: Pharmaceutical Lifecycle Management: Making the Most of Each and Every Brand

In order to ensure the reasonable price level for innovative drugs, most developed countries use value-based pricing in reimbursement negotiation, and adopt different payment principles at different stages of a drug's life cycle. In this case, a multi-dimensional comprehensive value assessment is used mainly during the patent term, while the phased price reduction and competitive comparison are used after the generics are marketed. At the same time, commercial medical insurance will also provide a role of “supplement” to some extent in terms of the payment for innovative drugs for the part that is not covered by social medical insurance. This enables the maintenance of a relatively high price level for innovative drugs in the international market for a long period of time during the patent term, and innovative drug companies obtaining the return on their early R&D investment will continue to be motivated to invest in a new round of innovative drug R&D.

However, in China, with the acceleration of the review and approval of innovative drugs (the review cycle for the NDA of a new drug could be shortened to 12 months in 2020, reaching the level of the US FDA) and the dynamic adjustment of the NRDL (subject to annual adjustment from 2020), the "old drugs" that have been distributed in the market for a long time are gradually replaced by newly marketed "innovative drugs” for the negotiated NRDL drugs. These innovative drugs are not only "brand new" to the Chinese market, but also in the "launch” stage and early "growth” stage compared with “new drugs” with a duration of marketing of less than 3 years in the international market (In 2017, the median time difference between the global approval of negotiated products successfully included into the NRDL and NRDL negotiation was 13 years) and need to be protected and encouraged by a reasonable price level. However, due to the significant price reduction through NRDL negotiation and the short duration of drug patents in China, the growth stage of innovative drugs is often short, and the phenomenon of small profits or even losses often occurs early, making it difficult for pharmaceutical companies to effectively recoup the high R&D costs invested in the early stage; the "payment system" for innovative drugs cannot become an effective incentive for innovation and a virtuous closed loop is not possible for sustainable innovative drug R&D therefore. China's existing medical insurance system has limited rising space in terms of financing and its payment ability is constrained by many parties; in addition, considering that China's CHI market still has a large gap with the markets of major developed countries in terms of maturity, the ecological closed loop supporting the R&D of innovative drugs needs to be supported by a “MLSS system" and “diverse HC coverage payers". **Therefore, in the current situation where medical insurance is the main payer of innovative drugs, the development of payment channels other than medical insurance such as CHI is very important for the sustainable and healthy development of innovative drugs.**

Section IV Commercial insurance is needed as a supplement due to the limited coverage level of BMI

China's BMI system has been in the process of continuous development and reform since the founding of the country, especially after the reform and opening up, and has gone through different stages, including the exploration period of the traditional medical insurance system transformation, the pilot construction period of the new basic medical insurance system and the improvement period of the universal medical insurance system development.

The reform and development of the basic medical insurance system have made outstanding contribution to the improvement of national health, which is reflected in following four aspects. First, the population covered has increased rapidly. By 2020, the universal basic medical insurance system had covered 1.361 billion people, with the coverage rate growing from less than 6% in 2001 to about 50 % in 2007. Now full coverage is basically achieved. Second, the financing level has been significantly improved. For example, the annual income of the urban employee basic medical insurance (UEBMI) fund has increased from RMB 35.4 billion in 2001 to RMB 1,573.2 billion in 2020, and the funding level per capita has increased from RMB 476 in 2001 to RMB 4,560 in 2020. Third, the coverage scope has been gradually expanded. It is transforming from pooling of single inpatient care to comprehensive pooling of outpatient and inpatient care, and the insurance and assistance mechanism for serious and critical illnesses has been in place to reduce the phenomenon of poverty due to illness and further expand the drug use scope. Fourth, the adjustment system has been routinized. Since the establishment of the NHSA in 2018, the NHSA has gradually developed a dynamic adjustment mechanism for the NRDL into which innovative drugs have been included through national negotiation, thus achieving regular adjustment and scientific mechanism.

BMI is the mainstay and the funding scale is developing steadily. The funding level per capita for medical insurance has been highly correlated with the speed of economic development over the past several years. At the same time, the funding level is also faced with many challenges, such as the non-payment of fees by retired employees covered by UEBMI, and the low individual contribution in the urban-rural resident basic medical insurance, which mainly rely on financial subsidies, and these are also the tasks to be resolved in the future, as proposed in the *Opinions on Deepening the Reform of the Medical Security System* issued in February 2020. Therefore, the growth of BMI fund income will level off in the future, and if the correlation with the economic development level is maintained, the income can increase to about RMB 4 trillion by 2025, accounting for about 37% of China's total health expenditure.

Compared with developed countries, China's BMI expenditure per capita is low, only about 1/10-1/15 of that of developed European countries. And it would remain a significantly lower level verses developed countries even if the BMI expenditure could reach about RMB 4 trillion by 2025. **This means that the contradiction of insufficient BMI coverage in China will exist for a long time and that other funding sources are urgently needed as a supplement.**

Table 5: Social medical insurance expenditure per capita by country

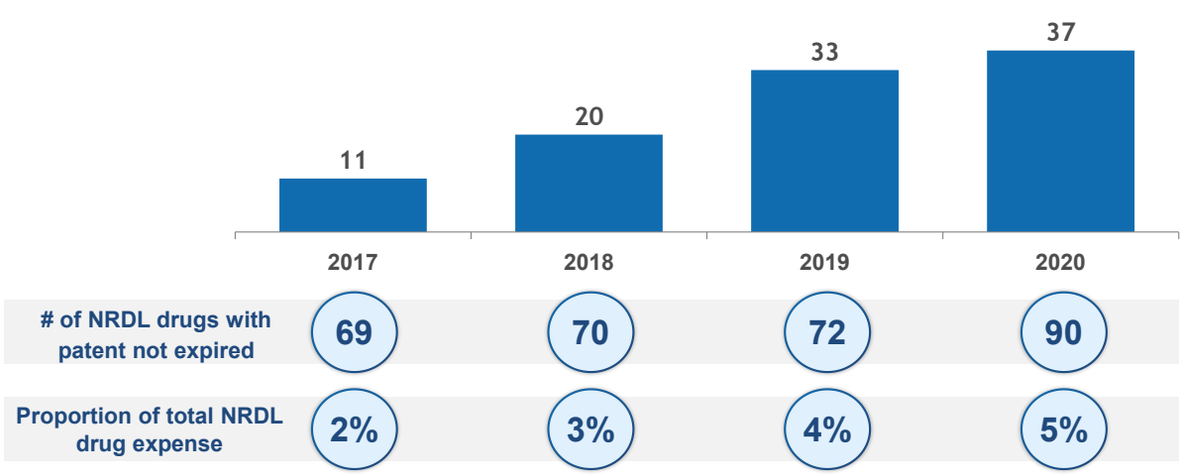
	Country	Social medical insurance expenditure per capita (2018, USD/year)
BRICS	China	267
	Brazil	365
	Russia	357
	India	19
	South Africa	225
Other major developing countries	Indonesia	55
	Mexico	264
	Turkey	301
Developed countries	France	3622
	Germany	4142
	US	3357
	Italy	2229
	Japan	3618
	South Korea	1524

Note: The data of social medical insurance expenditure per capita in this table is calculated as follows: the GDP of each country * health expenditure as % of GDP * governmental and mandatory insurance as % of health expenditure of each country in 2018 as disclosed by the OECD; the data of China is calculated based on BMI expenditure and number of the insured disclosed by the NHSA.
Source: OECD; World Bank; NHSA

Taking innovative drugs as an example to get to know the limitation of the coverage level of medical insurance

Since 2017, China has adjusted the NRDL every year and gradually established a dynamic adjustment mechanism, resulting in more and more innovative drugs included into the NRDL. According to the statistics of patent western drugs, from 2017 to 2020, the number of patent western drugs included into the NRDL increases from 69 to 90 drugs (including chemical and biological drugs), and it is estimated that the BMI expenditure attributable to patent western drugs increases from RMB 11 billion/year to RMB 37 billion/year, and the BMI expenditure attributable to patent western drugs as % of total NRDL drug expense has also increased to 5%. The accessibility of innovative drugs has further been improved thanks to the support of BMI for payment for innovative drugs.

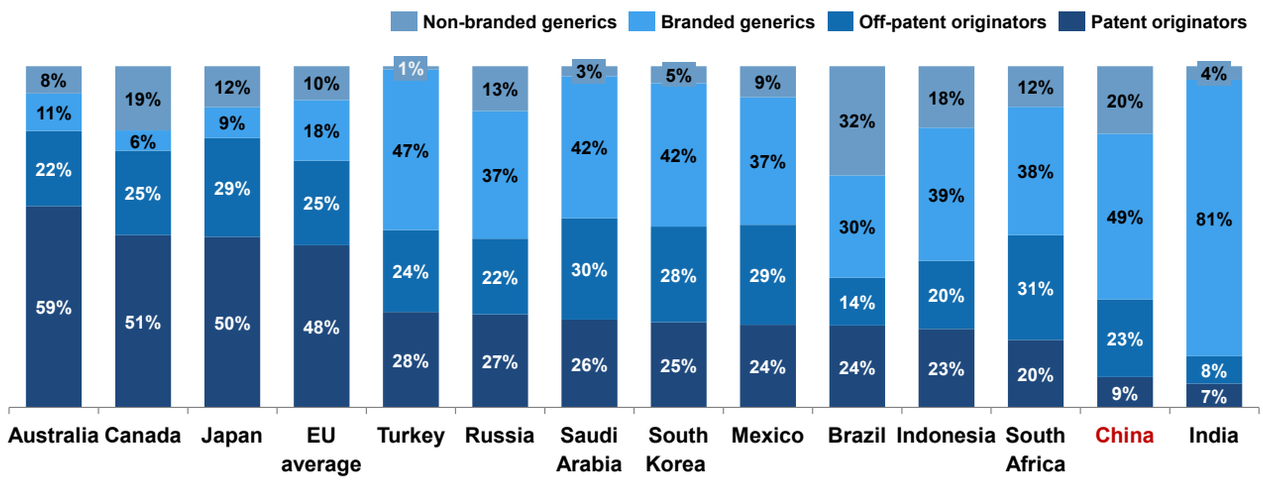
Exhibit 6: BMI expenditure attributable to patent drugs (RMB/Bn)



Note: # of drugs refers to drugs covered under patent protection at the beginning of the years mentioned above
Source: menet.com.cn; NRDL; desktop research; BCG analysis

The innovative drug expenses account for a relatively low percentage of drug expenses in China overall despite the improved accessibility of innovative drugs through the adjustment of the NRDL. According to the 2018 global prescription drug sales by drug type, patent originator expenses accounted for 9% of drug expenses in China. At present, patent drug expenses as % of drug expenses in European countries and the United States has reached over 40%, and the number in Turkey, Russia, Mexico, Brazil, Indonesia, South Africa and other countries with GDP per capita approximate to or lower than that of China has also exceeded 20%. There is still much room for improvement in the accessibility of innovative drugs in China.

Exhibit 7: 2018 global prescription drug sales by drug type



Source: IQVIA; BCG analysis

Since 2016, China has included some drugs into the NRDL through negotiation every year, while some drugs failed the inclusion due to unsatisfactory negotiation results. For example, the success rate of negotiation on new products in 2019 was only 59%. The main reasons affecting the inclusion of many innovative drugs with outstanding clinical efficacy into the NRDL include:

- No agreement reached on price during the negotiation for the adjustment of the NRDL. In many cases, the contradiction faced by pharmaceutical companies is that they are worried that the low price in China will affect the global price system.
- Great impact on the budget of BMI fund or high uncertainty.

In summary, building a multi-layered healthcare security system is the key to ensuring sustained investment in health and improving public health. What's more, the development of innovative drug industry, which is of great significance to the patients, the health care system, and society, is inseparable from the support of the multi-layered healthcare security system. Therefore, it is urgent to address the issue of payment for innovative drugs through a MLSS system, which is crucial for China to encourage the development of innovative drugs and improve their accessibility.

CHI has become an important supplement. CHI is expected to become the main growth driver to promote a MLSS system against the background of construction of a MLSS system in China. In the past 5 years, CHI premium income (including employer-sponsored medical insurance) has grown from RMB 241.1 billion in 2015 to RMB

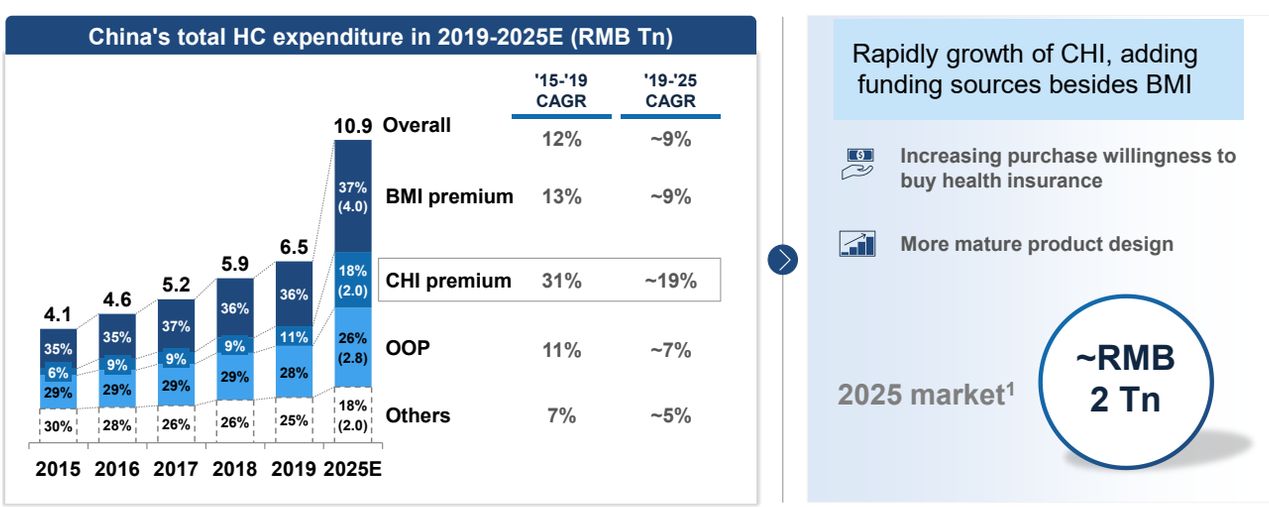
706.6 billion in 2019, with an annual growth rate of 31%, and the ratio to BMI funding has increased from 1:4.6 to 1:3.3, thus CHI becoming the backbone supporting the construction of the MLSS system. The main driving force is a significant improvement of consumers' insurance awareness and the diversification and scale-up of products.

At the beginning of 2020, China Banking and Insurance Regulatory Commission (CBIRC) and other 12 authorities jointly issued the *Opinions on Promoting the Development of Commercial Medical Insurance in Social Services* that proposes a goal that gross written premium (GWP) for CHI shall exceed RMB 2 trillion by 2025 as far as possible. The continuous economic growth in China in the future will bring about the continuous improvement of consumers' insurance awareness, and the Government will attach great importance to CHI. The premium target of RMB 2 trillion could be reached by 2025 if an average annual growth rate of about 19% is maintained. Preliminary estimates suggest that it could support 18% of total health expenditure, making it a major contributor to HC coverage.

Co-development of charitable medical assistance and others. In the context of the limitation of BMI and the difficulty of CHI to provide in-depth coverage for the needy, there is an actual need for charitable medical services based on the social donation system. According to a report released by the China Charity Alliance, there were 536 medical charitable organizations in 2019 with around RMB 33 billion of charitable donations in medical and health fields, and medical assistance, medical services, and donation of drugs and devices have become the major activities of medical charitable organizations. Charitable medical assistance will achieve co-development with CHI, etc., becoming an important component of the MLSS system.

Medical assistance as the bottom line: At present, China's medical assistance coverage for the rural poor mainly consists of financial contributions from governments at all levels and subsidies for critical illnesses. In 2019, the financial expenditure at all levels was RMB 50.22 billion, accounting for less than 1% of the total health expenditure. Under the MLSS system, medical assistance will continue to serve as a bottom line of HC coverage for the needy.

Exhibit 8: China's total health expenditure in 2015-2019 and forecast by channel



Note: # of drugs refers to drugs covered under patent protection at the beginning of the years mentioned above
Source: menet.com.cn; NRDL; desktop research; BCG analysis

Section V Core issues to be considered in the construction of the MLSS system

The *Opinions on Deepening the Reform of the Medical Security System* issued by the State Council clearly specifies that by 2030, a MLSS system with the BMI as the mainstay and medical assistance as the bottom line, with supplementary medical insurance, CHI, charitable donations, and medical mutual assistance achieving common development, shall be established. There is a top-level design framework for planning of the construction of a "MLSS system". The following questions as to how to develop China's MLSS system deserve further consideration.

A. What needs should be covered by CHI (including supplementary medical insurance) in terms of the need level? Are these needs the people's needs for a high quality of life, or do they need to cover some of the people's widely pressing needs that affect life, health and quality of life, and productivity?

B. Which groups of people should be covered by CHI in terms of population level? People will not suffer differentiated coverage due to their own health status (e.g., healthy, high risk of diseases, people with diseases) in BMI, so should CHI cover these people as well?

C. How should the Government participate in the construction of the MLSS system? Fostering a MLSS system is a common task for the whole society, with the participation of the Government. So should the Government participate in the CHI market, what areas should the Government participate in and how?

This report is intended to propose recommendations based on the actual situation in China by drawing lessons through the study of international experience.

Chapter II
Learning from International Experience

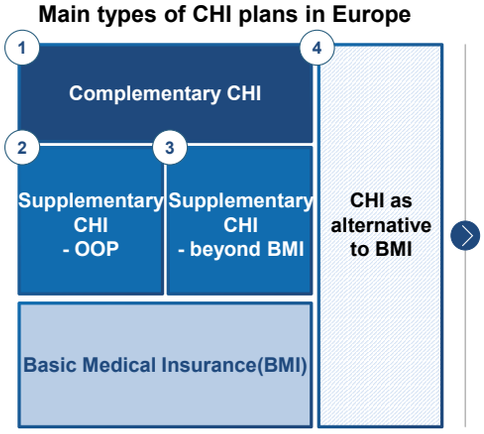
Section I Overall development of CHI in major countries

CHI (which refers to private health insurance that is not compulsory in a broad sense) plays an important role in the health expenditure of numerous countries. A report of the World Health Organization's "European Observatory on Health Systems and Policies" concludes that CHI plays two major roles in the social security (SS) system. First, the involvement of CHI in the SS system can enhance efficiency and give consumers more choices; second, CHI can reduce OOP health expenditure in the case of limited financial funds; and third, CHI can play a role in paving the way for expending the scale of BMI and improving coverage level.

Coverage in terms of need level: according to the summary of CHI in middle- and high-income countries of the European Observatory on Health Systems and Policies, CHI plays the following four main roles[5].

Exhibit 9: Main types of European CHI and insurance coverage

Main types of CHI plans in Europe



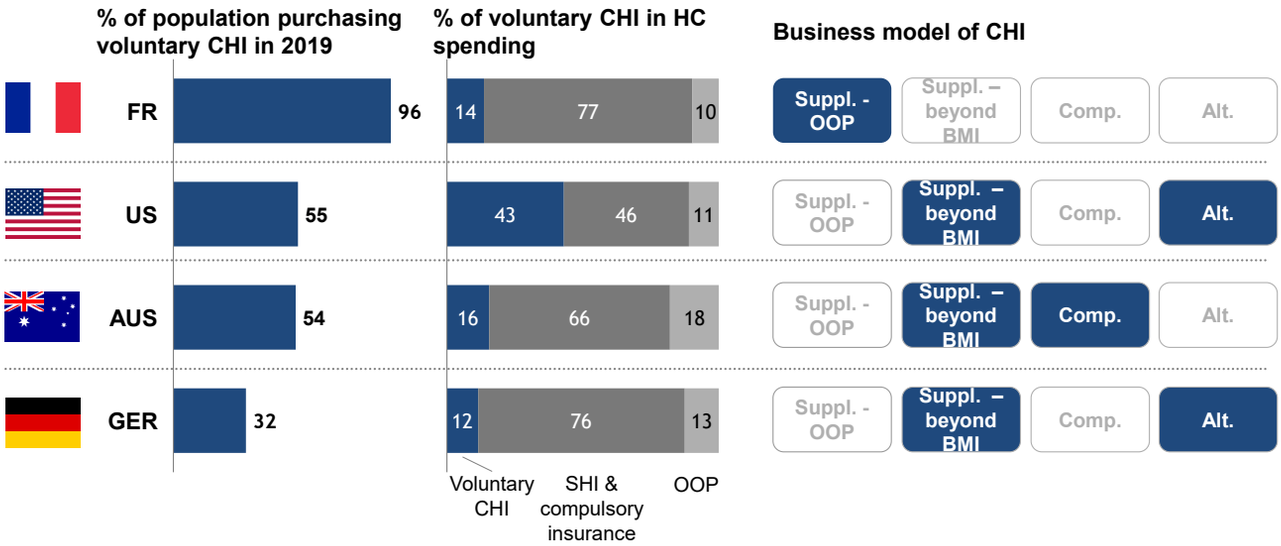
CHI coverage

Type	Coverage	Customer demand addressed
1. Complementary	HC services beyond BMI (e.g., private hospitals, clinics)	Meet the needs of customers (esp. high-income individuals) to access HC services by choice
2. Supplementary - OOP	OOP expenses under BMI	Reduce OOP expenses under BMI. Cover expenditure exceeding reimbursement cap to avoid illness-caused poverty
3. Supplementary – beyond BMI	Drugs, medical devices & services beyond BMI	Reduce OOP expenses beyond BMI
4. BMI alternative	Uninsured population, either not eligible for, or choosing not to join BMI	Meets the will of customers to increase insurance coverage and choices

Source: European Observatory on Health Systems and Policies; OECD; BCG analysis

The main coverage responsibilities of CHI may vary among representative countries in major CHI markets.

Exhibit 10: Enrollment rate, spending % and business model of voluntary CHI by country



Source: US Census Bureau; OECD Report; public information; BCG analysis

Coverage in terms of population level: there are clear differences in the demands corresponding to potential health expenditure of healthy people, high-risk people (elderly people, etc.) and people with diseases.

Table 6: Population level and amount and probability of medical expenses

Population level	Population description	Pre-existing medical expenses	Probability of future medical expenses
Healthy people	People who have not been ill recently and have no high risk factors for diseases	Few	Low
High-risk people	People with high risk factors for diseases, such as elderly people, people with a hospitalization history not long ago, young people with benign pulmonary nodules, etc.	Low	High
People with diseases	Suffering from a chronic or critical illness	High	100%

In a free market, the CHI market can provide HC coverage for employees (including their spouses and children), including healthy people, high-risk people and people with diseases, largely through “employer-sponsored group insurance". This is because in a company, the responsibility for higher payout for high-risk people and those with diseases is spread among all employees.

However, in a market where one can be free to get insured, "market mechanism failure” may appear, resulting in the exclusion from coverage of high-risk people and those with diseases, who place the greatest burden on the health system and are most in need of HC coverage[6] . **The “market mechanism failure” is caused by the following two main reasons.**

1.Adverse selection: Healthy people who are not prone to illness are generally unwilling to purchase CHI from insurers; and it is the people that are not healthy and prone to illness that are more willing to purchase CHI. The resulting overall

health level of enrollees is even lower and the insurers' risk of paying out is much higher than that corresponding to the premiums charged based on the average rate of illness in the normal population. In the long run, insurance products will have difficulty in surviving in the absence of a healthy population purchasing insurance.

2.Risk-based selection: Insurers usually wish to reduce the risk of paying out and therefore will review and assess the risk of the applicants according to certain criteria in order to exclude those who are ineligible and prevent the uninsurable risks. However, this also results in a circumstance where high-risk people, such as elderly people and those with a past medical history, have to spend much higher premiums than healthy people to obtain coverage, or face reduced coverage or outright denial of coverage.

Thus, **in a market where one can be free to get insured, the CHI's coverage for high-risk people and those with diseases can be observed from the following three points:**

- Whether high-risk people and those with diseases can get insured
- Whether a healthy person is guaranteed renewal of coverage after enrollment
- Whether premiums are adjusted according to the individual's health status

If high-risk people and those with diseases are allowed to purchase main CHI products in a country, and an individual's premiums are not subject to significant adjustment due to his/her health factors, or a healthy person is guaranteed renewal of coverage after illness, the country's CHI can be considered to have provided better coverage for high-risk people and those with diseases.

Section II Development of CHI in the US

Overview of the US healthcare security system

The US healthcare security system consists of CHI as the mainstay, which covers about 55% of the population (49% employer-sponsored insurance and 6% individual insurance) and the Government-led Medicare and Medicaid programs, which cover about 17% and 18% of the US population respectively; another 2% of the population is covered by programs offered by the US military; and only the remaining about 8% are not included into any health insurance program. From the perspective of health insurance expenditure, US's total health insurance expenditure was about USD 2.4 trillion in 2016, with CHI expenditure accounting for 48%, Medicare expenditure 28% and Medicaid expenditure 24%.

Table 7: Main types of HC coverage in the US

Type	Population covered	Nature	Proportion of population covered
Employer-sponsored health insurance	Employees, mostly including enrollment as a family	Commercial insurance	About 49%
Individual health insurance	Voluntary individuals	Commercial insurance	About 6%
Medicare	Elderly people over 65 or patients with long-term end-stage renal disease	Multi-layer: CMS-operated BMI. Supplementary commercial insurance can be purchased or a Medicare Advantage plan can be purchased in lieu of CMS-operated BMI.	About 17%
Medicaid	Low-income people, disabled people, etc.	BMI, operated by the Government or CHI companies	About 18%
HC coverage for military	Active and retired military personnel and dependents	Government-operated HC coverage	About 2%

Coverage for different population levels in the US healthcare security system

The US is a relatively free CHI market. Throughout the development history of CHI in the US, "employer-sponsored group insurance" has provided coverage for employees, including healthy people, high-risk people and people with diseases. After World War II, the US adopted the *1942 Stablization* Act to restrict employers from paying high wages to their employees due to great labor shortage in the market and high inflation. However, at that time, employers were not restricted from purchasing healthcare benefits for their employees, and were exempt from taxes therefor as well, thus driving employers to provide medical insurance for employees and setting up the employer-based structure of the US health insurance system. Coverage rate of the employer-sponsored group insurance in the US rose from about 10% before World War II to about 70% in 1955, although most insurance at that time covered only hospitalization expenses.

However, a "market mechanism failure" occurred in the free CHI market in the US, which has prevented effective coverage for elderly people and low-income people who lack jobs and financial resources. In the 1960s, the lack of coverage for the elderly, the disabled and other vulnerable groups gradually aroused widespread social concern, and the issue regarding the enrollment of these populations was solved through the establishment of Medicare and Medicaid based on social security by the Government's intervention in combination with BMI funding and individual financing. The US Congress adopted the Social Security Act in the 1960s, and the establishment of the Medicare program (for elderly people) and the Medicaid program (for low-income people) was proposed respectively in its Titles 18 and 19.

According to the law, the enrollees who pay Medicare taxes for more than 10 years before 65 years old (and patients with long-term end-stage renal disease) are eligible for reimbursements in Medicare Part A (covering the inpatient hospital care expenses) after age 65[7]. Also, enrollees shall pay a monthly premium of USD 105 for Part B (outpatient service fees).

In addition, the "market mechanism failure" of CHI in the free US market is also reflected in the inability of people with diseases to get insured, which is ultimately addressed through the Government's involvement. In the US, prior to 2010, it was difficult for people with diseases to get insured because of the general

"risk-based selection" by insurers for individual enrollment. In 2010, about 17.8% of the non-elderly population in the US still had no HC coverage, and such social problems also sparked widespread concern. In 2010, the Obama administration pushed through the *Affordable Care Act*, the most groundbreaking medical security act in the US since the Medicare and Medicaid legislation in 1965, to improve overall enrollment rate of health insurance in the US, especially for the vulnerable groups. Among the various requirements for enrollment and coverage of CHI in the Act with over 1,000 pages, updated over the years that followed, the provisions with great impact include:

1.**Government's endorsement of insurance products:** The federal government and state governments establish an "Exchange" (health insurance trading platform) where consumers can select and directly purchase government-screened and approved products (including Internet platforms, telephone and off-line sale channels). The goal of this move is to reduce the marketing costs of CHI companies and enhance consumers' trust in insurance products. The federal government also requires that products that can be sold on the Exchange must include at least 10 basic benefits (including hospitalization expenses, maternity expenses, ambulance services, etc.), to which each state government can add other content.

2.The public encouraged to enroll: All Americans who do not enroll in CHI must purchase a CHI policy among those as designated by the Government, otherwise they will be subject to a fine. The overall payout burden will be reduced by including more healthy people in the insurance pool.

3.Companies encouraged to take out insurance: Large employers (those with more than 50 employees) are required to provide health insurance for their employees, otherwise they will be subject to a fine. Tax incentives or subsidies will be provided for small employers that offer health insurance to their employees[8].

4.Increased requirements for insurers: Strengthened regulation for the terms and conditions of the products of insurers will be implemented, requiring that insurers selling products on the "Exchange" may not refuse coverage on the basis of illness or adjust the premiums for enrollees with diseases on the basis of their diseases, but only on the basis of their ages with the scope of adjustment limited. The medical loss ratio (MLR) of health insurance is required to be higher than 85% for large employers and 80% for small employers and individuals. Such an MLR requirement is largely in line with the payout level of large US CHI companies.

5.Helping insurers control risks: Due to the widespread inclusion of enrollees with diseases, many insurers are generally concerned about the high risk of payout. To this end, during the period of 2014-16, the US Government provided insurers with compensation by a "risk-corridor program", whereby the Government paid 50-80% of the excess of payout for insurance products included in the Exchange if the risk of paying out exceeded a certain amount of premiums. At the same time, the Government adopted a "risk transfer" approach to provide subsidies for insurers included in the "Exchange" by collecting taxes from general group insurance companies.

Thanks to this Act, the non-enrollment rate of US CHI (non-elderly people) declined from 17.8% in 2010 to 10.0% in 2016. Thereafter, the non-enrollment rate rebounded to about 10.9% in 2019 due to the Trump administration's reduced commitment to healthcare reform, but, overall, the healthcare reform made by the Obama

administration has had a very positive effect on HC coverage for the vulnerable groups in the US.

Table 8: Proportion of people aged 0-64 without CHI by year

Year	Number of non-enrollees (million)	Proportion of population aged 0-64
2008	44.2	17.1%
2009	45.0	17.3%
2010	46.5	17.8%
2011	45.7	17.4%
2012	44.8	17.0%
2013	44.4	16.8%
2014	35.9	13.5%
2015	29.1	10.9%
2016	26.7	10.0%
2017	27.4	10.2%
2018	27.9	10.4%
2019	28.9	10.9%

Source: KFF analysis of 2008-2019 American Community Survey; 1-Year Estimates.

However, the deep involvement of the Government and detailed requirements for the CHI market have also caused many problems. For example, the fees charged to CHI companies through the "risk transfer" approach are passed through to general group insurance products by the insurers, resulting in the general rise of the price of employer-sponsored group insurance and causing widespread dissatisfaction. The policy of mandatory enrollment for individuals (subject to a fine if not) was also opposed by many people unwilling to purchase the insurance, so the provision was repealed in 2019 with the promotion of the Trump administration.

Defining the need level of CHI in the Medicare system

Since the Medicare in the US basically covers all Americans, similar to the BMI in China, we are focusing on the Medicare system to understand the role of commercial insurance in the Medicare system. Medicare coverage is further divided into five categories:

- Original Medicare: Part A and Part B directly managed by the Center of Medicare and Medicaid Services (CMS) in the US: covering the inpatient hospital care expenses and outpatient service fees.
- Part C (Medicare Advantage) offered by CHI companies. Consumers may choose the original Medicare or Medicare Advantage at her/his own sole discretion. It is required to cover at least what original Medicare does. If a consumer chooses Medicare Advantage, the CMS will transfer that consumer's premiums to the CHI company concerned. If the fee needed for coverage is higher than the premiums transferred, the consumer will be required to pay the excess.
- Part D offered by CHI companies, covering outpatient prescription drug expenses not covered by Parts A and B.

Table 9: Major types of Medicare coverage in the US

	Medicare				
	Medicare Part A	Medicare Part B	Part C	Part D	Medigap
Population covered	Voluntary enrollment in Medicare coverage operated by the CMS		Voluntary enrollment in Medicare coverage operated by commercial insurance companies	Voluntary purchase	Voluntary purchase after enrolling in Part A+B or Part C
Coverage	Inpatient care in a hospital, skilled nursing facility care, nursing home care, home health care, hospice care, etc.	Medical examinations, nursing laboratory tests (x-rays, blood tests, etc.), medical supplies (wheelchairs, inpatient beds), orthosis and prostheses, ambulance services, mental health treatment	A commercial health insurance plan as an alternative to Part A+B (with the same service components), also including preventive treatment and prescription drugs, dental and vision care	Outpatient prescription drugs	Covering the OOP expenditure not covered by Parts A and B, overseas travel insurance
Premium per capita (USD/year)	Free of charge	1260	Vary by insurer	84-1,068 About 396 on average	About 1,712 on average
Number of people covered (million)	56	53	22	47	14

The main bodies of the Medigap and Part D are supplementary coverage on the basis of the basic Part A and B. Many of the coverage elements can be viewed as basic coverage. Prior to 2006, Medicare covered only the hospitalization expenses and outpatient diagnosis and treatment service (excluding drugs) fees in Part A and B. However, with the gradual increase in the incidence of chronic diseases, outpatient drug expenses for chronic diseases has gradually become a very heavy burden for elderly people, including many oral drugs for tumors, diabetes and hypertension. To this end, the US adopted the Medicare Modernization Act in 2006, which launched the Medicare Part D plan to cover the expenses of outpatient prescription drugs. As of 2016, enrollment rate of the Part D plan had reached 60% in Medicare enrollees.

For such an insurance product as Part D that benefits the broad masses and meets basic needs, the US makes it commercial insurance by a combination of government funding, pharmaceutical company funding and individual financing, and controls the compensation for prescription drugs in the Medicare by a cooperation and co-payment mechanism. Commercial insurance companies are the underwriters in terms of this plan with subsidies from the federal and state governments, and great price discounts from pharmaceutical companies. In 2016, for example, 75% of the full-year funding for the Part D plan was provided by Medicare funds as subsidies, 11% by the state government, and 14% by individuals as expenditures. The amount of the individual expenditures depends on the income of enrollees, with the standard fees to be borne by high-income people being correspondingly higher. Also, for the middle-level coverage of insurance (payout range of USD 3,310 to USD 7,515), pharmaceutical companies will provide great discounts (~50%) on brand-name drugs. To guard against moral hazard, the plan also sets a high deductible (USD 360 in most cases). Thus, the Part D plan covers the expenses of prescription drugs in HC services for elderly people through a multi-party cooperation and co-payment mechanism.

I**n addition, the supplementary medical insurance in the Medicare program is covered by Medigap plans, in which five of the nine responsibilities are the**

OOP portion or the portion below the deductibles of Medicare's basic coverage. Commercial insurance companies are the underwriters in terms of Medigap and have the right to launch their own commercial insurance products, but the Government has given commercial insurance companies a certain degree of freedom while ensuring a regulated and active market by setting the coverage and reimbursement criteria for 9 supplement plans under Medigap. There are five supplements to Medicare basic coverage in Medigap that can be categorized as supplemental-OOP, including: the OOP portion of hospitalization expenses and the portion below the deductible, the OOP portion of the outpatient service fees and the portion below the deductible, and the OOP portion of hospice care fees. Two non-Medicare services that can be categorized as supplementary-beyond BMI are the basic needs, including blood services, and Skilled Nursing Facility (SNF) care. Another two can be classified as complementary, including: the Part B “excess charges”, and foreign travel emergency coverage.

Medigap's 10 plans are regulated by CMS (with reimbursement rates subject to certain adjustment every year), and CHI companies are required to offer relevant products within this scope that meet the requirements. As a result, the Government has somewhat regulated the coverage responsibilities of the products of commercial insurance companies by the management of the coverage of supplementary products in the Medicare program.

Table 10: 10 Medigap supplement plans (2015)

Content	A	B	D	G	K	L	M	N	C	F
Medicare Part A coinsurance hospital	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Medicare Part B co-insurance	100%	100%	100%	100%	50%	75%	100%	100%	100%	100%
Blood	100%	100%	100%	100%	50%	75%	100%	100%	100%	100%
Medicare Part A hospice care coinsurance	100%	100%	100%	100%	50%	75%	100%	100%	100%	100%
Skilled nursing facility care coinsurance			100%	100%	50%	75%	100%	100%	100%	100%
Medicare Part A deductible		100%	100%	100%	50%	75%	50%	100%	100%	100%
Medicare Part B deductible									100%	100%
Medicare Part B “excess charges”				100%						
Foreign travel emergency coverage			80%	80%			80%	80%	80%	80%

Medicare Advantage (MA), an alternative option to the Medicare Part A + Part B plans in the Medicare program, was officially introduced in 1997. Its main purpose is to make insurance operation more efficient by outsourcing services to commercial insurance companies. In the early 1990s, CHI companies took on a lot of coverage responsibilities of social medical insurance (e.g., Medicare Part A and B plans, etc.), but due to the high risk of enrollees and a series of requirements set by the Government such as high minimum MLR, a large number of CHI companies had difficulty in operation and withdrew from the Medicare Part C market because the sustainability of their operations is greatly challenged. To address this situation, in 1997, the US Government introduced the *Balanced Budget Act* (BBA) and established the Medicare Advantage Plan. The plan had improved the operation enthusiasm of CHI companies through a reasonable risk compensation mechanism for commercial insurance companies. The

basic business model was that the federal government paid commercial insurance companies reasonable premiums through a complex risk adjustment mechanism and a competitive bidding system, and the commercial insurance companies provided HC services for enrollees on the principle of small profits and universal benefits (partial refund of premiums when the MLR is lower than 85%), thereby improving the use efficiency of funds by relying on the operational capacity of commercial insurance companies. And the Government assessed the service level of insurance companies with stars and rewarded those with better service. **The move has significantly improved the enthusiasm of insurers to operate Medicare Advantage and the sustainability of Medicare Advantage,** which now accounts for more than 30% of Medicare services nationwide on the whole, with a penetration rate of up to 50% in some states.

Section III Development of CHI in Germany

Overview of the German social security (SS) system

Statutory health insurance and CHI exist in parallel in Germany that implements a SS system with statutory compulsory insurance as the mainstay and private voluntary insurance as a supplement. In 2019, Germany's health expenditure accounted for 13.0% of its GDP, about USD 500 billion, with the expenditure per capita being USD 5,500; for health financing, social health insurance accounted for 76.5% and CHI 10.3%.

In terms of population coverage, almost the entire population of Germany is covered by insurance and the proportion of enrollees has remained stable over the past decade, with an overall universal coverage rate of 98%. Social health insurance covers about 87% of the population, and commercial insurance covers a total of 32% (of which 21% have both CHI and statutory health insurance and 11% are covered by CHI only).

Defining need level of CHI in Germany

In Germany, CHI is divided into two forms of insurance: comprehensive coverage and additional health insurance. Citizens can take out an additional insurance policy on the basis of enrolling in statutory health insurance to obtain a higher level of supplementary coverage; civil servants (not covered by statutory health insurance) and those with income above a certain income can opt out of statutory health insurance and only purchase comprehensive coverage.

According to the *Statutory Health Insurance Competition Strengthening Act* enacted in 2007, CHI (especially comprehensive coverage (alternative) and long-term care insurance) can provide the same HC coverage as statutory health insurance. The German *Social Insurance Act* specifies that people with annual pre-tax income above a certain threshold (with an annual pre-tax income above EUR 62,550 in 2020, subject to annual adjustment) are not compulsorily covered by statutory health insurance and can voluntarily choose between statutory health insurance and CHI. However, if you have elected to enroll in statutory health insurance, you cannot purchase alternative CHI. Comprehensive coverage is an alternative CHI, and the population covered thereby consists of three main types: active and retired permanent public employees, such as teachers, professors, civil servants, etc.; self-employed people who are outside statutory health insurance system; and people with income above the threshold who voluntarily opt out of statutory health insurance. Some people who are covered

by public health insurance (about 21% of the population) also choose to enroll in supplementary CHI for better coverage of healthcare services.

As statutory and alternative commercial insurance in Germany covers the vast majority of treatment expenses (prescription drugs, innovative drugs, hospitalization, outpatient fees, etc.), there is basically no market demand for serious disease insurance, special disease insurance and other important disease coverage in supplementary CHI in Germany, and additional health insurance is mainly as supplementary coverage (beyond BMI).

Table 11: Introduction of statutory and commercial health insurance in Germany

	Statutory health insurance	Comprehensive coverage	Additional health insurance
GWP	~EUR 240 billion	~EUR 280 billion	~EUR 92 billion
Premium per capita	~EUR 4,600/year	~EUR 3,169/year	~EUR 440/year
MLR	~90%	~85%	~70%-80%
Enrollees	• Covering approximately 87% of the population, about 72 million people (2018) • About 25% being retired people	• Covering approximately 8.74 million people (2018) • Available only to civil servants, freelancers, employees with an annual income of more than € 62,550 and other people who do not enroll in statutory health insurance	• Covering approximately 20-25 million people (2018) • Any people are eligible for purchase
Coverage	• Wide coverage of drugs, devices and medical services required for most treatments, including innovative drugs, hospitalization, inpatient services, dental and vision care • Low reimbursement rate for non-basic essential services such as dental and vision care	• With core coverage similar to BMI coverage, such as inpatient drug reimbursement • 80% of the enrollees choosing coverage in a medical institution by themselves, such as a private ward • Additional coverage including hospitalization benefits, etc.	• With the supplementary-beyond BMI as the core, 80% of the enrollees purchasing dental coverage • Complementary: 30% of the enrollees choosing coverage in a medical institution by themselves

The German CHI market is mature, with an overall annualized growth rate of about 2.2%. The GWP are approximately EUR 37.2 billion in 2018, with 74% from premium income of alternative CHI and 24% from supplementary CHI[9]. In terms of the growth rates of both types of commercial insurance, supplementary CHI grows faster than alternative CHI and is an important source of growth for commercial insurance companies. The overall MLR of CHI in Germany is around 85%.

Table 12: Income of CHI by type in Germany (EUR 100 million)

Year	Comprehensive coverage	Additional health insurance	Others	Total
2010	241	64	7	312
2011	252	67	7	326
2012	259	70	7	336
2013	257	75	7	340
2014	258	78	8	343
2015	258	80	8	346
2016	261	82	8	351
2017	271	85	8	365
2018	277	88	8	372
Annualized growth rate (2010-2018)	1.7%	4.0%	2.0%	2.2%

Source: Statistical Yearbook of German Insurance

The development and evolution of the German SS system shows that the positioning of commercial insurance changes at different times. The development of German SS system represents that in many developed European countries: the development of commercial insurance precedes that of social security and paves the way for its expansion and improvement.

The earliest group HC coverage (the predecessor of CHI) in Germany dates back to 1848, when HC coverage was set up by the Berlin Police Department. Since then, many industrial and mining companies had established group-based HC coverage to ensure the safety of workers' lives and reduce losses of productivity. As such HC coverage became universal, in 1883, the German Government adopted the *Sickness Insurance Act,* which firstly confirmed the compulsory enrollment of some industrial workers in BMI, and secondly established the Sick Founds (sickness fund organizations) that was specifically responsible for financing and managing funds and payment methods, marking that Germany was the first country in the world to implement a social security system by social legislation. The sickness fund is raised through joint contributions from employees and employers. In 1911, the Government adopted and implemented the Salaried Employees' Insurance Act, which included those falling between workers and civil servants, with low annual incomes into the coverage of statutory health insurance.

By the 1920s, CHI had developed vigorously, due to two major factors: a) the middle class's consumption capacity had recovered after the recession, creating a demand for health insurance; and b) many people who could not be covered by statutory health insurance realized the importance of health insurance and voluntarily enrolled in CHI. In 1924, the gradual recovery of the economic level of middle class after the end of World War I drove the growth of CHI, with another 2.5 million people enrolling in CHI. In 1931, the Association of Private Health Insurance Companies (PKV - Verband der Privaten Krankenversicherung e.V.) was formally established and developed in parallel with the statutory healthcare system.

In the 1970s, coverage of social health insurance was gradually expanded. In 1970, Germany implemented the *Act Relating to Health Insurance for Workers,* which further expanded the population eligible for statutory health insurance by allowing coverage for white-collar workers, while allowing people with high incomes to voluntarily choose to remain in CHI or to switch to statutory health insurance. In 1975, the statutory healthcare system also included students and disabled people, with the coverage of statutory health insurance gradually expanding. In 1981, the German Government adopted a social insurance act for freelance artists and journalists, and almost all German citizens were thus covered by the SS system.

As can be seen from the development path of Germany, CHI can serve as an effective transitional financing channel to reduce people's cash outlays when the country's economic development level is not sufficient to cover the basic medical needs of all people. At the same time, CHI can also effectively enhance people's attention to health insurance, enabling a broader consensus on the expansion of financing scope of social health insurance (or improvement of financing level).

In addition, Germany has seen a significant increase in medical expenses after the implementation of universal health coverage, and has to introduce a series of policies to reduce social health insurance expenditure and to encourage the

development of CHI to fill the gap of HC coverage, in particular encouraging CHI to provide supplementary coverage.

In order to control medical expenses and increase OOP expenditure for increased individual HC liability, the German Government enacted the Health Insurance-Cost Containment Act in 1977, established a national coordinating body and implemented measures such as strengthened review, restrictions on physicians' rights, and reduced charging standards for some items, thereby curbing the momentum of continued increase in HC coverage expenditures. In 1981, the German Government enacted the *1981 Health Insurance Cost Containment Amendment Act,* which further controlled total health expenditure of the Government, thereby further reducing the health expenditure of the Government. In the 1980s, the German Government introduced the *Health Care Reform Act* and the Hospital Cost-containment Act to promote the healthcare awareness of individuals by reducing the insurable amount of statutory health insurance, reducing statutory health insurance expenditures on dental, etc., and increasing co-payment ratio of individuals. At the same time, expenditure on preventive healthcare was increased and the level of medical services resources was improved.

Defining population coverage of CHI in Germany

Faced with the issue that it is difficult for high-risk people and people with diseases to get insured, taking comprehensive coverage as example, Germany ensures coverage for high-risk people and people with diseases by encouraging healthy people to enroll, regulating insurance products and avoiding adverse selection.

First of all, according to regulatory provisions, comprehensive coverage in Germany has the following characteristics:

- Guaranteed renewable for life. Once an insurer underwrites a policy, it cannot be canceled and the right to cancel it belongs to the insured, who can surrender the policy or switch to another policy of the same company. The commitments made at the time of contract conclusion are valid for life and insurers cannot unilaterally reduce the insurance coverage.

- Premiums may be determined only on the basis of age and health status at the time of enrollment and may not be changed on the basis of the health status or age after enrollment, known as the “Level Premium" policy.

Such a product regulation policy obviously poses a great challenge to the operation of CHI, so Germany has adopted legislation to enhance the sustainability of such insurance operation by the following policies:

1.Compulsory enrollment. In order to further improve the accessibility of insurance, the German Government implemented the *Act to Strengthen Competition in Statutory Health Insurance*, which makes it mandatory for all residents to have health insurance, either statutory or commercial health insurance.

2. Tax preference. In 2004, the Statutory Health Insurance Modernization Act was introduced in Germany, whereby CHI purchased by individuals/employees was tax-free up to certain limits. Within certain limits, CHI premiums can be deducted from a person's taxable income. For individuals with comprehensive coverage, the ceiling

is EUR 2,400/year. Statutory health insurance, CHI, and compulsory long-term care insurance paid by the employer for employees are deemed as its operating expenses because it is a part of the employees' incomes and are not taxable. The limits subject to tax exemption is capped at the obligation for statutory health insurance and statutory long-term care insurance. The part of CHI and long-term care insurance purchased by employees or individuals in excess of the statutory health insurance is exempt from tax up to certain limits (EUR 1,900 for employees and EUR 2,800 for individuals).

3. Overall premiums adjustable. While premiums for individuals cannot be adjusted for their health status, overall premiums can be adjusted for medical expense inflation. New treatment procedures, expensive drugs, increased expenses on care and population aging, etc. result in higher medical expenses. Therefore, health insurance companies compare annual payouts with projected expenses every year. If the deviation exceeds 10%, all calculation bases will be checked. If the deviation is confirmed upon verification, then the insurer can adjust the premiums and an independent trustee will check whether the assessment and calculation are correct. Insurers are not allowed to change premiums without the approval of the trustee, and the Federal Financial Supervisory Authority (BaFin) supervises the accuracy of premium calculation. CHI premiums grew at an average annual rate of 2.8**%** from 2009 to 2019.

4. Establishment of aging reserve. German law requires enrollees to pay an aging reserve, approximately 10% of the premiums when they are young. Prior to January 2009, if an enrollee switched to a new insurer, the aging reserve paid thereby could not be transferred to the new insurer, which effectively prevented the enrollee from making "adverse selection" and protected insurers from the risk arising from making the commitment of "lifetime coverage". However, given that this provision affected market competition and policy switching of customers, the aging reserve was changed to be transferable after January 2009.

5. Level premium and return. According to the Level Premium policy, the younger the consumer is, the cheaper the premium will be, which improves the awareness of young people to take out insurance. At the same time, the relevant law stipulates that insurers should return a portion of premiums to enrollees in years when no payout is paid to them, further increasing the enthusiasm of enrollees to stay insured.

6. Basic coverage scheme. In order to further stimulate competition in the healthcare market and increase the coverage of commercial insurance for the elderly people with payment difficulties, in 2009, the German Government required all CHI companies to offer their enrollees a basic comprehensive coverage scheme with coverage similar to that of the statutory health insurance.

It is worth noting that the Government's initiatives have promoted the development of CHI, but some of the policies have also been opposed by the industry for their adverse impact on the continuous development of CHI. For example, in the 2000s, the Association of Commercial Insurance raised objections to a number of reform policies, particularly the policies regarding the transferability of aging reserve and policies requiring insurers to offer a basic coverage scheme, as they would increase the risks of adverse selection by enrollees and excess of loss.

Chapter IV Development of Commercial Health Insurance in France

Overview of healthcare system in France

In France, the healthcare system consists of public health insurance and supplementary health insurance, combining national support with commercial insurance. In 2019, the total health expenditure in France accounted for 11% of GDP, about 297 billion dollars, with the expenditure per capita of about USD 4,433. Specifically, as the core of the healthcare system, the social insurance accounted for 84% of expenditure; CHI as an additional social insurance accounted for 7%, and OOP expenditure only accounted for 9%.

In terms of population coverage, almost everyone in France can be covered by public health insurance, and substantial medical expenses for serious diseases can be reimbursed in public hospitals. The social insurance covers close to 100% of the population, and the insured rate of supplementary commercial insurance is 96%.

Positioning of CHI in the level of needs

In France, the CHI coverage is mainly based on supplementary coverage (OOP expenses), which mainly supplements the OOP part within national health insurance (NHI) payments, and many of them are relatively basic needs.

The NHI is equipped with explicit regulations on its own coverage and reimbursement rate, and it is so extensive that it covers medical expenses on diagnosis, outpatient, hospitalization, essential drugs and medical devices, innovative drugs, dentistry and ophthalmology, as well as non-basic expenses on single wards and medical transport at present. Although the NHI in France is characterized by an extensive coverage involving almost all types of medical expenses, it still has a higher proportion of OOP compared to those in other developed countries in Europe, thus providing room for the development of commercial insurance[10].

Table 13: Coverage and reimbursement rate of national health insurance in France

Coverage	Theoretical reimbursement rate (%)
Inquiry	70
Disease diagnosis	60, 70
Prescription drugs	15, 30, 65, 100
Medical assistive devices	60
Hospitalization and surgery	80
Optics and hearing	60
Dental treatment	70
Medical transport	65

Taking innovative drugs as an example, France assesses the level of medical insurance reimbursement for innovative drugs by two dimensions:

ASMR rating assessment determines the reimbursement rates: the French National Authority for Health (HAS) has clarified that the ASMR rating (Amélioration du service médical rendu or clincial improvement, an official system for assessing the value of drugs by HAS) consists of five levels (from ASMR I to ASMR V), of which ASMR I to III mean that faster access with price notification instead of negotiations – as long as pricing is consistency with European counterparts. An ASMR of IV may possibility lead to a premium price but ASMR V products can be listed only if the costs are less than the comparators – in the range of 5 to 10 percent lower.

The SMR rating assessment specifies the proportion of national health insurance payment: the SMR rating is determined based on five considerations, including (1) the severity of the disease, (2) the importance of the medical demands, (3) the lower morbidity or mortality or improved quality of life caused by the drug, (4) the impact on the delivery of care and on the patients' life, and (5) the impact on public health, which determine the reimbursement rate of national health insurance.

Table 14: SMR rating and corresponding scope of reimbursement rate of drugs by national health insurance

Rating	Reimbursement rate by NHI
SMR-Major	65%-100%
SMR-Important	65%-100%
SMR-Moderate	30%
SMR-Weak but justifying reimbursement	15%
SMR-Insufficient	No reimbursement

In 2018 assessment of health insurance portion in France, only a few drugs (involving some life-threatening diseases with long-term medication) were reimbursed at 100%, with the majority of drugs reimbursed at 65% to 100%. Additionally, there are about 35% of drugs were reimbursed at a rate below 30%, and many drugs that significantly improve the quality of life and productivity of the population fell within this range. Such a payment policy rendered consumers more concerned about the guarantee of OOP to cover their basic medical needs.

Therefore, the CHI in France is dominated by supplementary coverage through out-of-pocket expenses. Taking for example a certain supplementary CHI product for employees offered by MGEN (one of the largest mutual insurers in France), its coverage is involved in outpatient treatment, hospitalization diagnosis and treatment, maternity, dentistry, pediatrics and other types. **Based on the social insurance payment standard, the product provides additional supplementary payment.**

Table 15: The certain supplementary health insurance product for employees offered by MGEN

	Social insurance	Basic product	Intermediate product	Premium product
Outpatient service				
Registration fees	70%	100%	140%-160%	180%-200%
Photographic ultrasound fees	70%	100%	140%-160%	180%-200%
Testing and examination fees	60%	100%	125%	150%
Drugs (65%/30%/15% reimbursable)	65%	100%	100%	100%
Medical materials	60%	135%	160%	210%
Hospitalized treatment				
Basic expenditures	80%	100%	100%	100%
Surgical costs	80%	100%	140%-160%	180%-200%
Daily hospitalization packages	\	Full	Full	Full
Private ward	\	30€/day	€60/day	€90/day
Emergency of private ward	\	€15/day	€15/day	€20/day
Ambulance service	65%	100%	100%	100%
Out-of-department hospitalization allowance	\	\	€15/day	€15/day
Maternity nursing				
Surgical costs	100%	100%	140%-160%	180%-200%
Fertility room	\	30€/day	€60/day	€90/day
Maternity allowance	\	100€	100€	100€
Dental treatment				
**100% health care and prosthetic treatment (from Jan. 1st, 2020)	70%	Full	Full	Full
Affordable care and prosthesis	70%	170%	220%	320%
Orthodontics	70%	120%	210%	270%
Ophthalmic treatment				
Frame glasses	60%	Full	Full	Full
Others	60%	60%+100€	60%+150€	60%+200€
Audiology treatment				
100% treatment by healthcare devices	Adults: 240€ Children: €840	Full	Full	Full
Other audiology treatments	Adults: 240€ Children: €840	Adults: 240€ Children: €840	Adults: €510 Children: €540	Adults: €1010 Children: €1040
Prophylactic treatment				
Convalescent care	65%	100%	100%	100%
Health rehabilitation treatment	\	30€-60€	70€-180€	160€-240€

In the development process of CHI in France, CHI has played a role in supplementing social medical coverage for a considerable period, and paved the way for improving the overall level of social coverage. The CHI market in France is mainly driven by Mutual insurers. The Mutual insurers were originally established in the 19th century, even earlier than the establishment of the social security system, and have long been the main providers of insurance covering 2/3 of the country's population by 1939 in France. The institution, which began with compulsory group insurance for covering workers by contract, has driven the development of the CHI market in France. The importance of the early Mutual insurers to French medical security led to the recognition of commercial insurance in "medical coverage" and "mutual aid and reciprocity" in French society[11] .With slower economic growth and the pressure on public medical system in financing during 1980 to 2010, the proportion of spending on public medical system in outpatient medical expenditures decreased from 77% in 1980 to 63% in 2010, and more costs were transferred from social security to individuals. Thus the commercial insurance played an increasing role in funding and ensuring access to medical services. Growth in residents' income also contributed to increasing coverage of commercial insurance in France, and insurers expanded their contracts to attract young and healthy populations to insure themselves. By 2010, the proportion of CHI coverage in France had reached 90%.

The consensus has been gradually formed for enhancing the security level of the society as a whole along with the popularity of CHI. As a result, France adopted the *CMU-C* act in 2000 to provide additional CHI coverage free of charge for people with annual household incomes below a certain level, and the program succeeded in covering about 6% of the French population in 2020. *The Employment Security Act,* a new policy, has been officially introduced since 2016, making it mandatory for French employers to make contribution and ensure that all employees are covered by additional health insurance. Only 33% of small businesses offered additional health insurance to their employees in 2009 according to the data, therefore, this Act directly promoted the insured rate of additional health insurance for employees in small enterprises.

Positioning of CHI at the population level

Currently, the commercial insurance products in France are mainly provided by three types of institutions, including mutual insurers, provident insurers and commercial insurers. The above three types of insurers vary in their business features, target customers and profitability attributes.

Table 16: Overview of voluntary commercial health insurance market in France in 2014

	Number of insured (millions of people)	Target customers	Business feature	MLR
Mutual insurers	38	General employees, elderly population, etc.	Adhering to the "solidarity principle", risk-based pricing is forbidden, and pricing is only based on a few factors such as age.	76%
Provident insurers	13	General workers, managers, etc.	Priority is given to employer-sponsored group insurance and pricing is done on a employer basis as a whole.	79%
Commercial insurers	12	Self-employed professionals (e.g. lawyers), farmers, etc.	Risk-based pricing is predominant, but the "premium tax" shall be reduced and exempted by the government for products without regard to "anamnesis".	74%
Total	63	96% of insured rate	/	76%

Source: Private Health Insuranee-Cambridge University, European Observatory on Health Systems and Policies

The CHI coverage for populations at high risk and with diseases in France is mainly achieved through mutual insurers. Adhering to the "solidarity principle", mutual insurers are mostly based on industry and trade unions and provide medical coverage with the following features:

- mutual insurers may not refuse the insured access to social insurance.
- Risk-based pricing is not allowed, and premiums are basically nonadjustable based on individual health status, but only on a few factors such as age, gender, and occupation.

The strong credibility and collegiality of mutual insurers contributed to the development of commercial insurance in France. In the 19th century and the early 20th century, mutual insurers administered compulsory social insurance schemes in France by its major role in medical coverage, making it possible to play an important role in developing the insurance awareness of "mutual aid and reciprocity" among the French.[12]

Mutual insurers that provide medical coverage are exempted from tax by the government due to their characteristics of mutual aid. In 2004, commercial insurers were encouraged to offer insurance schemes available for people with disease through fiscal and tax incentives provided in the *Health Insurance Act.* The insurer shall be exempted from the 7% premium tax[13] in case unhealthy people are allowed to be insured without underwriting and physical examination, and with disease.

Chapter V The Development of Commercial Health Insurance in Australia

Overview of medical insurance system in Australia

In Australia, the universal public health insurance is available, along with voluntary CHI. In 2019, 10 percent of Australia's GDP is spent on health, about 142 billion dollars, and the expenditure per capita was about 5,770 dollars; with respect to health financing, the government public expenditure, CHI, out-of-pocket payment and others accounted for 68.3%, 9%, 16.5% and 6.2% respectively. In terms of population coverage, Australia

has 100% statutory health insurance coverage and 53.6% CHI coverage on a voluntary basis. The role of CHI can be summarized as mainly supplementary-beyond BMI, the mainstay, coupled with security function of high-end services.

As CHI in Australia began in the 1990s. The number of people using commercial medical facilities in Australia increased when public medical resources were not sufficient to bear the soaring demand for medical services and imbalance in social security benefits caused by potential instability needs to be addressed, prompting the government to be aware of the market value of the commercial healthcare system. As a result, the government has stepped up its efforts to promote reform of the commercial healthcare system.

Positioning of CHI in the coverage hierarchy

The coverage of both public medical insurance and commercial health insurance are clearly stipulated in Australian laws, therefore, there is still larger room for development of CHI. Although Australia has a universal public medical security system (Medicare), patients have no right to select doctors and wards when going to public hospitals, nor do they have priority for treatment and hospitalization, expressly stated *in the Health Insurance Act.* In addition, dentistry and physical therapy are excluded in the public health services, thus providing larger room for the development of CHI.

Meanwhile, Australia has very strict requirements for the operation of the CHI industry, and the respective business scope of universal medical insurance system and CHI industry are clearly defined in laws and regulations. Specifically, the Private Health Insurance Act 2007 is considered as the main law that regulates the business scope of CHI. Since its enactment, the Act has been amended several times, with specific requirements for CHI regarding “qualification requirements of insurers”, “pricing requirements for community”, “insurable and uninsurable coverage of products”, “waiting time for medical treatment” and “allowable premium growth”, ensuring the healthy development of both the universal medical insurance system and the CHI industry.

Table 17: Business requirements for commercial health insurance industry in Australia

	Statutory health insurance	Commercial health insurance
GWP	AUD 103.9 billion (Year 2015)	AUD 25.2 billion
MLR	/	86%
Enrollees	25.4 million people covered (about 100% insured rate)	13.52 million people covered (54% insured rate)
Coverage	• The coverage of statutory medical insurance defined by the Medicare Benefits Schedule (MBS) includes drugs, devices and medical services needed for most treatments, but is low for non-basic and essential services such as dentistry and ophthalmology • The costs of some prescription drugs are determined by the Pharmaceutical Benefits Scheme (PBS) list: more than 5,000 drugs contained.	Complementary CHI is composed of two types of coverage. • Supplementary coverage: supplementary services, such as dentistry, audiology, physical therapy, nursing and ambulance, that are not covered or less covered by Medicare. • Complementary coverage: more optional additional diagnosis and treatment services offered by hospital such as anesthesia, cardiovascular diseases, obstetrics and gynecology, etc.

Source: Australian Institute of Health and Welfare, Private Health Insurance Statistics---The Australian Prudential Regulation Authority (APRA)

Positioning of CHI in terms of people covered

The Australian government has provided a high proportion of commercial health insurance coverage for all age groups in the country by legislation to achieve "universal and relatively equitable" coverage of commercial health insurance as far as possible (for both young healthy population or elderly vulnerable groups). In 2019, 56% of Australians aged 65-79 were covered by commercial health insurance, higher than the average insured rate for all age groups.

Policy 1: Community pricing

Based on the "community pricing", the insurers charge the same premium for all individuals covered by the same type of health insurance regardless of gender, health status, occupation, or other factors of the insured. The insurers set premiums based on health status and demographics in different geographic regions or the total population covered by specific policy they underwrote. In other words, both healthy and sick people can be insured under the same insurance product with similar premiums, which also lowers the threshold of insurance for people with disease.

Policy 2: Imposing penalty mechanism on uninsured high-income earners

Table 18: Medicare levy surcharge rates for uninsured high-income earners in Australia

Levy treatment of insurance surcharge				
Levy rate of surcharge	0.0%	1.0%	1.25%	1.5%
Individuals	≤ AUD 90,000	AUD 90,001 - 105,000	AUD 105,001 - 140,000	≥AUD 140,001
Households	≤ AUD 180,000	AUD 180,001 - 210,000	AUD 210,001 - 280,000	≥AUD 280,001

Source: PrivateHealth.gov.au

On July 1, 1997, the Australian government formally commenced the implementation of the *Private Health Insurance Incentive Scheme* (PHIIS) in 1996. Under the Scheme, a 1-1.5% medicare levy surcharge shall be imposed on high-income groups (including individuals with an annual income of more than AUD 90,000 and households with an annual income of more than AUD 180,000) who do not purchase commercial health insurance. Thanks to the Scheme, high-income earners get more engaged in buying insurance while health insurance companies can obtain a proportion of relatively healthy customer base, leading to stable premium revenue and the size of risk pool, and further reducing overall risk of compensation.

Policy 3: Providing corresponding tax subsidies for low-income and elderly applicants who purchase commercial health insurance

Under the *Private Health Insurance Act* 1996, the Australian government compensates policyholders by direct deduction of fees or tax rebates at the time of purchase in order to encourage low-income and elderly groups to purchase CHI. As shown in the table below, the lower the total annual income and the older the age, the greater the corresponding discounted compensation for purchasing commercial insurance.

Table 19: Tax subsidies for low-income and elderly applicants who purchase commercial health insurance in Australia

The following discounted compensation rates shall be applied until Jun. 30, 2021:				
Individuals	**≤ AUD 90,000**	**AUD 90,001 - 105,000**	**AUD 105,001 - 140,000**	**≥AUD 140,001**
Households	**≤ AUD 180,000**	**AUD 180,001 - 210,000**	**AUD 210,001 - 280,000**	**≥AUD 280,001**
Discount compensation				
	Basic tiers	**Tier 1**	**Tier 2**	**Tier 3**
<65 years old	**24.608%**	**16.405%**	**8.202%**	**0%**
65-69 years old	**28.710%**	**20.507%**	**12.303%**	**0%**
>70 years old	**32.812%**	**24.608%**	**16.405%**	**0%**

Source: PrivateHealth.gov.au

Policy 4: Introducing preferential premium scheme to encourage young people to enroll in insurance

The insurers are not allowed to reject any applicant based on the “uniform community rating” approach to CHI in Australia. Besides, the proportion of purchasing registered a slow growth for young population. In 2000, the government implemented the *Lifetime Health Cover* (LHC) program to encourage individuals to enroll in CHI when they are relatively young.

An additional 2% of the annual fees shall be charged for each year of delay if the insured purchases CHI after age 31, as a result, the insured shall face a maximum 70% costs of lifetime health cover. For residents who fail to enroll in CHI in a timely manner, the subsequent fees incurred can be canceled if they can stay insured for 10 years.

Additionally, the insurers were required by the Australian government to insure people aged 18-29 and offer age-tiered discounts of up to 10% on the purchase of commercial insurance at different levels from April 1, 2019, so as to further encourage stable long-term insurance coverage of young groups. The service is available to both new policyholders and those who are already insured. Moreover, people who enroll in the insurance in this age group can enjoy the benefits of this provision until the age of 41.

Table 20: Discounts of insurance enrollment for different ages in Australia

Age stratification of the insured eligible for hospital policies	Proportion of discounts that may be offered after purchase of commercial insurance (%)
18-25	10
26	8
27	6
28	4
29	2
30	0

Source: PrivateHealth.gov.au

Chapter VI How Governments Participate in Commercial Health Insurance Market

European and American governments' enrollment in CHI is generally characterized by "separating management from enforcement". In terms of "management", the medical security system is generally defined through legislative means. Taking Germany as an example, *the Bismarck's Health Insurance Act of 1883*, adopted by the Parliament in the late 19th century, established the first social health insurance system in the world, stating the implementation of compulsory social insurance for diseases for all workers (except agricultural workers) engaged in industrial economic activities. Since then, Germany has successively enacted more than ten relevant laws at different stages of development, such as *"Workmen's Insurance Code", "Health Insurance Cost-Containment Act, "Hospital Cost-containment Act and "Health Care Structure Act"*[14].The medical security systems have been also regulated in details through legislative means in developed countries such as UK, France, Netherlands, US, Israel, and Australia. **The legislation of European countries and the US is more granular, with a series of legal regulations on insured populations, scope, encouragement and restriction policies of social insurance and CHI.** In the case of Australia, its incentives were provided to encourage people to buy private commercial health insurance based on hundreds of detailed regulations stipulated in its *Private Health Insurance Act 2007* (PHIA) which also states rules for private health insurance products. In Germany, for example, residents were required to have health insurance and to insure themselves by choosing statutory health insurance or CHI, stipulated in the *Act to Strengthen Competition in Statutory Health Insurance* enacted in 2007. Thus the Act directly encouraged people who did not participate in statutory health insurance to purchase CHI.

In terms of "enforcement", the administration shall focus on supervision and the enforcement of legal provisions. The regulators for CHI are divided into three modes:

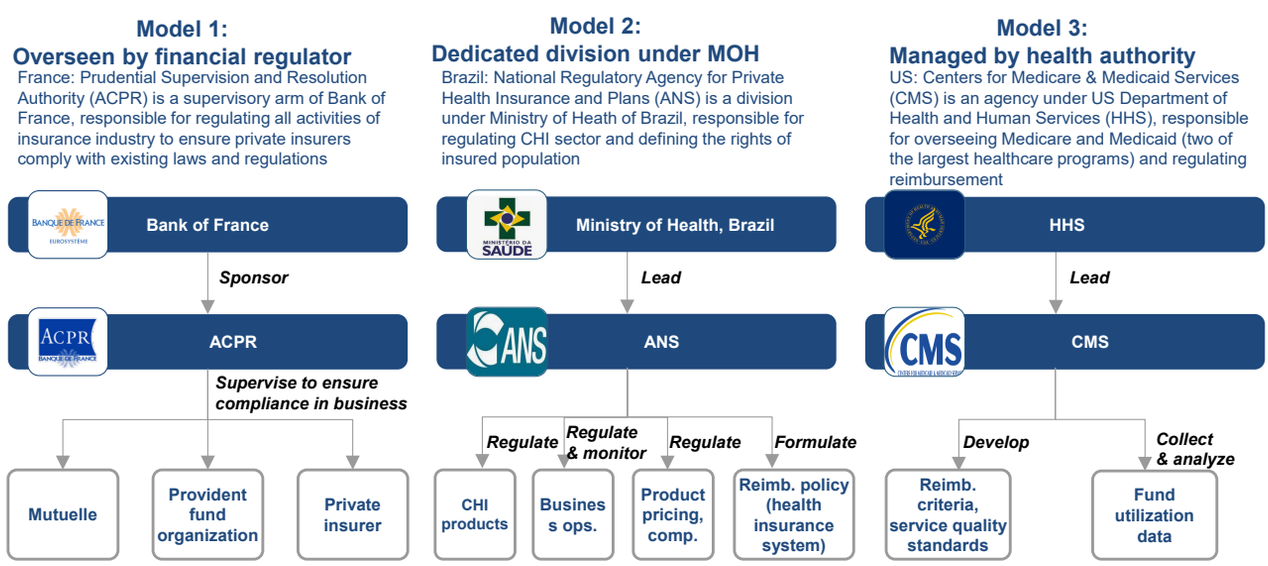
1.Overseen by financial regulator, such as the French Prudential Supervision and Resolution Authority (Autorité de Contrôle Prudentiel et de Résolution, ACPR). ACPR, the banking supervisory arm of Bank of France, is primarily responsible for maintaining the stability of the financial system and protecting rights and interests of customers of health insurance companies, policyholders and related beneficiaries.

The scope of ACPR's responsibilities is defined in the *Monetary and Financial Code.* It supervises and penalizes commercial insurance companies pursuant to related CHI regulations to ensure CHI institutions carry on their business under the framework of laws and regulations.

2.Dedicated division under MOH, such as the National Regulatory Agency for Private Health Insurance and Plans (ANS). ANS is a division under Ministry of Health (MOH) of Brazil and responsible for regulating CHI sector. There are four aspects regulated by ANS, including regulation of commercial insurance products (e.g., specifying requirements for product design), regulatory review of business operations (including licensing of health insurance companies), regulation of product pricing and market competition, and development of cost reimbursement policies for health insurance system. For the purposes described above, ANS also defines the rights of insured population, such as stipulating that people with disease may not be denied access to commercial insurance products.

3.Managed by health authority, such as the Centers for Medicare & Medicaid Services (CMS). CMS is an agency under US Department of Health and Human Services (HHS) and responsible for overseeing products and services offered by Medicare and Medicaid (two of the largest healthcare programs) and regulating reimbursement. Specifically, CMS is responsible for regulating reimbursement standards and service quality standards by working with state governments, collecting and analyzing fund utilization data to ensure the safety and stability of medical funds, and working to eliminate instances of fraud and abuse in the healthcare system; and it is also in charge of establishing regulations related to the participation of CHI companies in Medicare and Medicaid operations.

Exhibit 11: Overview of global CHI regulatory landscape



Source: ACPR official website; CMS official website; public information; BCG analysis

Chapter VII Enlightenment of International Experience to China

Analysis of international experience shows that the function positioning, system design, product coverage and developmental maturity of CHI are closely developed with a country's political (legislative) system, the level of healthcare development, the level of social welfare and people's cognitive level of CHI. Any country needs to plan for the sustainable CHI development through long-term policy guidance and market cultivation, and there is no single set of experience or system that is "universally applicable". The development history of CHI in developed countries provides reference meanings for the construction of a "multi-layered social security system" in China.

From the perspective of requirement level

1.The coverage of social health insurance delineates the CHI coverage. The more specific the scope of social health insurance, the clearer the CHI coverage. In addition, the healthcare insurance should provide space for the development of commercial insurance, for example, there are differences in the reimbursement rate in spite of wide healthcare coverage in France, bringing space for the development of commercial insurance.

2.CHI coverage should be diversified to meet the multi-level needs of the people. The CHI coverage should include:

- Supplementary tier: OOP expenses within healthcare insurance
- Supplementary tier: expenses uncovered by healthcare insurance
- Complementary tier: more upscale services and medical institutions available for free choice

3.The partial CHI coverage in the supplementary tier is absolutely basic, which ensures security of life and actively improves the quality of life and productivity, with insured ratio of at least more than 30%, or even more than 90%, thus it can be called the "basic supplementary tier". The coverage in the supplementary tier also presents higher insured ratio in countries and it is the one that should be strongly promoted. CHI is easily understood as a high-level demand only for middle- and upper-income groups by its nature of market and voluntary participation. However, we have seen from international experience that CHI can play an important role in meeting people's needs for a complementary healthcare tier to safeguarding their basic security of life and enhancing their quality of life and productivity, including OOP coverage for innovative drugs in France and additional coverage of outpatient medications for the elderly in the US. Such insurance generally achieved a higher insured ratio or registered a faster growth because of meeting such "inelastic demands". The insured ratio of commercial insurance mainly covering OOP in France is over 90%, and that of CHI centered on supplementary insurance beyond BMI in Germany is about 32%, which is growing continuously.

Table 21: Comparison of difference of social insurance and CHI coverage in some countries

Social insurance			Commercial health insurance		
	Average premium	Coverage		Average premium	Coverage
Social healthcare insurance in France	About USD 3724/year	Including: outpatient and inpatient expenses (e.g., registration, testing, drugs, medical consumables, medical transport) and dentistry, ophthalmic, maternity and convalescent care)	France-Supplementary health insurance covering OOP	USD 400-700/year	Out-of-pocket CHI: 1) Covers compensations for out-of-pocket expenses within the coverage catalog of social healthcare insurance 2) and supplements of parts uncovered by basic healthcare insurance (e.g. inpatient meals, private wards, childbirth allowance, etc.)
Medicare	Part A About USD 2100/year Part B About USD 1260/year	Medicare Part A (inpatient part) inpatient hospital care, skilled nursing facility, hospice, home health care and end-of-life care Medicare Part B (outpatient part) doctors' services, outpatient services, preventive services, and some home health services	Medigap, USA	USD 1600-1800/year	Supplementary coverage other than Medicare Part A and B or part of reimbursement for individual payment program needed for increased Part A and B coverage, and overseas travel insurance
Public health insurance in Germany	Statutory health insurance is approximately $4,208/year	Including: drugs, devices and medical services required for most treatments such as innovative drugs, outpatient, inpatient, dentistry and ophthalmology, but the low reimbursement ratio for non-basic services such as dentistry and ophthalmology	Supplementary coverage in Germany - guaranteed CHI other than social insurance	$600 - $1,000/year (depending on specific insurance coverage)	Supplementary coverage-guaranteed CHI other than social insurance: parts uncovered or less covered by basic health insurance, including dentistry, insurance for daily sick pay, long-term care insurance, employer health insurance and overseas travel medical insurance

4.CHI can supplement medical insurance in the development of multi-layered coverage, and also play a role in promoting the improvement of awareness in medical insurance and paving the way for the enhancement of coverage and level of healthcare coverage. Firstly, the development of health insurance in Germany and France shows that the basic needs people consider cannot absolutely be met even in developed countries (e.g., reduction of reimbursement ratio in France and strict health care cost containment after the basic implementation of universal coverage in Germany), thus the CHI can serve as an effective supplement. Additionally, CHI developed earlier than social health insurance and led to the expansion of the insured population in Germany. In France, supplementary CHI has elevated the importance the society places on supplemental healthcare coverage, and has ultimately achieved coverage for low-income and small business, improving the overall coverage for the population. Therefore, CHI plays a positive role in raising the public awareness of insurance and ultimately promoting the improvement of social funding and coverage or scope expansion.

From the perspective of CHI coverage at the population level

5.Mainstream CHI in major countries have basically achieved the coverage of high-risk groups and insured persons with diseases, with an overall claim ratio of more than 70%. For example, high-risk groups and insured persons with diseases are covered by employer-sponsored group insurance, individual insurance (Exchange insurance) and Medicare Advantage in the US, supplementary insurance in France, comprehensive health insurance in Germany, and supplementary health insurance in Australia. This also means that CHI incorporates medical compensation liability into its

coverage, resulting in a final insurance claim ratio of around 70-80%, and effectively providing patients with multi-payment coverage.

6.The coverage of high-risk groups and insured populations with diseases requires the active participation of the government CHI can effectively spread the risk in a form of “employer-sponsored group insurance” to achieve coverage for high-risk groups and population with diseases, but the “market mechanism failure” occurs easily in the market where individuals can purchase insurance on a voluntary basis. In the US market where CHI registered highly free development, the lack of coverage for the old and insured people with disease has caused great concern of society, and ultimately the government is compelled to make changes through legislative policies. In the meantime, we found that no insurance products are separately provided for the population at high risks or with diseases in the major market, but more healthy people are included into the insurance pool to spread the risk of compensation through the administrative power of government (or strong mutual insurers), and these policies mainly include:

1)Encouraging more healthy people to enroll in CHI. The enrollment of a large number of healthy people is conducive to “risk pooling”, reducing the risk of insurance payouts due to adverse selection and increasing the sustainability of insurance. For example, the Lifetime Health Cover (LHC) was introduced in Australia in 2000, which allows applicants to avoid additional 2% of annual fee for each year of delay in purchasing CHI after age 31 if they are insured before their age of 31. In addition, there are age-tiered discounts of up to 10% on commercial insurance for insured persons aged 18-29, and people who enroll in insurance in this age group can enjoy the benefits of this provision until age 41. Another example is the Employment Security Act issued by the French government in 2016, which requires employers to compulsorily invest to ensure that all employees are insured with additional health insurance, resulting in a rapid increase in the number of employees of small and medium-sized employers participating in out-of-pocket supplementary CHI. In the US, the “Exchange” was established to endorse insurance products while reducing marketing costs and increasing the incentive for people to participate in insurance.

2)Providing subsidies to high-risk and low-income populations. This allows the necessary “supplementary healthcare tier” of CHI to be widely covered. For instance, individuals or families below certain annual incomes can obtain additional CHI managed by commercial insurance companies free of charge at the expense of the government, stipulated in the “CMU-C” introduced in France in 2000. This program has covered approximately 6% of the French population in 2020. In Germany, for example, insurers cannot kick out those who are in arrears of premium payments (although the insurers may limit the level of services they provide). If people can prove that they are unable to afford the full premium of the basic tariff, the premium shall be reduced by 50%, with the rest subsidized by the state. If this remains unaffordable, the individual shall receive a state subsidy under the social welfare program.

3)Giving policy incentives to long-term participants. CHI premiums cannot be determined based on age and health status of insured persons after they got insured but when they got insured in Germany, which is called the “level premium”

policy, and all CHI products are subject to guaranteed renewal. Although the overall premium of insurers can be slightly adjusted according to the inflation of medical costs, health insurance premiums for applicants grew at an average annual rate of only 2.8% from 2009 to 2019. The applicants' premiums shall remain stable for a long time regardless of their health status once they enroll in in and renew their coverage, resulting in the improvement of their enthusiasms for covering insurance on a long-term basis.

4)Providing compensations CHI companies Tax reduction and exemption or compensation shall be provided for CHI companies that allow the enrollment of people with disease to motivate insurers to include people with disease into their coverage. In France, supplementary health insurance companies are exempted from 7% of tax on premiums, provided that they offer at least one "mutual insurance" product that allows the applicant to be insured with some disease, without underwriting and medical examination. In France, this is used to stimulate an increase in coverage by CHI companies other than mutual insurers for population with disease.

5)Regulating CHI products, but the relevant regulatory policies may also bring about a decrease in the motivation and sustainability of the industry's operations. CHI product design is standardized, such as specifying the claim ratio and coverage of insurance products. For example, the health insurance companies are required, to maintain claim ratio of at least 80%, and to refund a certain amount of premium to applicants if the claim ratio is less than 80%, as stated in the *Affordable Care Act*. However, strict regulatory policies may also act as a double-edged sword. For example, the excessive requirements for Medicare Part C in the US in the 1990s reduced the employers' enthusiasm in participation, while the willingness of the industry to participate increased significantly after the introduction of more reasonable claim ratio, risk compensation, star ratings and other policies. Once again, this proves that the intervention of the "visible hand" in the market should be moderate.

7.The administration with main responsibilities is necessary to lead the overarching design of the multi-layered security system (including CHI) and the specific regulatory contents. In Europe and the US, the governments' involvement in the CHI operation generally reflects the characteristics of "separating management from enforcement", that is, the principles and standards are completed by legislature, while the specific implementation and supervision shall be achieved by administration. Drawing on the mode of "separating management from enforcement", China should standardize the overarching design and principle standards at the legislative level, and the administration with primary responsibilities should take the lead and work together with ministries to refine policies and promote implementation and supervision.

Chapter III
Current Situation, Challenges and Thinking of Commercial Health Insurance in China

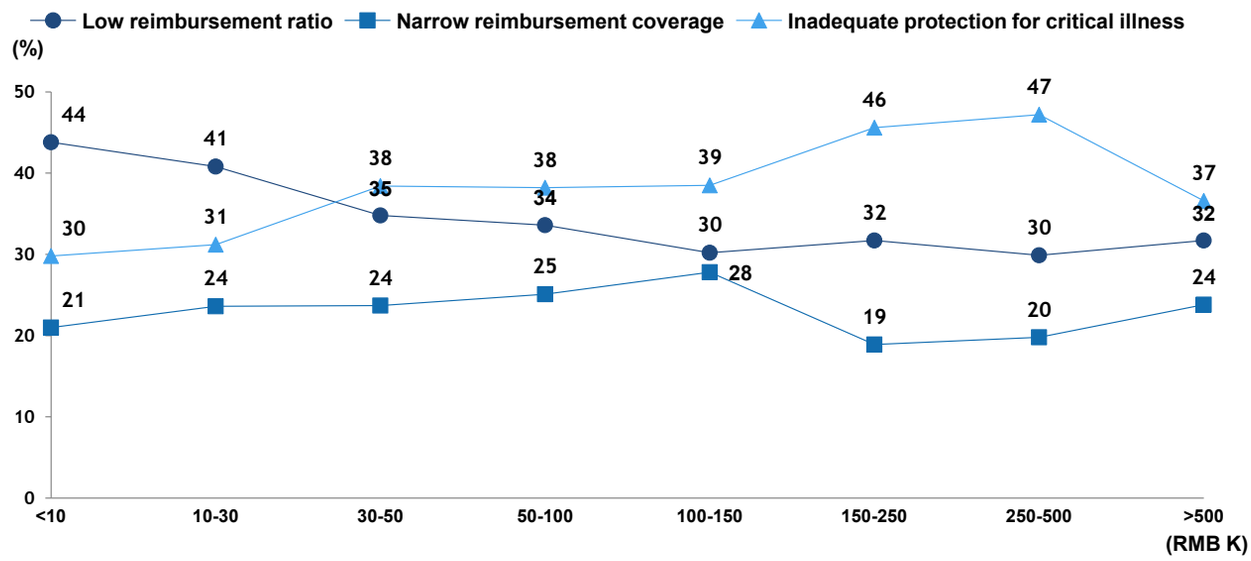
Section I People's growing multi-level demand for commercial health insurance

The people have a multi-level demand for CHI, of which the need for a "basic supplemental layer" is urgent.

The 2017 China Commercial Health Insurance Demand Survey Report surveyed a total of 20,000 respondents from three municipalities directly under the central government and 43 prefecture-level cities, and the results showed that 26.3% had purchased CHI, and 41.3% were willing to purchase CHI in the coming year. This data indicates that a higher percentage of the population believes that current HC coverage is still inadequate and would like to have their HC coverage needs met by purchasing CHI.

The reasons why BMI is insufficient to meet the needs of people from different household income levels shows that different groups have higher requirements for CHI in terms of the individual OOP expenditure, the expenditure beyond BMI, and the burden of major diseases. According to the survey results, the need for OOP expenditure for BMI is more pronounced among households with lower annual incomes than among high-income households, while different income groups all have certain needs for critical illness coverage. This shows that for BMI (coverage of basic need and life-saving) and critical illness medical insurance, HC coverage is still inadequate, especially for the middle- and low-income groups.

Exhibit 12: Reasons citied by respondents of different household income levels on why BMI is insufficient to meet their needs (RMB K)



Source: Research Report of China's Commercial Medical Insurance, China Development Research Foundation

At the same time, while the 2015-2016 survey showed that the public generally had a low demand for coverage of expenditure beyond BMI due to a lack of knowledge about treatment modalities and progress in drug development, in recent years, with the release of the movie “Dying to Survive” and a series of campaigns, including “special drug insurance”, public demand for coverage of expenditure beyond has risen. A joint survey by BCG and Tencent in 2019 showed that 85% of respondents said they value CHI for its “broad coverage of diseases and treatments”.

In addition, with the rise of the middle class, the market demand for diversified healthcare services has increased significantly. According to a joint survey conducted by BCG and Tencent in 2019, 54% of respondents value CHI for providing “broad and diversified coverage of medical institutions”, while 42% value various ways of health and disease management, including “healthy lifestyle services”, “full-course management of critical and serious illnesses” and “housekeeping medical services”.

In general, there are three main categories of people’s demand for commercial insurance, which fit with the characteristics of the categories of CHI in the international market.

- **Supplemental - OOP supplement**: reimbursement for the OOP expenditure of a service or product covered by BMI. This includes reimbursement of the OOP expenditure above the BMI payment ceiling, or the OOP expenditure below the BMI payment ceiling.
- **Supplemental - beyond BMI**: supplemental to products or services not covered by BMI.
- **Complementary**: for the same services covered within the BMI, the patient may choose to seek care from a provider that is not designated by BMI.

Based on the international experience, we have seen that a portion of the coverage provided by CHI in the supplemental layer is to meet people's basic security of life and alleviate quality of life and productivity, such as Medicare Part D in the US and the out-of-pocket for innovative drugs in France.

In China, also in the supplemental layer, there is a layer of security that is related to the people's life safety, or directly affects the quality of life and productivity, or may lead to return to poverty due to illness.

In the supplemental - beyond BMI, for innovative drugs, there are many life-saving, essential and special drugs that cannot be covered by BMI because of their price, and the lack of such protection can seriously affect people's life safety, quality of life and productivity, and may lead to poverty due to illness. Oncology-targeted drugs and drugs for immunotherapy can significantly improve five-year survival rates and are key tools to achieve a 15% increase in five-year cancer survival rates in Healthy China 2030. Taking immuno-oncology drugs for example, although four immuno-oncology drugs have been included in NRDL to meet the needs of Hodgkin's lymphoma, non-small cell lung cancer, hepatocellular carcinoma, esophagus cancer, melanoma, and uroepithelial cancer, drugs for head and neck squamous carcinoma, gastric cancer, small cell lung cancer, and colorectal cancer are not included among the cancers that are also treatable with immuno-oncology drugs.

Table 22: Inclusion of innovative immuno-oncology drugs into the National Reimbursement Drug List

Mechanism of action	Included in the NRDL or not	Molecule name	Indication
PD-1	Yes	Sintilimab	Hodgkin's lymphoma
		Toripalimab	Melanoma
		Camrelizumab	Hodgkin's lymphoma, hepatocellular carcinoma, non-small cell lung cancer, esophageal cancer
		Tislelizumab	Hodgkin's lymphoma, urothelial cancer
	No	Navulizumab	Non-small cell lung cancer, head and neck squamous carcinoma, stomach cancer
		Pembrolizumab	Non-small cell lung cancer, melanoma, esophageal cancer, head and neck squamous carcinoma, colorectal cancer
PD-L1	No	Durvalumab	Non-small cell lung cancer (stage III)
		Atezolizumab	Small cell lung cancer, non-small cell cancer, hepatocellular carcinoma (in combination with bevacizumab)

Source: 2020 NRDL

At the same time, in terms of rare diseases, several drugs for rare diseases have not been included in NRDL, and there is no multi-layered security mechanism for rare diseases in place. In particular, no clear approach has been set up to reimburse high-value drugs (annual cost of RMB 500,000/year) for rare diseases. Although the population affected by rare diseases is relatively small, the impact of these diseases on the lives, quality of life and families of this population is enormous, and the financial burden they impose can be difficult to bear even for people with high incomes. Adhering to the principles of mutual assistance and justice, this group of people should be widely concerned, so as to realize their HC coverage.

The requirement for “significant price reductions” is the main challenge for the inclusion of innovative medicines in NRDL, and more than 40% of the products shortlisted for negotiation in 2019 could not be agreed upon in the negotiations for various reasons. Forty-two of the declared innovative drugs in the 2020 NRDL adjustment were not included finally. Many of these products are innovative drugs of high clinical value that cannot be included in the NRDL because of the failure to reach an agreement, which means that many patients cannot benefit from these drugs. At the same time, patients may have to bear “excessive costs” if they use these products at their own expense. In recent years, there have been continuous discussions on “life-saving drugs”, such as the movie “Dying to Survive” and the post “A dose of medicine sold for RMB 700,000”, which have been reported by CCTV and other official media for many times. The reason for such a great controversy is, on the one hand, the high cost that the general public cannot afford to pay in cash and, on the other hand, the lack of social awareness of the comprehensive value of innovative drugs.

In addition, the urgency of the “OOP reimbursement” varies due to disparities in the level of reimbursement payment in different parts of the country. The need for “OOP reimbursable” commercial insurance is particularly urgent where both reimbursement ceiling and reimbursement rates are low. Taking the hypoglycemic drug acarbose tablets as an example, the reimbursement rate varies greatly between different regions of urban and rural BMI, with the reimbursement rate in first-tier cities significantly higher than in other regions, for example, the actual reimbursement rate in Shanghai reached more than 60% in 2018, while the actual reimbursement ratio in Qiqihar was only about 4%. Therefore, the complementary role of CHI is particularly important in areas where reimbursement payment levels are low.

Table 23: Reimbursement rates by location for the hypoglycemic drug acarbose tablets

City	Hospital	Deductible	Reimbursement rate	Reimbursement ceiling	Acarbose tablets		
					National production - self-pay	National production - reimbursement	Actual reimbursement rate
Shanghai	Class-I hospitals	300	70%	No ceiling	1196	2090	63.60%
Beijing	Class-I hospitals	100	55%	3000/year	1533	1752	53.30%
Shenzhen	All designated hospitals for medical insurance	0	30%	1.6 million/year	2300	986	30.00%
Guangzhou	Selected primary medical institutions	0	70%	600/year	2685	600	18.30%
Lianyungang	Class-I hospitals	500	75%	3000/year	1196	2089	63.60%
Chengdu	Class-I hospitals and below	100	65%	No restrictions on individuals	1280	2005	61.00%
Tangyuan County	Designated hospitals	0	50%	1200/year	2085	1200	36.50%
Chongqing	Class-I hospitals	0	80%	1000/year	2285	1000	30.40%
Datong	Class-I hospitals	0	60%	200/year	3085	200	6.10%
Qiqihar	Town and township hospitals	0	60%	150/year	3135	150	4.60%

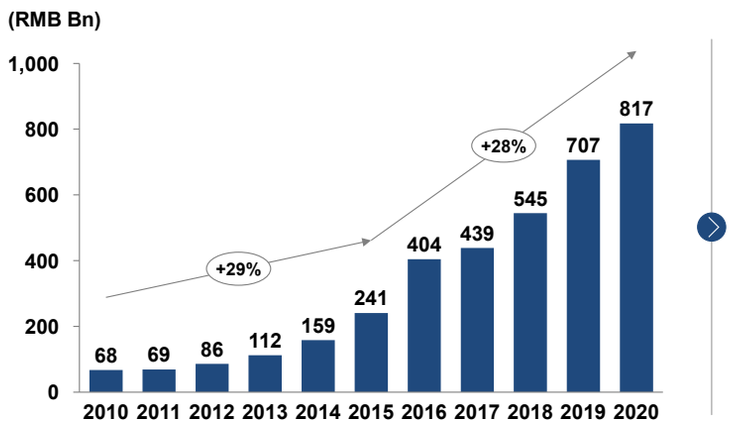
Source: “Guogun Medicine|Chinese Health Insurance in the Diabetic Friends Group”

Section II Current situation and main challenges in the development of commercial health insurance in China

In the past 10 years, China's CHI industry has developed at a rapid rate, realizing premium income of RMB 706.6 billion in 2019, with a compound annual growth rate of 31% and an overall claim ratio of 33% in 2015-2019. Unlike the earlier crude business philosophy of operating life insurance and property insurance, commercial insurance institutions have begun to think outside the traditional business management of health insurance, and professional health insurance companies have begun to emerge, such as Ping'an Health and PICC. At the same time, products are becoming increasingly diversified, and in recent years, efforts have been made to such types of insurance as million RMB medical insurance, city-tailored insurance HuiMinBao and long-term medical insurance to improve the selectivity and coverage of commercial insurance.

Exhibit 13: China's CHI premium income and 2019 overview

China's CHI premium income



CHI overview 2019

Type	Premium income	Claim ratio	Insured population
Disease-specific	~460 Bn (64%)	~11%	~120 Mn
CII[1]	~80 Bn (12%)	NA	>1 Bn
CMI[2]	~160 Bn (23%)	~58%	~200 Mn
Care ins. & disability ins.	~6.6 Bn (1%)	NA	~45 Mn
Total	707 Bn	33%	~300 Mn

Note: 1. CII=critical illness insurance; 2. CMI= commercial medical insurance
Source: CBIRC; public information

From the classification of CHI by CBIRC, CHI mainly includes disease-specific insurance, critical illness insurance, commercial medical insurance, care insurance and disability insurance. The coverage, payment characteristics and premium levels vary from different types of insurance.

Table 24: Classification and basic information on commercial health insurance by type

	Definition of insurance	Payment characteristics	Size of insured (2019)	Premium levels
Disease-specific insurance	Commercial insurance in which the insured suffers from a specific critical disease within the insurance liability and the insurer appropriately compensates for the medical expenses spent	Lump-sum fixed cash benefit	Approx. 120 million people (predominantly healthy group under 60 years of age)	Approx. RMB 3500-4500/year
Critical illness insurance	Expansion and extension of the basic medical insurance system to provide further coverage for the high medical expenses incurred by patients with critical diseases	Non-cash payment	Greater than 1 billion	Approx. RMB 80/year
Medical insurance	Voluntary participation by employers and individuals, with the insurers compensating the insured for the loss of medical expenses under liability	Reimbursement of a percentage of actual medical expenses incurred only	Approx. 200 million people (predominantly healthy group under 60 years of age)	Approx. RMB 50-2000/year
Care insurance	Insurance to cover expenses incurred by individuals who are unable to care for themselves due to old age, illness or disability and require medical treatment at home or in a sanatorium and are accompanied by an attendant	Multiple fixed cash payments	Approx. 45 million people (predominantly 40-60 age group)	Approx. RMB 120-160/year
Disability insurance	Insurance that provides coverage for the reduction or interruption of the insured' income for a certain period of time, subject to the payment of benefits for the loss of working capacity due to illness or accidental injury as agreed in the insurance contract	The amount of coverage is determined by the insured' remuneration and is paid in multiple fixed cash payments	/	Varies according to the insured' remuneration

From the current extent of HC coverage by insurance type, medical insurance reimburses the actual medical expenses incurred by the insured and has a higher claim ratio than critical illness insurance, which has a more important medical compensation role. There are many types of medical insurance products in China currently, including policy-based critical illness insurance that is purchased from commercial insurance institutions at the government's expense, with a certain degree of enforceability; and the commercial medical insurance, employer-sponsored supplemental medical insurance, individual medical insurance and city-tailored insurance are the main product categories, based on the principle of voluntary insurance. The main characteristics are as follows.

Table 25: Main product categories and characteristics of commercial health insurance in China

	Commercial medical insurance		
	Employer-sponsored supplemental medical insurance	**Individual health insurance**	**City-tailored insurance (HuiMinBao)**
Total premiums (2019)	**~100 billion**	**~58 billion**	**~1 billion**
Number of people covered	**Approx. 140 million people**	**Approx. 100 million people**	**Approx. 24 million people**
Product price	**~RMB 800-2000/year Few products above RMB 10,000**	**RMB 300-20,000/year, of which those around RMB 400-2,000 medical insurance are the main products**	**~RMB 70-200/year**
MLR	**~70-85%**	**~35%**	**~20-100% (varies greatly from place to place)**
Group vs. individual	**Employer group purchase**	**Individual purchases mainly**	**Individual purchases mainly**

Note: The number of the insured in the three types of health insurance is greater than the number of the insured in commercial health insurance because some people have more than one health insurance coverage.
Source: China Million Medical Insurance Industry Development White Paper, Interviews with Insurance Industry Experts

However, we also found that there are still many challenges in our CHI compared to the government regulatory mechanism, complete product system and mature market participation in developed countries, which are as follows:

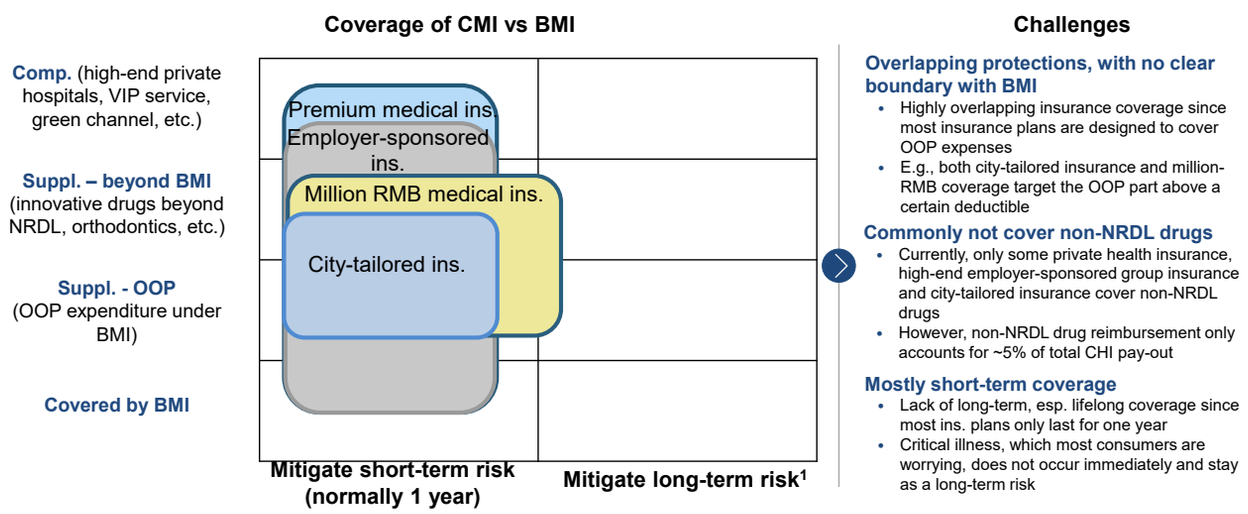
Challenge 1 Level of coverage needs: low level of coverage and unclear boundaries of liability

At present, the overall level and scope of coverage of CHI in China are still inadequate, especially in the supplemental layer, there are problems such as overlapping coverage, short-term coverage but not long-term coverage, and unclear boundary of the division with medical insurance.

Table 26: Information on supplemental medical insurance of commercial health insurance in China

	Employer-sponsored supplemental medical insurance	Individual health insurance	City-tailored insurance (HuiMinBao)
Deductible	Subject to specific provisions (0 deductible minimum)	Usual deductible of RMB 10,000-20,000, some high-end individual medical insurance does not have a deductible	Usual deductible of RMB 10,000-20,000
Within NDRL	Usually 100% reimbursement of OOP expenditure	Usually 100% reimbursement of OOP expenditure	Usually 70% reimbursement of OOP expenditure
Outside NDRL	Approximately 20% covering drugs outside NRDL, depending on the specific provisions	Usually covers more than 100-200 special drugs	Usually covers more than 20 special drugs

Exhibit 14: Coverage of commercial medical insurance vs. basic medical insurance in China



1. GWP is still small although some insurers have unveiled long-term CHI plans in response to favorable gov't policies
Source: public information; BCG analysis

The inadequate level and coverage of CHI is reflected in the following points:

- **Insufficient coverage of the supplemental medical layer.** Most CHI policies only cover drugs that are within NDRL, not drugs that are outside NDRL. Only some private health insurance (e.g., million RMB medical insurance), high-end employer-sponsored group insurance, and city-tailored insurance cover non-NRDL drugs; however, non-NRDL drug reimbursement only accounts for ~5% of total CHI pay-out, which is insufficient coverage for the supplemental medical layer.

- **Mostly short-term coverage.** At present, commercial medical insurance is mainly a one-year coverage product represented by million RMB medical insurance, and there is a lack of medical insurance with long-term, especially lifelong coverage. Critical illness, which most consumers are worrying, does not occur immediately and stay as a long-term risk, which makes consumers prefer to buy lump-sum sickness insurance products with saving attributes. Although in April 2020, CBIRC issued the Notice on Issues Relating to the Adjustment of Long-term Medical Insurance Product Rates, in which insurers can develop and operate long-term medical insurance products, the overall premium scale of long-term medical insurance for the whole year of 2020 is only about RMB 2.82 billion, which is still at the stage of market education and exploration, judging from the market feedback.

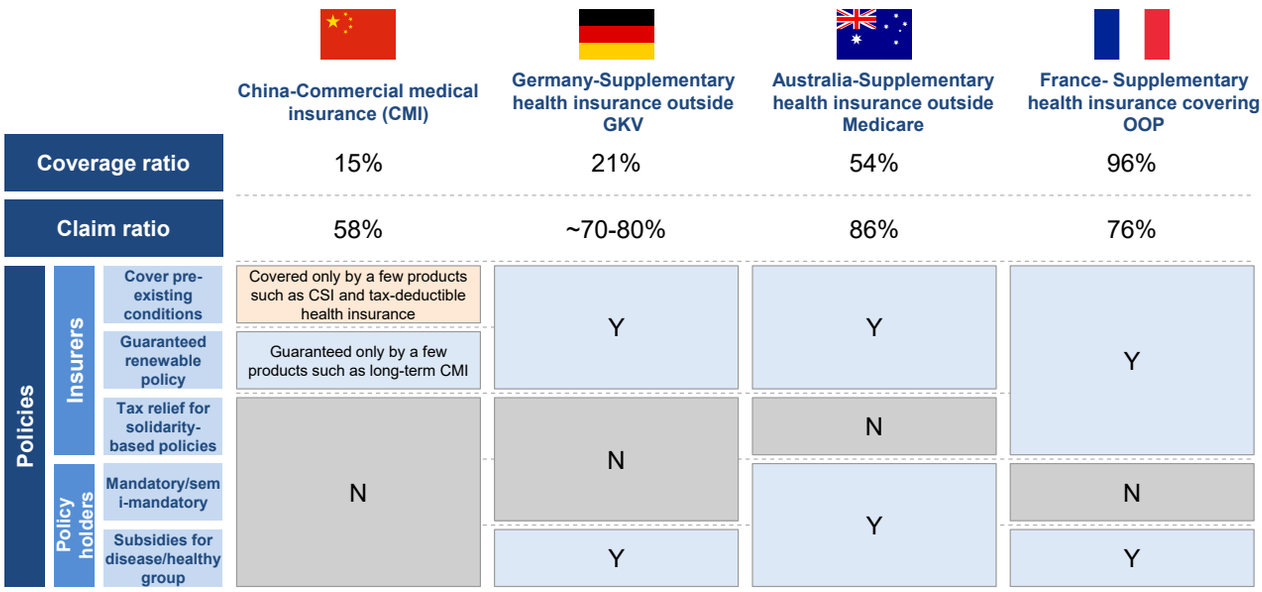
- **Insufficient coverage of VIP services.** At present, most commercial medical insurances in China mainly cover the OOP expenditure under BMI, and does not provide enough coverage for VIP services such as private hospitals and special need services, which makes the pressure on medical resources concentrated in the public system and makes it difficult to meet people's needs for diversified services.

- **Overlapping coverage,** with no clear boundary with BMI. Highly overlapping insurance coverage since most insurance plans are designed to cover OOP expenses e.g., both city-tailored insurance and million-RMB coverage target the OOP part above a certain deductible. Employer-sponsored group insurance overlaps with the individual accounts under UEBMI in terms of reimbursement for outpatient/emergency care, and even creates a "moral hazard" of abuse of medical services due to cashing out of individual accounts. In the case of million RMB health products, for example, most of them are priced at RMB 300-700 with a deductible of RMB 10,000-20,000, and the coverage ceiling and scope are roughly the same among products, which also results in no differentiation of products, high marketing costs for insurers, and difficulty for customers to make a rational choice.[15]

Challenge 2 Coverage of the population: difficulties in enrolling high-risk and sick

The market mechanism failure is beginning to emerge, and it is difficult for people at high risk of claim settlement, such as the general elderly, the sick, or the sub-healthy population (e.g., obese, asymptomatic nodules detected by physical examination, etc.) to enroll in CHI. And this is the group of people who need to be covered the most.

Exhibit 15: Coverage and policies of supplemental CHI in China and some other countries



Source: CBIRC; EU insurance expert interview; lit research

The vast majority of CHI policies currently purchased by individuals in China widely apply “risk-based selection” measures to deny coverage to high-risk individuals, reduce the burden of future claims, or charge high premiums that prevent them from purchasing commercial insurance products. Ultimately, the individual population of insured, mainly healthy and young people, has a low payout rate of only about 33%, which makes a limited contribution to the overall health-care system. In the case of one-year insurance for market participants, once a insured becomes ill during the coverage period, it is difficult to renew the policy the following year, and it is even more difficult to generate continuous coverage.

Most employer-sponsored supplemental insurance policies are only for active employees and they will not be covered after retirement, and it is difficult to purchase individual health insurance products again after retirement, leaving young people with a reduced level of coverage after retirement.

Most city-tailored insurances allow sick people to enroll, but the level of reimbursement for pre-existing conditions is generally much lower. So again, there will be the problem of new-onset patients being adequately covered in the year of illness, but with a reduced level of coverage in the second year.

Table 27: Most commercial health insurance strictly restricts coverage for pre-existing conditions as well as for the elderly

	Sickness insurance	Medical insurance		
	Critical illness insurance	**Employer-sponsored supplemental medical insurance**	**Individual health insurance**	**City-tailored insurance (HuiMinBao)**
Whether pre-existing conditions are allowed to be insured	**N**	**Y**	**Overwhelmingly not allowed**	**>95% of products allow coverage for people with pre-existing conditions**
Whether elderly people are allowed to be insured	**The upper age limit for most products is 50-55 years**	**Active employees insured; retired employees insured by only a few companies**	**The upper age limit for most products is 55-65 years**	**Most products are not age-restricted**

Source: Public Information

Along with the development of an aging population, the number of people at high risk of disease will likewise have a rapid rise, and the demand for treatment of chronic diseases, oncology and other diseases will expand. Older people are a high prevalence of chronic diseases, and according to data provided by the National Health Commission of the People's Republic China, more than 180 million older people in China suffered from chronic diseases in 2019, with up to 75% suffering from one or more chronic diseases. The number of cancer incidences has also continued to increase, with the incidence of malignant tumors in China maintaining an annual increase of about 3.9% over the last decade or so, the majority over 60 years of age, according to a report on national cancer statistics released by the National Cancer Center in January 2019. As most CHI products on the market have strict restrictions on the age and health status of the applicants, with the upper age limit of the insured generally at 55-65 years old, the elderly and non-healthy people are usually unable to obtain CHI coverage. Faced with the demand for coverage of basic life and life-saving, CHI has become increasingly problematic in terms of insufficient coverage for people and for supplemental needs beyond BMI.

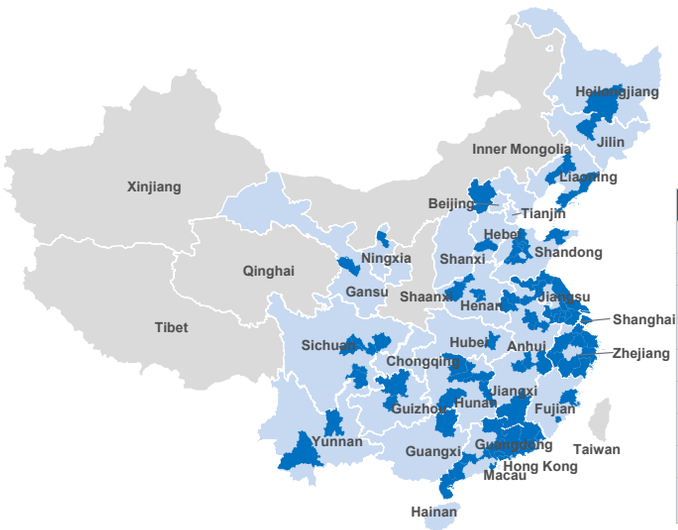
Based on the experience at abroad, in a free market, CHI is prone to "market mechanism failure", with insurers subjectively selecting healthy people as insureds while ignoring the non-healthy and elderly/vulnerable groups who are most in need of HC coverage. In such cases, the government usually plays an important role in the regulation of CHI, ensuring wide coverage of the population and sustainable development of CHI institutions. Examples include France, Germany and the US, which subsidize high-risk groups through legislation and policy tilts, Australia, which encourages healthy people to enroll through premium discounts and semi-compulsory coverage for high-income groups, and the US and Germany, which encourage the development of long-term health insurance by providing for guaranteed renewals (see Chapter II for details). Through legislation and government intervention, CHI is still able to effectively supplement social insurance and achieve high participation rates in these countries.

This report argues that governments have an essential and important role to play in promoting multi-tiered population participation in CHI. At the same time, given the urgency and importance of some of the needs in the supplemental layer, the government could focus on promoting the coverage in this layer.

Challenge 3 The sustainability of the development of city-tailored insurance remains to be tested by time

Compared with the major product innovations this year, city-tailored insurance has received a lot of attention from local governments, insurers, pharmaceutical companies, and the public because of its "low price", "few restrictions on coverage", and "covering non-NDRL drugs". By the end of July 2021, city-tailored insurance has launched more than 140 products covering 26 provinces, and it is estimated that the current population of city-tailored insurance has reached about 60 million.

Exhibit 16: Overview of the areas covered by city-tailored insurance (a.k.a. HuiMinBao)



City-tailored insurance products were rapidly promoted in 2020. As of July 31, 2021, over 140 products have been launched, covering 26 provinces

Province	Product #	Province	Product #	Province	Product #
Anhui	7	Hunan	7	Ningxia	1
Beijing	3	Hubei	2	Shanghai	1
Chongqing	1	Henan	5	Sichuan	9
Fujian	5	Hebei	2	Shandong	12
Guangdong	19	Hainan	3	Shanxi	2
Guangxi	2	Jiangsu	20	Tianjin	2
Guizhou	2	Jilin	1	Yunnan	1
Gansu	1	Jiangxi	5	Zhejiang	16
Heilongjiang	1	Liaoning	5	Nationwide products	5

Note: Data on the nationwide CSI products is only reflected in the table and not marked on the map
Source: public information

At the same time, considering the coverage targets for high-risk groups and those with illnesses, the coverage of pre-existing conditions and the initiatives on premiums will be further upgraded. As a model of city-tailored insurance innovation, Shanghai HuHuiBao Insurance has reached 6.08 million participants since its launch from April 27, 2021 to June 9, 2021. The positive innovations of Shanghai HuHuiBao Insurance also reflect potential trends in city-tailored insurance.

1.Coverage of pre-existing conditions: there is no restriction on the health status of the insured, and people who have surgery history, pre-existing conditions or “three highs” are eligible for coverage. The data show that 97% of the insured are healthy people and about 3% are people with pre-existing conditions.

2.Individual account payments, family co-payment: 82% of insured use their individual accounts to pay the premium, 89% are employees, and 55% choose to insure their families at the same time.

3.Reimbursable OOP costs beyond BMI: 100% reimbursement for 21 out-of-pocket drugs up to RMB 1 million.

4.Mandated payout ratios: the government requires payout ratios above a certain amount for CHI companies participating in the city-tailored insurance.

Compared to the existing individual health insurance products (mainly the million RMB medical insurance), the city-tailored insurance is a useful attempt to provide coverage for high-risk/sick patients and a “basic supplemental layer” of coverage. Basically, all items are covered for people with illnesses, many of which are covered for pre-existing conditions, and the most urgent needs of the people for reimbursement of expenses beyond the BMI reimbursement ceiling are covered; coverage of both expenses can effectively prevent poverty due to illness and are effective coverage for the “basic supplemental layer”.

The development of city-tailored insurance also faces the following challenges that have an impact on its sustainability.

- **Adverse selection**: City-tailored insurance is usually set at a high deductible (usually RMB 10,000-20,000) because it covers mainly large payment risks. Young healthy people are likely to be less motivated to renew their policies after enrollment because of the benefits they receive; instead, people with illnesses and definite expenses will be motivated to renew their policies, exposing even city-tailored insurance to the risk of a "death spiral", with rising payout rates.

- **The motivation of insurers to operate**: Some municipal governments require high claim ratio, high guarantee responsibility, but have insufficient publicity, or lack of compensation for the excess of loss risk of insurers, which makes some insurers face loss risks and reduce the enthusiasm for long-term operation;

- **Limited GWP**: the average premium for city-tailored insurance is currently about RMB 70 per person (some localities have increased premiums for seniors). Such a level of premiums raises questions about the need for city-tailored insurance in that whether it can be addressed directly by overspending on health insurance.

Based on international experience, it is not possible to find an insurance form that is identical to city-tailored insurance, but the experience of the following insurance forms can be taken into account:

- **Exchange individual commercial insurance market in the US**: increased government incentives and mandates for healthy people to enroll in insurance and increased insurance pools to address adverse selection issues. The government also endorses insurers, reduces their marketing costs and provide compensation for the "risk exposure" of excess of loss, thus to improve the enthusiasm of insurers to participate;

- **Medicare Advantage in the US**: reasonable requirements on the claim ratio of products offered by insurers, both to protect consumer interests and to ensure the sustainability of the insurer's ongoing operations.

- **Supplemental medical insurance in France**: In terms of development, the average premiums for supplemental health insurance offered by "mutual insurers" are not high either, amounting to 1/7 of the average per capita expenditure on health insurance. However, over the decades, supplemental medical insurance became an effective supplement to health insurance and raised the national spirit of risk-sharing and insurance awareness, with participation rates increasing year by year, and eventually legislation was passed to extend coverage to low-income and small business populations, paving the way for a higher level of medical coverage for society as a whole.

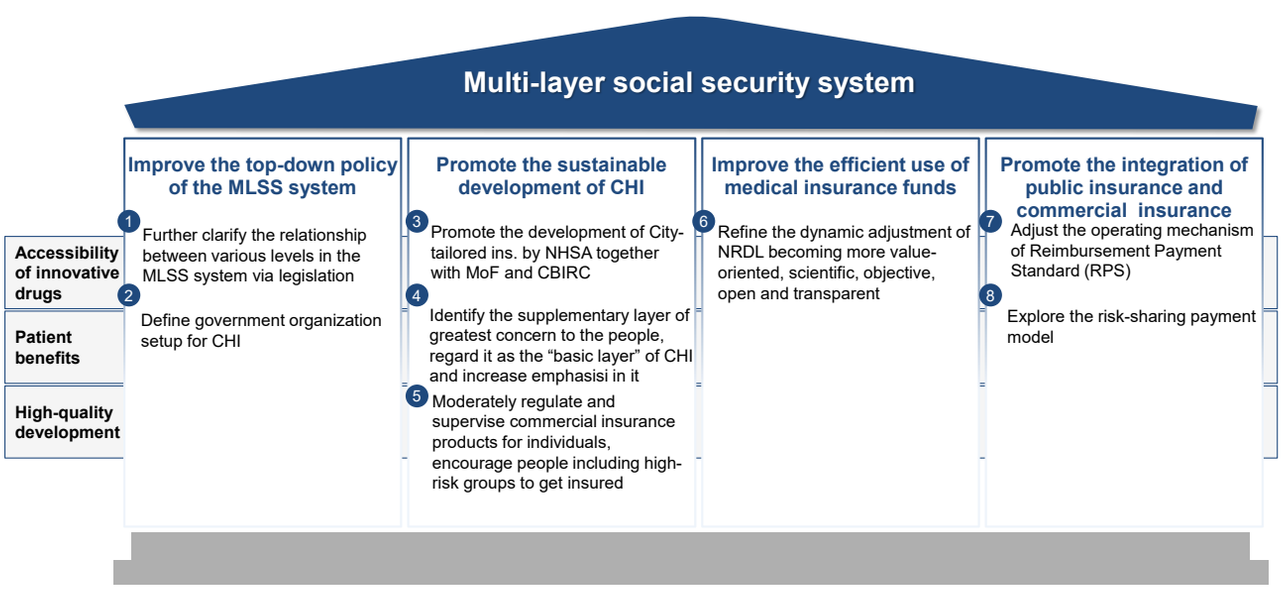
Therefore, our government should actively participate in raising the people's awareness of mutual aid in risk and insurance, encouraging healthy people to participate in city-tailored insurance on a continuous basis, and should make reasonable regulations on insurance products and payouts. At the same time, considering the basic inter-regional imbalance and overall inadequate coverage that exists in China, the overall challenge of raising the level of coverage expenditure is great, and city-tailored insurance can effectively play a role in supplementing and paving the way.

Chapter IV
Policy Suggestions on Multi-layered Security

Along with the rising demand of our people for medical services and the aging population, the GWP of CHI is also expected to reach about RMB 2 trillion by 2025, and the funding of BMI will exceed RMB 4 trillion, and both BMI and CHI are the main body of the MLSS system. The people hope that the future MLSS system will be able to achieve the goal that those who need security will be protected, and that the medical contents that are urgently needed can be covered, and that the contradictions of our current social security system, which is not adequate and balanced, will be truly resolved. This requires the government to optimize top-down policy of MLSS system, promote the sustainable development of CHI, improve the efficient use of medical insurance funds and promote the integration of health insurance and commercial insurance. At the same time, such a MLSS system will also promote the accessibility of innovative drugs, support the sustainable development of the innovative drug industry and provide protection for the long-term demand for innovative drugs for our people.

Drawing on international experience and the recommendations of domestic experts, the report puts forward suggestions in the following four aspects:

Exhibit 17: Policy suggestions for the multi-layer social security (MLSS) system



Section I Improve the top-down policy of the MLSS system

A. Further clarify the relationship between various levels in the MLSS system via legislation

First of all, clarify the scope and level boundary of RPS under BIM, and leave the development space for commercial insurance The *Opinions on Deepening the Reform of Medical Security System issued* in 2020 point out the general direction of MLSS system development: By 2030, a comprehensive healthcare security system with the basic health insurance as the main body and medical assistance as the foundation, and the common development of the supplementary health insurance, CHI, charitable donations, and mutual medical assistance. The BMI should have the RPS scope and payment defined, delimiting a clear space for the development of CHI.

In terms of specific implementation, it is recommended to accelerate the issuance of the List of Basic Medical Insurance Coverage and other relevant content documents to standardize the RPS scope and level and the guiding principles for future adjustment. Taking the BMI coverage of innovative drugs as an example, the current dynamic NRDL adjustment mechanism still needs to be improved, and it is recommended that a value-oriented and rule-transparent dynamic NRDL adjustment review mechanism be established, so that the scope of innovative drugs that can be covered by BMI in the future is clearer and CHI is more predictable about the innovative drugs that need to be covered in the future.

Secondly, CHI itself should cover multi-layer needs and there should be a clear definition of each layer of need. The people have a broad range of needs based on BMI coverage, including the OOP of high BMI-covered costs (the portion within the deductible, the OOP portion within the deductible, and the portion above the deductible), the costs not covered by BMI, and the costs of non-designated medical institutions.

Therefore, China's CHI should also be diversified in terms of demand. Considering the difficulty for consumers to understand the complex terms of health insurance, the issue of “information asymmetry” between consumers and contractors arises. The government can draw the boundaries for different levels of health insurance products, define the coverage of products of different levels, enhance the standardization of products and the readability of coverage, and improve the people’s awareness and participation in CHI.

At the same time, it is one of the important objectives to promote CHI coverage of high-risk groups and sick groups in the development of a MLSS system. Looking at international experience, CHI in numerous countries allows high-risk groups (such as the elderly) or sick groups to be insured. Because of the inclusion of these high claim risk populations in CHI coverage, these countries maintain the claim ratio of CHI in the 70-85%, which is higher than that of our overall CHI and higher than that of our individual health insurance. The inclusion of not only healthy groups in CHI coverage, but also high-risk and sick groups, is what will make CHI a truly important contribution to a MLSS system.

At the same time, the international experience also shows that CHI in the free market alone is prone to “market mechanism failure”, which makes it difficult for high-risk and sick groups to be covered, and the government plays a key role in promoting the participation of these populations in CHI.

B. Define government organization setup for CHI

On June 15, 2021, the Law on Medical Security (Draft for Comments) was released by the NHSA. The Draft for Comments provides the first legislative clarification of our healthcare security system. With regard to CHI, the Draft for Comments specifies that "the administrative department of healthcare security under the State Council will work with relevant departments to regulate the management of CHI and promote the orderly development of CHI". This also means that from the legislative point of view, the NHSA and the CBIRC and other relevant authorities will work together to promote the orderly development of CHI under the framework of MLSS system. In the future, the responsibilities and cooperation mechanisms between the two sides on "data interaction", "product design", "product promotion" and "risk prevention" should be further clarified. It is recommended that the government further clarify the responsibilities of the different administrations in the CHI market.

- **NHSA**: Clarify the RPS scope and level, leaving room for CHI. Assume the responsibility of guiding the development of CHI boundaries, regulate product design and, in particular, promote the expansion of the "basic supplementary layer" of coverage. At the same time, the NHSA should share healthcare claims data to help CHI improve its actuarial capacity.
- **CBIRC**: Control financial risks and ensure sustainable operation of CHI. Regulate business practices and protect the rights and interests of consumers.
- **The Ministry of Finance**: Develop various preferential policies for CHI in conjunction with the NHSA and the CBIRC.
- **Local governments**: Assume the responsibility for promoting the development of local CHI.

Section II Promote the sustainable development of CHI

C. Promote the development of city-tailored insurance by NHSA together with MoF and CBIRC. Each local government should play a role in promoting the implementation of city-tailored insurance in their local cities

- The NHSA and the CBIRC shall jointly provide guidance on the design and claim ratio of city-tailored insurance;
- The NHSA should introduce a policy to encourage the use of the balance of employees' individual accounts of UEBMI to purchase city-tailored insurance for individuals or their family members;
- Local governments should include the scale of city-tailored insurance development in government work plans and include indicators such as participation rates in targets for officials at all levels;
- Local governments should assume responsibility for the promotion of city-tailored insurance in local municipalities and increase their efforts to promote it in public communication channels;
- Local governments should make public selections of insurers, regulate claim ratio, and also compensate for the risk of excess of loss to ensure a reasonable level of profitability and ensure the motivation of insurers and the continued healthy development of city-tailored insurance.

D. The government should identify the supplementary layer of greatest concern to the people, regard it as the "basic layer" of CHI and increase emphasis in it, so that the insurance coverage rate covering this layer of CHI reaches at least 30%. Innovative drugs of high clinical value but not included in the NRDL are proposed as a "basic supplementary layer".

Looking at international experience, part of the needs of the supplementary layer of CHI is concerned with the safety of life and quality of life and productivity of insured, including reimbursement for non NRDL drugs (e.g. Part D coverage of outpatient prescription drugs under Medicare in the United States) and reimbursement for higher OOP burdens (e.g. France-supplementary health insurance). In China, the need for the complementary layer also exists.

It is recommended that the government, in promoting the development of the entire MLSS system, should focus first and foremost on promoting the coverage of this "basic supplementary layer". In particular, the following measures could be taken:

- Studies on topics to be conducted by the NHSA, in conjunction with the CBIRC, health administrations and relevant social groups, to define or provide principles for defining the coverage of layers with urgent needs in the supplementary layer.
- For CHI covering the supplementary layer, this "basic supplementary layer", that covers the urgent needs of the population, is served as the minimum level of coverage.
- Modestly increasing the financial support at this level could help to explore the implementation of protection by means of co-financing by the public finance and CHI (refer to the practice of the Part D multi-funding mechanism of Medicare in the United States) or subsidize the participation of low-income population in such CHI, so as to prevent the return of poverty due to illness (refer to the practice of subsidizing the participation of low-income population in supplementary health insurance in France).

E. On the premise of ensuring orderly competition and sustainable development of the industry, the government should moderately regulate and supervise commercial insurance products for individuals, encourage people to get insured, expand the risk pool of CHI, and make it possible for high-risk groups and sick groups to take out insurance.

From international experience, the government's regulation of CHI can effectively avoid "market mechanism failure" in the individual insurance market, and reduce the information asymmetry between insurers and the insured, and enhance the credibility of insurance products. At the same time, however, government involvement can be a double-edged sword; overly strict regulation may reduce the dynamism of insurers to compete (e.g., Medicare Part C in the United States) and reduce the sustainability of the industry's development. CHI in China, especially CMI, is still in a relatively early stage of development. For areas where government involvement is high, the following means can be taken.

1.Promote overall participation rates and cover high-risk groups and sick groups. When putting forward policy requirements for individual CHI products such as non-rejectable insurance and guaranteed renewal, supporting policies shall be adopted

to encourage healthy people to take out insurance, help insurers expand the insurance pool, and provide a certain risk compensation mechanism for the risks of insurance products to encourage insurers' participation.

- **Encourage the development of employer-sponsored supplementary insurance.** Increase tax incentives for companies to purchase supplemental health insurance for their employees and provide a reasonable increase in the current percentage of employer-sponsored insurance in the pre-tax deduction. Encourage the expansion of employer-sponsored supplementary insurance coverage to non-NRDL needs, especially for the more urgent non-NRDL needs in the “basic supplementary layer”. Encourage employer-sponsored supplemental insurance to cover HC coverage for employees’ families.

- **Improve the incentives for tax preferential health insurance.** Increase tax incentives to improve coverage of tax-preferential products. Simplify the operational process of tax preference filing and lower the threshold for insured to enjoy tax-preferential benefits.

- **Encourage the development of long-term health insurance.** In 2020, China has issued *the Notice of the General Office of the CBIRC on Issues Concerning the Adjustment of the Rate of Long-term Medical Insurance Products*, which stipulates that the health insurance premiums are adjustable, and then various regulations regulate the operation and publicity of short-term insurance, aiming to clarify the boundary between long-term insurance and short-term insurance and promote the development of long-term insurance. It is recommended that tax incentives be implemented for individuals who purchase long-term health insurance to promote purchase by insureds. At the same time, the current maximum coverage period for long-term health insurance is 20 years, which is not yet sufficient to protect the people against long-term risks. It is recommended that the CBIRC, jointly with the NHSA, use the claim data of the NHSA to carry out subject research, provide guidance for the risk management and control of long-term health insurance, realize the lifelong nature of long-term health insurance, and encourage more young healthy people to take out insurance;

- **Explore a semi-mandatory policy for the purchase of CHI for high-income populations.** Referring to international experience, it is recommended to levy additional taxes on high-income populations who do not purchase, or whose employers do not provide supplementary medical insurance, and encourage high-income populations and their employers to purchase CHI. It is specified that people with a certain income level must purchase health insurance, and their expenditure on purchasing quota health insurance shall be exempted from individual income tax;

- **Provide subsidies for low-income populations to participate in CHI at the “basic supplementary layer”.** Referring to international experience, when a large number of the insured have purchased CHI products, and the coverage is mainly “basic supplementary layer” products, the government can provide subsidies for low-income populations, encourage these people to take out insurance for a more basic guarantee, which not only improve the sense of access of the whole society, but also expand the insurance pool and enhance their risk resistance.

2.Propose claim ratio requirements to reduce the marketing costs of insurers, and help insurers optimize their risk control ability.

- **Impose requirements on the claim ratio of individual CHI products.** Introduce appropriate policies to support the endorsement and promotion of insurance products and effectively reduce the insurers' marketing costs.
- **Encourage the establishment of insurance data sharing platforms and encourage data sharing.** When requirements are imposed on the underlying liability covered by CHI, data sharing should be provided to help insurers improve their actuarial capabilities and control risk.

Section III Improve the efficient use of medical insurance funds

F. Refine the dynamic adjustment of NRDL becoming more value-oriented, scientific, objective, open and transparent

The medical insurance department of China may establish a more open, transparent and value-oriented adjustment and review mechanism of the NRDL based on the life cycle of innovative drugs. At the same time, a comprehensive long-term value evaluation system should be established for the products already in the NRDL and those newly included in the NRDL, with continuous attention to the safety, effectiveness and cost-effectiveness of the drugs, and a corresponding adjustment mechanism of the NRDL should be developed. For safety, cooperation should be made with the NMPA to collect information on drugs with great side effects, many adverse events or even withdrawn approvals and the drugs involved should be delisted; for effectiveness, efforts should be made to work with the NHC and the NMPA to require the submission of post-marketing clinical trial evidence or real-world evidence of no less than a certain number of cases during renewal negotiations for drugs entering NRDL negotiations for the conduct of a comprehensive value assessment of these drugs; for the drugs of low or unclear clinical value that are prone to irrational use, evaluation should be made before delisting; for the cost-effectiveness, the NHSA may organize follow-up assessments of the use of innovative drugs after being included into the NRDL, and formulate policies to guide and encourage the priority use of cost-effective innovative products to replace low-value products in the clinical setting, so as to realize the “exchange of cages for birds” at the clinical level and further enhance the efficiency of fund utilization.

Section IV Promote the integration of public insurance and commercial insurance

Innovative drugs have greater clinical and social value and the public are in a more pressing medical need of these drugs. Additionally, reimbursement for innovative drugs is one of the main challenges facing multi-layered coverage today. Therefore, the integration of public health insurance and commercial health insurance can be explored and broken through in terms of reimbursement for innovative drugs.

G. Adjust the operating mechanism of RPS

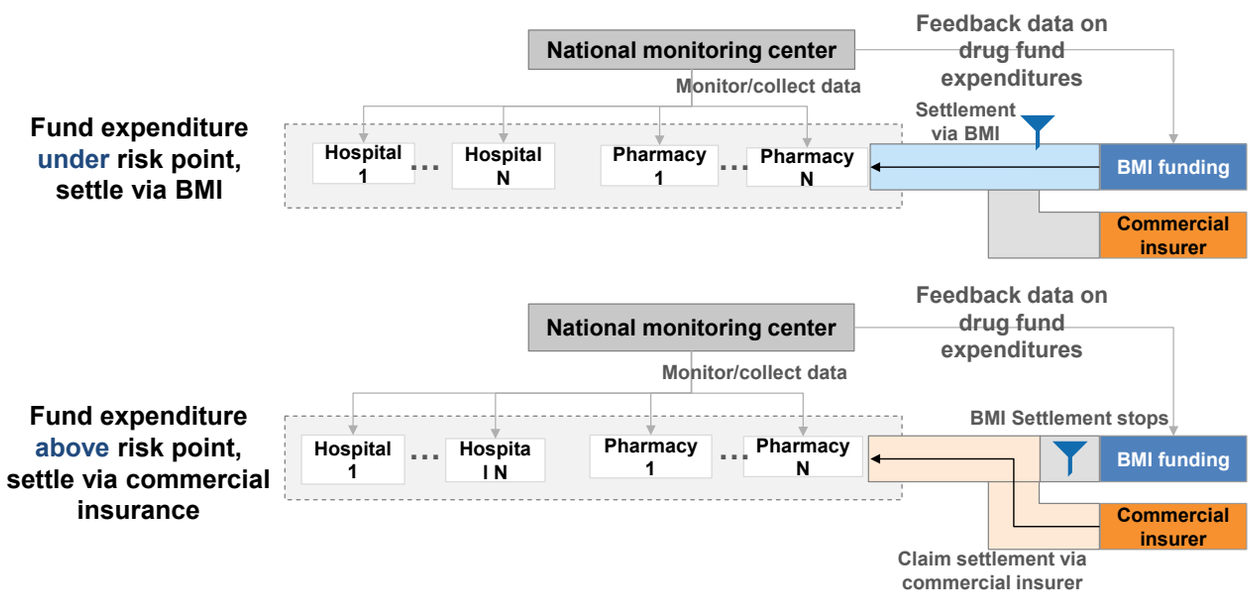
After the current dynamic adjustment of the NRDL, hospitals at all levels are required to procure NRDL innovative drugs at prices no higher than the RPS. This move makes the post-NRDL negotiation market price of innovative drugs essentially equal to the

RPS, and the too-low price may have an impact on the international market price of the product. This impact not only acts on the products of multinational pharmaceutical companies, but may also affect the products of local innovative drug companies to open the international market abroad. Therefore, it is recommended that after the adjustment of the NRDL, while maintaining the confidentiality of the RPS, the actual market price is allowed to be higher than the RPS, and the portion higher than the RPS is encouraged to be included in the scope of OOP payment and CHI.

H. Explore risk-sharing payment model

In the context of promoting the development of a MLSS system, and establishing a risk-sharing model of commercial insurance co-payment in the negotiation of NRDL, the medical insurance department of China can, on the basis of standardizing the negotiation and calculation & estimation process and pathway, explore new models such as “volume and price sharing” and “efficacy betting”, and collaborate with CHI for payment. The introduction of the risk-sharing model for commercial insurance requires a collaborative effort among five parties: patients, outpatient/pharmacies, drug companies, BMI and commercial insurance, with payment risk sharing implemented by BMI and commercial insurance, the National Health Insurance Monitoring Center collecting BMI fund expenditure data from hospitals and pharmacies, and BMI making settlement when the cumulative BMI fund expenditure does not reach the risk point; After the cumulative expenditure of BMI fund exceeds the risk point, the settlement by BMI is stopped, and the claim is settled by commercial insurance. In fact, the claim that is settled by commercial insurance is actually borne by the drug companies. At the patient end, it does not affect the reimbursement of patients.[16]

Exhibit 18: Illustrative example of introducing the risk-sharing model for the commercial insurance



Source: New Medical Insurance Access Pattern Of High-value Innovative Drugs Under Multi-level Healthcare Security System by Ding Jinxi, Li Jiaming and Ren Yuqing

In conclusion, commercial health insurance is an important part of the national social security system and has a very important and positive meaning in enhancing the level of health protection for the whole population, meeting the health needs of different levels and promoting harmonious social and economic development. To do this job well, it is necessary to push beyond conventional thinking under the principles of freeing our mind and seeking truth from facts as well as staying true to our original aspiration and mission, and make timely adjustment to policies adaptive to the economic development in China and according to the evolution rules of the aging society and the changing health demands of the public; Under the leadership of the government, we should give full play to the regulatory role of the market to build a harmonious society, deliver tangible benefits to the public, sustain the innovation, and make CHI a driver for stable social development.

Appendix I
A Compendium of CHI-related Policies in China

Year	Document name	Authority	CHI-related Policies
2006.9	Administrative Measures for Health Insurance	CBIRC	“The First Specialized Regulatory Regulation of Health Insurance. ”
2009.3	Opinions on Deepening the Reform of the Pharmaceutical and Healthcare System	State Council	“Encourage commercial insurance institutions to develop health insurance products that suit different needs ..... Actively advocate the use of government purchase of medical insurance services and explore the commissioning of qualified commercial insurance institutions to handle various medical insurance management services. ”
2009.5	Opinions on the In-depth Implementation of Medical Reform Opinions by the Insurance Industry and Actively Participating in the Construction of MLSS System	CBIRC	“Vigorously develop CHI to meet diverse health security needs... Actively participate in basic medical security handling management services... Actively explore and participate in the construction of medical service system”
2012.3	Circular of the State Council on Printing and Issuing the Plan for Deepening the Reform of the Pharmaceutical and Healthcare System During the Period of the 12th Five-Year Plan	State Council	“Encourage commercial insurance institutions to develop health insurance products other than basic medical insurance, and actively guide commercial insurance institutions”
			“Develop long-term care insurance, special or critical illness insurance and other insurance to meet diverse health needs. Encourage enterprises and individuals to participate in CHI and various forms of supplementary insurance, and implement tax and other related preferential policies .....”
2012.8	Guidance on the Implementation of Critical Illness Insurance for Urban and Rural Residents	NDRC, NHC, MOF, MOHRSS, MCA and CBIRC	“Specify that the scheme for critical illness insurance for urban and rural residents is “purchasing critical illness insurance from commercial insurance institutions”. It states that bidding for critical illness insurance should be regulated.”
2013.9	Several Opinions of the State Council on Promoting the Development of Health Services	State Council	“Encourage the commercial insurance institutions to invest in the medical service industry in various forms such as funding new construction, participating in restructuring, trusteeship and public-private operation. ..... Encourage the development of CHI that dovetails with basic medical insurance, promote CHI to undertake critical illness insurance for urban and rural residents, and extend the coverage of the population .....”
2014.8	Several Opinions of the State Council on Accelerating the Development of Modern Insurance Services	State Council	Encourage insurance companies to vigorously develop various types of CHI products such as medical and disease-specific insurance and loss of income insurance for disability, and connect them with basic medical insurance ..... The government can entrust insurance institutions to handle them, or purchase insurance products and services directly
2014.10.	Several Opinions of the General Office of the State Council on Accelerating the Development of CHI	State Council	“Expand the supply of health insurance products and enrich health insurance services, so that CHI can play a role of “fresh troops” in deepening the reform of the pharmaceutical and healthcare system, developing the health service industry and promoting the upgrading of the economy in terms of quality and efficiency ..... Comprehensively promote and regulate commercial insurance institutions to undertake critical illness insurance for urban and rural residents, and steadily promote the participation of commercial insurance institutions in various medical insurance administration services”
2015.12.	Circular on the Implementation of a Pilot CHI Individual Income Tax Policy	MOF, STA, CBIRC	“Provide the regulation of pilot areas and CHI products and several management issues as well as the control of individual income tax deduction before tax, and determines that the individual tax preference policy shall be implemented in pilot areas from **January 1**, **2016**”
2016.8	"Healthy China **2030**" Planning Outline	State Council	“By **2030**, the modern CHI service industry will be further developed and the share of CHI payout expenditures in total health costs will be significantly increased”
2016.12	Circular of the State Council on Printing and Issuing the Plan for Deepening the Reform of the Pharmaceutical and Healthcare System During the Period of the 13th Five-year Plan	State Council	“Actively give play to the advantages of commercial insurance institutions in actuarial technology, professional services and risk management, encourage and support them to participate in medical insurance handling services, and form a new pattern of diversified handling and multi-party competition. …. Enrich health insurance products and vigorously develop consumer health insurance...”
2017.5	Opinions of the General Office of the State Council on Supporting Social Forces in Providing Multi-layer and Diversified Medical Services	State Council	“Encourage commercial insurance institutions and health management institutions to jointly develop health management insurance products, and support commercial insurance institutions and medical institutions to develop insurance products for special needs medical treatment, innovative therapies, advanced testing and inspection services, and the use of high-value medical devices.”
2017.6	Circular on the Extension of the Pilot Policy on Individual Income Tax for CHI to Nationwide Implementation	MOF, STA, CBIRC	“The circular stipulates that the pilot policy on individual income tax for CHI will be extended nationwide from **July 1**, and the purchase of CHI will be deductible against individual income tax”
2019.11	Administrative Measures for Health Insurance	CBIRC	Adjust the product rates of insurance institutions, give insurance operators more flexible space, give the right of adjusting rates to the main body, and make the insurance companies having greater power to price products, which provide strong support for the design and development of long-term health insurance products, and for short-term health insurance products, circumvent product homogenization and promote the return of products to insurance protection.
2020.1	Opinion on Promoting the Development of Commercial Insurance in Social Services	CBIRC and **13** other ministries	In the first article, “Expanding the supply of CHI”, it is clearly stated that by **2025**, the CHI market will exceed RMB **2** trillion and become an important part of the medical security system with Chinese characteristics.
2020.3	Opinions on Deepening the Reform of the Healthcare Security System	CBIRC, NDRC, MOE, MCA, MOJ, MOF, MOHRSS, MNR, MHURD, MOC, NHC, STA and NHSA	"By **2030**, a comprehensive healthcare security system with the basic medical insurance as the main body and medical assistance as the foundation, the common development of supplementary medical insurance, CHI, charitable donations, and mutual medical assistance."
2021.06	Law on Medical Security (Draft for Comments)	NHSA	A comprehensive healthcare security system with the basic medical insurance as the main body and medical assistance as the foundation, the common development of supplementary medical insurance, CHI, charitable donations, and mutual medical assistance. The administrative department of medical security under the State Council is responsible for the administration of medical security nationwide, while other relevant departments of the State Council are responsible for the relevant medical security work within their respective areas of responsibility.

Appendix II
Summary of CHI Incentives in Selected Countries

	Policy Content	Relevant Acts	Year of Promulgation
Require/encourage coverage for sick groups			
Germany-Supplementary health insurance outside GKV	Health insurance entities may not refuse to take out a policy with a sick groups.	The Social Law Act	**1995**
	In **2009**, the German government required all CHI companies to offer insured a minimum alternative health insurance plan with coverage similar to the statutory social security coverage	Act To Stimulate Competition in the Statutory Health Care Market	**2009**
Australia-Supplementary health insurance outside Medicare	Health insurance entities may not refuse to take out a policy with a sick groups.	**Private Health Insurance Act**	**2010**
	Health insurance entities can set a waiting period of up to **12** months, depending on the physical condition of the insured individual	**Afford Care Act**	**2007**
Brazilian-Supplementary health insurance outside Medicare	The law specifies that the health insurance entities may not deny residents the right to purchase insurance services on the ground of their physical condition or age	**Law 9.961** establishes **ANS** provisions	**2000**
France-Supplementary health insurance covering OOP	If a supplementary health insurance institution offers at least one product, known as “solidarity”, which allows unhealthy groups to be insured without underwriting, without medical examination and with a medical condition, the company is exempt from the **7%** of premium tax	Health Insurance Act	**2004**
Encourage coverage for low-income families			
France-Supplementary health insurance covering OOP	Individuals or families with annual incomes below a certain level can obtain CHI covering OOP funded by the government and administered by commercial insurance companies	**CMU-C** Act	**2000**
Guaranteed coverage/renewal			
Germany-Supplementary health insurance outside GKV	CHI is subject to guaranteed renewals, but allows for some rate adjustments at renewal (health insurance premiums grow at an average annual rate of **2.8%** from **2009** to **2019**)	Act To Stimulate Competition in the Statutory Health Care Market	**2009**
Brazilian-Supplementary health insurance outside Medicare	It is unlawful for a health insurance entity to refuse to replace or renew a policy for sick groups within **24** months of the purchase of a CHI plan	**ANS** regulations	**2000**
Encourage young people getting in insurance and long-term insurance			
Australia-Supplementary health insurance outside Medicare	Australian residents who are not covered by CHI by the first **July 1** after **31** years old should pay an additional **2%** of the premium for each year of delay, up to a maximum cumulative rate of **70%**.	**Life Health Cover**	**2000**
	For those insured between the ages of **18-29**, CHI companies offer discounts of up to **10%** of the premium for this age group. People will enjoy the discount until they are **41** years old.	**Age based Discount**	**2019**
	The government imposes a penalty tax on higher income groups who do not have CHI; groups with an individual annual income of more than AUD **90,000** or a household annual income of more than AUD **180,000** who do not have CHI are subject to an additional individual income tax of **1% to 1.5%** depending on their specific income.	**Medicare Levy Surcharge**	**1998**
Compulsory insurance			
France-Supplementary health insurance covering OOP	Small and medium-sized enterprises are required to make mandatory contributions to ensure that all employees are covered by health insurance covering OOP	**Employment Security Act**	**2016**

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