CICC Research, CICC Global Institute

Building an Olive-Shaped Society

Economic Growth, Income Distribution and Public Policies in China

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Preface—Toward an Olive-Shaped Society

The once-in-a-century COVID-19 pandemic has prompted us to scrutinize the challenges facing human society. The pandemic has exposed flaws in the economic system, such as the vulnerability of supply chains, and has triggered reflection on the relationship between human beings and nature, boosting the impetus for green transformation. Pandemic prevention and control measures benefited from scientific and technological progress, highlighting the importance of knowledge and innovation. The impact of this public health crisis on the economy has been asymmetric. Low-income groups have been hit harder, and more attention must be paid to the polarization between rich and poor globally. The post-pandemic world faces not only a reboot, but also the challenge of how to reconfigure and how to build a better society.

China has stepped into a new stage of development after President Xi Jinping proposed the *New Development Philosophy* in 2015. The five key concepts of the philosophy are *innovation-driven, coordinated, green, oriented toward global progress, and beneficial to all*. Beneficial to all implies that economic policies should not only pursue efficiency, but also emphasize equity, so that all people share the fruits of development. Following our two in-depth reports published in 2021, *Guidebook to Carbon Neutrality in China* and *The Rise of China's Innovation Economy*, the CICC Global Institute and the CICC Research Department have jointly authored this research report on *common prosperity*, a concept that I shall explain later. This report explores the path of future development and possible challenges from various perspectives, including the goal and connotation of common prosperity, the current status of income distribution, and in view of market mechanisms, public policies, and investment implications.

Common prosperity is a special concept put forward by the Chinese government. It refers to affluence shared by everyone both in material and cultural terms and emphasizes that such prosperity does not cover only a few people or parts of the country. Common prosperity is an issue of both development and distribution, and the correct handling of the relationship between efficiency and equity is the key, with the goal of building an olive-shaped society with "two small ends and a large middle." The history of human society shows that the polarization of the rich and the poor

is neither uncontrollable nor does the decline of inequality occur automatically, and the key lies in public policy. No one disagrees with the goal of common prosperity, but in reality, there are controversies about what kind of policies should be adopted. This essay sets out my thinking on several related issues from a macro-perspective.

Growth and Equity in the New Stage of Development

How should we understand the relationship between economic growth and common prosperity in the new stage of development? Economic thinking on the relationship between growth and inequality has polarized into two opposing views.

One pole of the argument is that inequality is good for economic growth, and that the gap between rich and poor favors savings and investment by the rich while providing incentives for the poor to work hard. This had been the dominant view in the 18th–19th centuries, and its subtler formulation is neoliberalism, beginning in the 1980s, which argues that income disparities are the inevitable result of market competition, reflecting differences in efficiency (ability), and should not be artificially altered. By taxing the rich and transferring wealth to the poor, the rich have less incentive to work because they are being taxed, and the poor have less incentive to work because they are "getting something for nothing," which ultimately hurts the economy as a whole. This logic seems to make sense, but it does not stand up to scrutiny, and the corollary is that it promotes economic growth by making the rich richer and the poor poorer.

The supply-side economics that endorsed the Reagan tax cuts in the 1980s is typical neoliberalism, arguing that lower-income taxes stimulate incentives for the private sector and economic growth, and that a broadening of the tax base offsets the effects of lower tax rates, allowing overall tax revenues to rise. From empirical analysis, this view was not supported by subsequent economic development, and the US fiscal deficit rose sharply in the 1980s after the tax cuts. GDP per capita growth in the USA was 0.8 ppt higher during the postwar period of declining inequality than during the period of rising inequality since the 1980s, suggesting that the decline in inequality during the first three decades of the postwar period did not impede economic growth.

The other pole of the argument is that reducing inequality is good for economic growth. For example, providing more public goods and building infrastructure is conducive to raising labor productivity. Another example is that taxing the rich to fund poor children's pre-school education and healthcare inputs can reduce inequality and promote human capital accumulation as well as economic growth in the long run. However, it cannot be concluded that all policies to reduce income disparity are conducive to economic growth, and the effectiveness of policies depends on the general environment in which the economy is situated as well as the specific measures taken. In the new phase of development, three areas of changes deserve attention.

First, the core economic problem in China has changed. Since embarking on reform and opening up, China has shifted from a planned economy to a market

economy. The efficiency of resource allocation has been greatly improved, the economy has grown rapidly, and at the same time, the income gap is widening. The main conflict in society has shifted from the "conflict between people's ever-increasing material and cultural needs vs. backward social production" to "conflict between people's ever-increasing need for a better life vs. unbalanced and insufficient development". As a result, more emphasis ought to be placed on the common prosperity which is required in the new stage of development. Over the past 40 years, under the dominance of liberal ideology, the global polarization between rich and poor has risen sharply, which has also provoked reactions at social and political levels, with inclusive growth becoming a focal point.

Second, the pattern of economic growth is shifting. The dominant view in the 18th and 19th centuries was that the division between rich and poor is conducive to economic growth because classical economics emphasizes the importance of capital accumulation. Savings (investment) determines economic growth and concentration of wealth increases savings, assuming that the population remains constant. Modern economies are knowledge-based, intangible assets are increasingly important, and innovation is a major source of growth. The history of technological progress shows that most disruptive innovations come from a multitude of small businesses, with limited contributions from a few super-rich individuals. At the same time, governments can facilitate knowledge production by providing public goods (e.g., R&D and education inputs). As China's demographic dividend fades and the contribution of labor and capital accumulation declines, growth will rely more on technology progress.

Third, globalization is starting to unravel. Over the past few decades, with the refinement of the division of labor in the industrial chain, the rapid rise in ratio of global trade to GDP, and the combination of lower-cost labor in emerging market countries and capital in developed countries, Asian countries, represented by China, have dramatically narrowed the gap between their incomes and that of developed countries. Within the developed world, the relative deterioration of the position of the middle class and the dramatic increase in the wealth of the wealthy have caused a backlash from protectionist and anti-immigrant forces. Pandemic shocks and geopolitics, especially the Russia-Ukraine conflict, have intensified de-globalization. For China, de-globalization means that the development model of catching up with developed countries by participating in international production and trade so that workers' income is synchronized with economic growth has run into resistance.

The changes in the internal and external environments described above underscore the importance of balancing growth and equity in the new stage of development. Indeed, the two can be mutually reinforcing rather than mutually exclusive. Economic growth translates into public investment and public services, as well as more transfers, which are conducive to enhancing the well-being of low-income groups; growth makes a society more generous and receptive to social policies in support of low-income groups, and it also makes low-income groups more tolerant of income disparities. On the other hand, it is unrealistic to expect inequality to decline automatically after a certain level of economic development is reached. The key is the choices of public policies.

Paths Toward an Olive-Shaped Society

In primitive societies, early humans were hunter-gatherers with little production surplus, and while the scale of group living was small, the role of organizational mechanisms was small as well; hence, there was basically no inequality. As people settled down to carry out agricultural production and poultry and livestock raising, production surplus appeared, while the organizational mechanism began to play a role in the formation of property rights, hence leading to the emergence of inequality. A certain degree of inequality is a natural and inevitable phenomenon of human society. The problem is that if income distribution takes on a pyramid shape, it exceeds what society can tolerate. The so-called common prosperity is to move from a pyramid-shaped to an olive-shaped society.

The Three Dimensions of Inequality

Generally speaking, inequality has three dimensions: Income inequality, wealth inequality, and inequity of opportunity. How are we to understand the relationship between the three? In the 1920s, financial asset prices in the USA soared, and the prevailing view at the time was that rising asset prices represented increased wealth. The disappearance of wealth after the stock market crash in 1929 prompted a search for a tool to measure real wealth creation, which led to the invention of the concept of GDP (output) and the statistical system, and the understanding that the creation of real wealth requires the production of goods and the provision of services. Wealth in a modern economy represents a claim on output and does not necessarily correspond to the accumulation of savings.

Since the 1980s, a prominent phenomenon worldwide has been the expansion of wealth, represented by financial assets, at a rate faster than economic growth, with the ratio of wealth to GDP rising. The form in which wealth is manifested varies from country to country, with a significant increase in the ratio of equity market capitalization to GDP in the USA and more of a rise in the ratio of real estate market capitalization to GDP ratio in China. At the same time, the gap in the distribution of wealth greatly exceeds the income gap. Combining the rise in the ratio of macro-wealth to GDP along with the disparity in wealth appropriation has two implications for distribution: (1) Wealth is more important than income; and (2) inheritance is more important than creation, the latter of which is a manifestation of unequal opportunities for the younger generation.

Wealth growth is a process of collective social creation, and whether there is equality of opportunity in the process also affects efficiency; a society with equal opportunities is more conducive to wealth growth, and greater equity in education promotes equity of opportunity. The widening in the wealth gap between the rich and the poor in Western countries over the past 40 years, along with the decline in per capita GDP growth, may be related to the decrease in investment in education.

In China, discussion on common prosperity often focuses on the urban-rural gap, the regional gap, and the income gap together as three prominent issues. The three are interrelated but separate issues. Development remains China's top priority, and narrowing the urban-rural and regional gaps requires solving problems in the context of development, such as new urbanization and rural revitalization. At the same time, the urban-rural and regional gaps are results of institutional and policy factors such as household registration and the resulting inequality in public services such as education, and reducing the urban-rural and regional gaps means reducing inequality of opportunity.

Measuring Inequality

"Inequality" or "polarization of the rich and the poor" are clear expressions, but are not easy to quantify. The Gini coefficient is a commonly used indicator for the proportion of unequally distributed income to the income of the population, with a maximum value of "1" indicating absolute inequality, in which 100% of income is shared by a single unit of individuals, and a minimum value of "0" indicating absolute equality. In reality, the value of the Gini coefficient ranges from 0 to 1, and internationally, 0.4 is usually taken as the warning line for the disparity between the rich and the poor. Over the past 40 years, the Gini coefficients of major economies have increased, indicating a deterioration in income distribution. According to the Bureau of Statistics, China's income Gini coefficient has also risen in recent decades, and although it has declined in recent years, it is still at a high level.

The Gini coefficient is flawed in that it does not show where the imbalances in distribution lie, and comparisons of different percentiles of income distribution can provide a more intuitive indicator. The wealth of the super-rich (top 0.1%, top 0.01%) compared to the majority of the population, or the gap between the lowest income group and the majority of the population, for example, can both serve as intuitive indicators. The poles of income distribution have different meanings. The richest may hold enough wealth to have greater control or influence over society, while the history of economic development shows that extreme poverty brings social instability. According to the *World Inequality Report* of the Paris School of Economics, global inequality in personal wealth has increased under the impact of the pandemic, with the share held by the top 0.01% of the rich rising from 10.3% to 11.1%, while the share of the top 1% of the rich has stabilized, showing that the rise in wealth has been concentrated among the richest of the rich.

Market Allocation and Redistribution

How can inequality be reduced? A popular argument is that wars and revolutions reduced the gap between rich and poor in the mid-20th century. However, not all

wars reduce income disparities, and causality can be such that extreme polarization between rich and poor leads to war and brings about policy changes. Globalization has been cited as a contributing factor to the polarization of rich and poor within developed countries. Even in open economies, however, the gap between rich and poor in the USA and UK has widened dramatically over the past 40 years, while the polarization between rich and poor has narrowed in France and Switzerland. French economist Thomas Piketty summarized the world's historical experience in his book *Capital and Ideology*, proposing that the wealth gap is not an objective and independent existence, and that the biggest determinant is the arrangement of the economic and social system, the latter reflecting changes in the mainstream thinking of society. Now, the polarization between the rich and the poor has once again become a global concern.

Income distribution can basically be categorized into two tiers, with market economic activities forming the primary distribution, and fiscal and tax institutional arrangements representing redistribution or secondary distribution, i.e., the provision of public goods and transfers to lower-income groups through taxation of higher-income groups. In recent years, tertiary distribution through public goods and charitable activities has also received attention, but on a smaller scale. There is a basic consensus that market distribution prioritizes efficiency, while secondary distribution focuses on equity, but the emphasis varies from country to country. Though they are both market economies, the USA is more progressive in taxation and its secondary distribution is stronger than in Europe, whereas the gap between the rich and the poor in Europe is smaller. The difference lies in the market distribution chain, for example, postwar Germany established a co-management corporate governance mechanism in which workers are represented on the boards of directors of large corporations and hold half of the voting rights, which strengthens the bargaining position of workers.

Understanding Market Mechanisms Accurately

The examples of the USA and Germany illustrate that market economies are not monolithic models and that their functioning is governed by a number of rules, including laws and policies in each country. How are we to understand the mechanism of the role of the market distribution chain? The mainstream thinking in the past decades is the perfect market assumption of neoclassical economics, in which everyone makes rational decisions based on complete information, full competition brings about efficient allocation of resources, and each factor of production such as land, capital, and labor distributes returns according to its contribution to production. However, the reality of the market is not as perfect as described in textbooks, and in some aspects, the allocation of resources is neither efficient nor equitable, requiring policy intervention.

Correcting Externalities

Some market economic activities have externalities or spillover effects, i.e., the benefits or costs of an individual's behavior affect people who are not associated with the activity; if the behavior harms others, the actor does not need to compensate those who are harmed; if the behavior incidentally benefits others, the actor has no incentive to increase its inputs to satisfy the others, which results in a less efficient overall resource allocation than desired. From noise pollution to financial risk, there are many examples of externalities in economic activities, and it is generally recognized that market efficiency is more important than externalities, but some externalities may affect the overall situation.

A prominent example is the climate problem posed by carbon emissions, in which the benefits of the economic activity that generates them are reaped by some people but the harms of climate change are borne by all. Correcting the externality requires worldwide public policy intervention, such as the implementation of a carbon tax or the trading of carbon emissions rights to create a price (cost) for carbon emissions. In reality, the key to the effective functioning of a carbon tax or carbon trading price is international cooperation and synergy. Most of the carbon dioxide accumulated in the atmosphere is emitted by developed countries, and now all countries are required to reduce emissions together, so the issue of fairness is controversial. How we balance efficiency and equity in emissions reduction is a global challenge.

Promoting Competition

Another factor contributing to market failure is monopolization and unfair competition. Increased market power undermines both efficiency and equity. First, it discourages innovation. Firms with market power focus on maintaining their market positions and are often reluctant to engage in innovations that benefit society as a whole but disrupt their existing patterns. In distributional terms, market power increases the ability of firms to raise prices, and profitability increases relative to the cost of production, including wages. At the same time, firms with market power may reduce competition among themselves for labor demand through non-competitive terms to achieve lower wages. One possible explanation for the decline in the share of labor income and the increase in the share of returns to capital in the USA over the past two decades is the increase in the share of firms with market power.

What factors led to increased market power? First, the structure of the economy has changed, with an increase in the share of services that are less tradable than goods, with limited competition in the spatial dimension, and with services not being able to be stored (unlike goods), diminishing intertemporal competition. Second, the marginal cost of digital products is close to zero, resulting in economies of scale and scope effects that increase the market power of platform firms. Digital technology has enabled the increased tradability of some services, such as telemedicine and

education, but these services are often tied to apps provided by platform firms. Again, the digital economy makes differential pricing possible, and discriminatory pricing undermines the efficiency of the market in allocating resources.

In addition to the above-mentioned issues of market forces, which are of general significance, a special phenomenon in China is the prominence of state-owned enterprises (SOEs). SOEs can be broadly categorized into two types: SOEs for public welfare, whose function is mainly to serve the state and national strategy, and to address market failures; and competitive SOEs, which are mainly active in the competitive business arena and create economic value by competing with other market players. SOEs usually have advantages in government subsidies, obtaining financing resources, and the use of land resources and mineral assets, which help SOEs for public welfare better perform their function of serving national strategies, but for competitive SOEs (including public interest SOEs that have expanded their operations into competitive areas), it means an undue competitive advantage. For example, private firms in competitive sectors are less leveraged than SOEs, but have significantly higher financing costs than SOEs.

The key to addressing these issues is implementing the principle of competitive neutrality that has been put forward by the policy sector in recent years, the basic gist of which is that the government's actions should be neutral in terms of their impact on market competition between competitive SOEs and other types of enterprises. Competitive neutrality does not target ownership, but rather opposes any enterprise relying on discriminatory policies to gain undue competitive advantage. In addition, the principle of competitive neutrality applies only to competitive SOEs in the commercial sector, but not to SOEs for public welfare which are primarily engaged in non-commercial activities. The principle recognizes the function of SOEs to compensate for market deficiencies in specific areas, emphasizing fair and transparent compensation based on the cost of their social responsibilities.

Political Economy

What neoclassical economics calls the efficient allocation of resources by the market is measured by Pareto optimality. If no individual in the economy can improve his or her own situation without worsening the situation of others, the allocation of resources is optimized and is called Pareto-optimally efficient. In other words, a Pareto improvement in resource allocation is achieved if a person can improve his or her own situation without harming others. While neoclassical economics emphasizes objective science without a political point of view, the principle of Pareto optimality itself connotes a particularly strong political point of view, which is to accept the established pattern of wealth allocation without asking why there is a gap in the initial situation.

In reality, market behavior is more or less governed by evolving political and socio-ethical values, and there are norms or rules by which the market operates, with values and public policies playing an important role. To take a few examples, is it

market behavior or Pareto-optimal for poor people to voluntarily accept dangerous jobs? If so, what about child labor? Child labor was common in the early days of the Industrial Revolution, when it was considered normal market behavior. It was through the intervention of public policy that the employment of child labor was made illegal. Some of the forces that influence other people's decisions are not necessarily legitimate competitive market behavior, such as the use of public figures such as celebrities for advertising to guide consumer preferences, or wealthy groups exerting greater influence on politics and policy than the general population.

Traditional classical economics has a much stronger philosophical and political economy flavor. Beginning with Adam Smith's *The Wealth of Nations*, classical economics divided society into three classes: Workers, capitalists, and landowners. Landowners collected rents from the land and wasted them through lavish consumption, workers earned wages for their labor, and capitalists organized production. Economic growth required land rent to be reduced, wages to be maintained at subsistence levels, and production surpluses to be used for investment. Competition for trade (division of labor) replaces land grabbing (war) in the allocation of resources, thus making the market mechanism the most efficient way to raise living standards. In the present context, there is also a political economy perspective on the role of markets in allocating resources, with finance and the innovation economy being two areas that deserve particular attention.

Improving the Structure of Finance

The classic economic description of finance is that the economy has a need for investment, entrepreneurs have a wide range of investment opportunities that bring positive returns, and the role of finance is to identify these entrepreneurs and provide capital to support investment in their projects. Finance can efficiently convert savings into investment and supports economic growth. However, over the past 40 years, the share of capital expenditure in GDP has been largely stable globally, while the ratio of credit to GDP has continued to rise, meaning that the unit output of credit has fallen. At the same time, income and wealth gaps have widened significantly. In China, real estate and credit have gone hand in hand over the past two decades, with real estate prices and debt expanding dramatically during the upward phase of the financial cycle, with adverse effects on both efficiency and equity.

The time required for and difficulty in obtaining loans may vary. Industries that are able to obtain loans first gain a head start and can expand operations and purchase assets during a period of relatively low prices, and the incomes of capital owners and employees can also grow faster, while real incomes in other sectors may fall as a result of credit expansion. So, who has preferential access to credit? Borrowers with government credit guarantees and real estate as collateral have an advantage, and the real estate sector benefits most from credit expansion because of its collateral. Financialization gives real estate firms a special competitive advantage by reversing their entry into the financial sector, achieving rapid expansion of total assets through holdings

of financial licenses, and by means of cross-shareholdings, connected transactions, and regulatory arbitrage, accumulating debt risk and undermining the sustainable growth of the economy.

The excessive financialization of real estate also threatens people's livelihoods and equity, exacerbating intergenerational, urban-rural, and regional disparities. The irrational structure of housing supply and the insufficient supply of public housing have a direct impact on the housing security of the younger generation and low- and middle-income groups and also exacerbate the wealth gap. First, the intergenerational gap, the generation with the most earning power in the past decades, accounted for a high proportion of the total population, and their investment demand contributed to the real estate bubble, allowing them to benefit most from the rise in housing prices. The second is the urban-rural divide, with the sharp rise in real estate prices in towns and cities putting those who stayed in the countryside, as well as their offspring, at a disadvantage.

The experience of developed countries shows that the polarization between the rich and the poor, in turn, contributes to debt (credit) expansion. Income distribution gaps have led low- and middle-income groups to increase their indebtedness in order to maintain their consumption levels. One area in which public policy can make a difference in the face of social pressures is in improving financing conditions and financial services for low-income groups. From a macro-perspective, as the marginal propensity to consume is lower among high-income groups than among low-income groups, the widening of the wealth gap results in a lack of demand for consumption, and finance plays an important role in promoting the balance between supply and demand by providing credit to low-income groups to support consumption, but the expansion of debt is ultimately unsustainable, and may even lead to financial crises.

Improving the financial structure to better serve the real economy will enhance both efficiency and equity. The first step is establishing a new development model for real estate, changing the structure of housing supply, increasing the supply of low-income housing, and reducing the financialization of real estate through real estate taxes and other measures. The second step is breaking down the mixing of finance and commerce and fostering the specialized banking system. Since the 2017 National Financial Work Conference, regulatory measures to regulate the holding of stakes in banks and other financial institutions by industrial capital have been launched one after another, the regulatory framework for financial holding companies has gradually taken shape, and the regulation of Internet finance has been strengthened. Breaking up the mixing of finance and commerce and fostering the specialized banking system are conducive to blocking the extension of government credit guarantees from banks to the real economy and the capital market, hence allowing the market to play its role in allocating resources.

The Knowledge-Based Economy

In August 2021, the Chinese government proposed that "we should encourage hard work and innovation for wealth". How can we promote innovation? Traditional economic analysis is based on private goods, but knowledge and science and technology are public goods with positive externalities. Scientific and technological innovation benefits the society at large and is generally funded by the private sector, which results in overall innovation inputs being lower than socially desirable levels. Promoting innovation requires government investment in R&D as well as attracting private sector participation. Innovation requires risk-taking, and matching risks and returns is not only a matter of distribution, but also of incentives to innovate. The new paradigm of the digital economy and related changes in the structure of the economy are of particular interest.

An important feature of the digital economy is that it is non-rivalrous, with the cost of reproducing and transmitting data being virtually zero, with one person's use not affecting use by others. Zero marginal cost makes it easier for the digital economy to improve efficiency by increasing scale and expanding scope. The prominent vehicle is the platform economy, which, unlike traditional enterprises that serve unilateral markets, serve bilateral or even multilateral markets, forming an ecosystem that connects producers, consumers, and even researchers and developers, among others, to enhance efficiency.

The combination of the non-competitive nature of data use, which leads to economies of scale, and exclusive property rights for data, leads to market power and even the ability to monopolize. Antitrust in the digital economy is a difficult problem faced by regulators in all countries. On the one hand, platform companies often subsidize their operations across products and markets, making traditional criteria for identifying monopolies, such as whether they raise consumer prices or increase the market share of their products, no longer applicable. In addition, there is an inherent contradiction between efficiency and fairness; the larger the scale of the data, the more efficient it is individually, but the resulting market power may have negative externalities that affect the efficiency of the economy as a whole.

On the other hand, the zero marginal cost feature of the digital economy means that the threshold for innovation and entrepreneurship is low, and it is not easy for firms that have first-mover advantage to solidify their market power by virtue of the big data they have accumulated, and monopoly and competition evolve dynamically rather than statically. Antitrust efforts should focus on eliminating and controlling forces that may solidify market power, and the role of finance is a key factor. Finance is a heavily regulated business with strict entry thresholds, and it therefore enjoys a certain degree of government credit guarantee. Digital platform companies themselves have significant economies of scale. As a result, the combination of digital platforms and finance can help solidify market power and hinder competition. The key to anti-monopolization of platform enterprises is thus to implement the separation of production and finance, strictly segregate risks, and prevent regulatory arbitrage.

Technological progress, including the development of the digital economy, brings about changes in the structure of the economy. Historical experience has shown that technological progress has led to an increase in the share of low-productivity sectors because the output in high-productivity sectors tends to rise as a result of technological advancement, but as the associated consumer demand is limited, the excess supply tends to drive a transfer of surplus labor from high-productivity sectors to less efficient sectors. In the past, China's rural areas required a large workforce in order to provide enough food and clothing, but now the surplus labor has shifted to the manufacturing industry after the productivity of agriculture increased and then to the service sector after the productivity of manufacturing industries increased, leading to a rising share of the service sector in the economy.

The structural changes in the economy brought about by technological progress are justified, but some possible distortions should be noted. As a special factor of production, data can usually be shared and used at the same time but productive capital and land cannot. The potential for the digital economy to improve efficiency is particularly high in China as it is a populous country, whereas land is non-renewable and resource inputs only lead to higher prices and do not improve overall social well-being. If the proceeds of digital economic development are used to purchase land, which is in limited supply, hence pushing up real estate prices in big cities, it undermines both innovation and equity. Public policy needs to direct the proceeds of technological advances into public services such as education and health care, where efficiency gains are slower but socially beneficial.

The Boundaries of Government

The role of public policy in a market economy can be categorized into two types: One role is to regulate the behavior of market players in competition through laws, rules, and policies, and the other is the direct provision of products and services by the government, such as national defense, research and development, and public services. The latter category is public finance, which is financed by taxes and debt, and works as redistribution. Adjusting income distribution is an important function of finance, while finance can act as an automatic stabilizer and counter-cyclical adjustment. Fiscal operation can enhance efficiency, but may also squeeze market players. Moreover, the government debt might be unsustainable and thus may potentially cause long-term damage. Utilizing the functions of finance to promote common prosperity requires a comprehensive balance of these dimensions.

Improving the Structure of Income and Expenditure

China's fiscal and taxation system is characterized by three features: A high proportion of indirect taxes in terms of taxation, a low proportion of public services such

as transfer payments and social security in terms of expenditure, and an imperfect mechanism for regulating local government finance. The principle of equity in taxation requires that the tax burden be proportional or even progressive to personal incomes, while indirect taxes are regressive in nature. The tax base of the turnover tax is consumption, with the consumption of high-income groups accounting for a low percentage of their income, and the consumption of low-income groups accounting for a high percentage of their income, making the turnover tax regressive in nature. This does not help in regulating the gap in income distribution between groups of people, nor does it help with the smooth implementation of changes in the disposable income of individuals at different stages of the economic cycle.

This system, with indirect tax or transfer tax as the main sources, alongside the low proportion of fiscal expenditures devoted to transfers and social security, has weakened the role of public finance as an automatic stabilizer for the economy. At the same time, the land finance (i.e., using use land sales as a primary source of revenue or using land as collateral for bank loans) of local governments tends to be pro-cyclical, diminishing the role of public finance as an automatic stabilizer for the economy and amplifying the pro-cyclical fluctuations of the economy and the financial industry. The lack of an automatic stabilizer for the economy and the pro-cyclicality of the fiscal mechanism highlights the importance of adopting the proactive fiscal policy to smooth cyclical fluctuations of the economy, which can only be carried out through fixed-asset investment. This is why infrastructure and real estate investment has been the main vehicle for implementing the counter-cyclical macroeconomic policy in China, which is good for short-term stabilization of growth but detrimental to long-term efficiency.

The high share of corporate income taxes and the low share of real estate and other property taxes in direct taxes also have a distorting effect on the economy. The experience of developed countries shows that real estate and other property taxes have less of a negative impact on employment, human capital investment, innovation, etc. The reform program of the fiscal and tax system established by the Third Plenary Session of the 18th Central Committee in 2013 proposed the reduction of indirect taxes and increase in direct taxes. This involves lowering indirect tax rates, introducing new types of direct tax, expanding the direct tax base, or increasing direct tax rates. As for increasing the proportion of direct tax, the room for income tax adjustment is limited, the reform of personal income tax would change the income tax classification into comprehensive tax, the general direction is to reduce tax rather than increase tax, and the corporate income tax rate is already not low. The main way to raise direct taxes in the future will fall on property taxes, including real estate tax and inheritance tax, capital gains tax, etc.

Improving the structure of fiscal expenditure requires an increase in spending on transfer payments, public services, and security such as education and health care, and a decrease in spending on fixed-asset investment. This is an important aspect of helping low-income groups, reducing the risk of class solidification, and promoting equity, especially as the equalization of public services helps to reduce urban-rural and regional disparities. At the same time, in today's increasingly important knowledge-based economy, increased investment spending on intangible assets

such as research and development has a positive spillover effect on private firms, boosting overall productivity; and investment in childcare and early education is conducive to enhancing the skills, competitiveness, and productivity of the future workforce.

Emphasizing the Role of Public Debt

In addition to improving the structure of revenues and expenditures, public debt is an important aspect of the function of finance in regulating the economy. In a downward economic cycle or when the economy encounters a major shock, the treasury can raise debt to reduce taxes and increase transfers in order to boost the aggregate demand. In response to the once-in-a-century COVID-19 pandemic, the government's action of increasing debt to support affected enterprises and individuals is not only a manifestation of its social insurance function, but it also helped to prevent the economy from going into "shock" and jeopardizing its growth potential. A common concern about government debt is that it is too large and unsustainable for long-term economic development.

One macro-perspective for analyzing debt sustainability is to compare the interest rate on the national debt (i), which is the cost of financing the treasury, with the growth of the tax base (g), and the size of the given debt converging in the future if $i < g$, or the debt being dynamically efficient. Historical experience shows that for most countries, the cost of finance is lower than the economic growth rate, and China is no exception. At the same time, when the return on capital (R), which is the sum of interest rate (i) and the risk premium, is greater than the economic growth rate (g), the share of labor income tends to decline and the income gap will widen, as is shown by some research.

Government debt promotes both efficiency and equity if it promotes long-term economic growth (g) while reducing the risk premium for society as a whole. More obvious examples include government departments increasing the provision of public goods that the market cannot efficiently provide, such as education, health care, and basic research. In the face of an aging population, the public sector increases debt to encourage childbearing and reduce the burden of childcare, and the resulting increase in the number of children who become part of the workforce 20 years later brings economic growth that pays off the debt.

Another example is the standardization of financial mechanisms to reduce risk premiums and abnormally high rates of return on capital. China's national and local bonds are issued at an interest rate of about 3%, while urban investment company bonds are issued at about 8–10%. The large spreads highlight the inefficiency of the existing lending arrangements, and the central government's "implicit" guarantee to local governments allows investors to obtain excess returns, i.e., returns that exceed the risks they actually bear. Converting implicit government debt to explicit government debt can effectively reduce financing costs and promote efficiency and equity.

To summarize, balancing efficiency and equity is an eternal topic of concern in economics and public policy, and many issues are very controversial. In the process of writing this book, we focused on important questions in reality and have attempted to analyze them objectively, but due to the limitations of our ability, bias, errors, and omissions are inevitable. This book is another effort to study the New Development Philosophy of China, and we hope that it will be useful in promoting the discussion of related public policies.

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Contents

Chapter 1
From Pyramids to Olives

Abstract Since embarking on a path of economic reforms in the late 1970s, China has achieved two milestones in improving people's livelihoods. First, China's per capita income has risen rapidly, from US$156 to US$12,556 between 1978 and 2021, making it one of the fastest growing economies in the world. Second, China's poverty rate has declined dramatically. In the past 40 years, China has lifted 770mn rural people out of poverty, accounting for more than 70% of global poverty reduction in the same period. Despite China's socio-economic achievements in development, we believe a sustained effort is still required to raise income levels and address economic inequality, in order to achieve inclusive growth. Currently, China still has a large low-income population, and the income distribution pattern represents a pyramid rather than an olive shape. China's Gini coefficients in income, consumption, and wealth distribution are at a high level, and inequality is a prominent issue. China's economy is still subject to urban–rural disparities; in fact, we can attribute nearly half of the income gap attributed to the urban–rural gap. In addition, wealth in China has continued to concentrate over the past 30 years. With housing assets becoming the main component of household wealth, rising urban housing prices are a major driver of wealth concentration in China. Based on the World Income Inequality Database (WIID), we find that based on certain income classification criteria, the shape of China's income distribution represents a pyramid shape. This contrasts with that of Nordic countries, Japan, and the US, which are closer to an olive shape. The main reason for this difference is that China still has a large number of low-income people, and its middle-income population is not large enough to support the "waist" of the olive shape. In addition, the income level of China's middle-income population is relatively low, and their weak risk resilience makes this income group vulnerable to a return to poverty. The focus of improving income distribution is not to create an olive-shaped pattern, but to raise the per capita income level and expand the population size of the middle-income group. We believe that China should continue to raise per capita income and deepen reforms and "opening up" policies, while at the same time implementing redistribution policies to reduce inequality.

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1.1 Measuring Inequality with Income, Consumption, and Wealth Gini Coefficient

This section describes economic inequality in China using four data categories. Individual income is defined by per capita household income and includes household members within the household who do not have income. For example, children with no income are not classified in the zero-income group, but in the income group corresponding to the per capita income of their household. Thus, when measuring the size of the income group in a given income range, we are actually measuring all people whose household per capita income falls in that range.

1. Data published by the National Bureau of Statistics (NBS) and other official agencies in China: The NBS publishes relatively limited data on income distribution, mainly the Gini coefficient and the mean, median, and quantile of per capita disposable income. Among the various data on income disparity, we believe data from the NBS is the most trustworthy.
2. Databases published by international organizations: These include the World Income Inequality Database (WIID), PovcalNet, and the World Inequality Database (WID). The raw data of these databases are official data obtained from countries and survey data from research institutions, some of which are adjusted for international comparison. The advantage of these databases is their high degree of international comparability.
3. Household survey data released by academic institutions: Some academic institutions conduct sample surveys on the economic situation of Chinese households over a long period. These surveys in China include CHIP, CFPS, CGSS, CHNS, and CHFS,[1] which describe household economic situations in detail. The drawbacks of survey data are small sample size, statistical biases, and insufficient coverage of the very-high-income group.
4. Income and property data on high-net-worth individuals (HNWIs) published by commercial institutions: For example, we refer to wealth management data provided by private banks. This type of data helps depict the HNWI population, but may be limited by its own sampling as well as modelling.

1.1.1 The Income Gini Coefficient Has Steadily Decreased Over the Past Decade, but Remains at a High Level

Despite various limitations, the Gini coefficient is still an important indicator for measuring inequality. Data from the NBS indicates that China's income Gini coefficient is at a relatively high level. The NBS, National Development and Reform Commission (NDRC), and international organizations have estimated China's

[1] Well-documented household surveys in China include the Chinese Household Income Project (CHIP), China Family Panel Studies (CFPS), Chinese General Social Survey (CGSS), China Health and Nutrition Survey (CHNS), and China Household Finance Survey (CHFS).

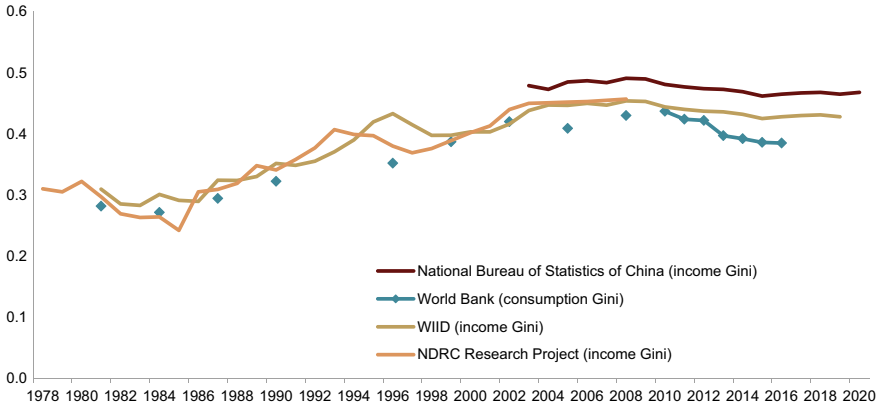

Fig. 1.1 Gini coefficients in China from different sources (1978–2020). *Note* The World Bank's Gini coefficient was not continuous until 2010. *Source* China Statistical Yearbook, World Bank, PovcalNet, World Income Inequality Database (Version 31 May 2021), National Development and Reform Commission,[4] CICC Global Institute

income Gini coefficient (Fig. 1.1). The highest value was provided by NBS at 0.47 in 2020. The Gini estimate published by the NBS should be the most accurate, because the NBS calculates Gini coefficient directly based on micro-level survey data, and the "missing rich" problem is addressed using tax data.[2] Gini estimates by other agencies are based on quantile data provided by the NBS and are more likely to underestimate the Gini coefficient.[3] In terms of comparison across countries, the latest data from the WIID database shows that China's income Gini coefficient was 0.43 in 2019, higher than that of the US (0.42) and most European countries (e.g. Germany 0.32).

China's income Gini coefficient has been rising since 1978, and has now fallen from its peak. China's income Gini coefficient rose gradually from 1984 to 2000, reached its highest level around 2009, and then declined. It is still above 0.4 based on various sources. However, the rise in the Gini coefficient cannot be attributed to economic reforms and opening up. Ravallion and Chen [27] shows that there is no significant evidence that economic growth policies or urbanization per se caused income divergence after 1980.[5] We believe the urban–rural gap is the most important factor accounting for the widening income gap in China. The urban–rural dual system established in the planned economy has not been entirely reformed, which has largely prevented rural residents from seeing the same level of income growth as urban residents. Therefore, China's rising Gini coefficient implies that some people,

[2] "Missing rich" indicates that the highest-income people may be absent in the samples of household surveys, because they account for a very small proportion of the total population.

[3] Some studies suggest that the NBS data under-sampled the high-income groups, as these studies have a higher Gini estimate than the NBS.

[4] National Development and Reform Commission, Institute of Social Development Research Group [23].

[5] Ravallion and Chen [27].

especially rural residents, have not been able to fully reap the reform dividends of marketization and urbanization, and that China's market-oriented reforms are still ongoing.

China's income Gini coefficient experienced a downward trend over the past decade. The income Gini coefficients estimated by various institutions have reversed their previous upward trend and have fallen to some extent over the past decade, indicating a reduction in income inequality. The ongoing urbanization process has reduced the income inequality caused by the urban–rural gap. In addition, the government has vigorously promoted poverty alleviation policies to raise the income level of rural residents, which helped to narrow not only the urban–rural gap, but also the income gap within the rural areas.

1.1.2 Consumption Accounts for a Relatively Small Share of China's Economy, and There Is Considerable Inequality Within the Country

Consumption is a direct indicator of national welfare. After the global financial crisis in 2008, consumption became an important engine of China's economic growth, but consumption growth still lags other countries and it remains uneven. China's consumption-to-GDP ratio is lower than that of developed countries and other emerging market economies. According to Wind data and our estimates, the household consumption-to-GDP ratio in China was 38% in 2020 (Fig. 1.2), significantly lower than that in the US (67%), Japan (54%), and India (63%). Although in aggregate-level terms, China's consumption has grown rapidly over the past 15 years, with total consumption in China in 2020 being five times higher than in 2005, there is still much room for increasing household consumption in terms of GDP share.

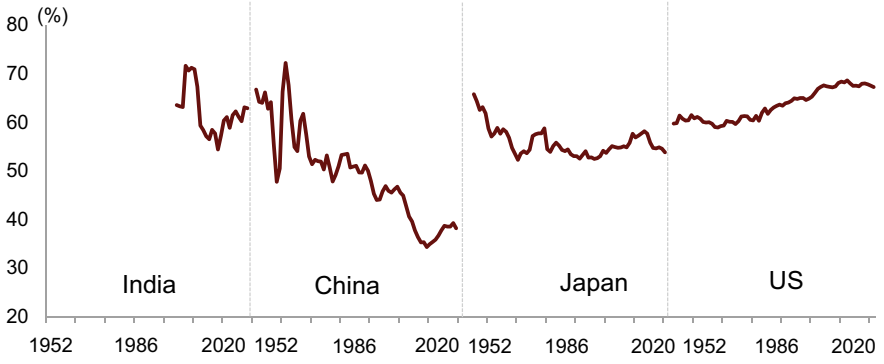

Fig. 1.2 Household consumption as a share of GDP. *Source* Wind, CICC Global Institute

Income inequality inevitably triggers consumption inequality. According to the World Bank, the Gini coefficient of consumption in China was 0.38 in 2016, which is relatively high among developing countries. Consumption of basic goods and services such as food, housing, and health care account for a higher share of expenditure in low-income households, while consumption in high-income households is more skewed toward upgrading consumption categories such as culture, education, entertainment, and household appliances.[6] Compared to the US, the correlation between income and consumption inequality is stronger in China, which can be explained by two phenomena. First, low-income households in China have insufficient access to social transfers or financial instruments to smooth their consumption when experiencing income shocks. Even if the income shock is temporary, poorer households have fewer assets at their disposal and the imperfect financial system provide them with insufficient consumer credit, leading to a stronger correlation between income and consumption in the same period. Second, in the economic restructuring related to digitization and automation, the income declines faced by low-skill workers are likely to be long-term rather than temporary.

Consumption inequality in China is slightly less severe than income inequality. First, relative to the income Gini coefficient, China's consumption Gini coefficient experienced a faster decline over the last decade (Fig. 1.1). Since the marginal propensity to consume is higher for low-income groups, the decline in consumption Gini coefficient reflects the increased consumption and improved welfare of low-income groups in China, which is closely related to China's ongoing urbanization reforms and poverty alleviation policies. Second, China ranks better in consumption Gini coefficient than in income Gini coefficient. The WIID and PovcalNet databases provide comparable Gini coefficient estimates across countries.[7] The income Gini coefficient provided by the WIID database shows that China's income Gini coefficient is 0.43, higher than two-thirds of countries available in the database. The PovcalNet database has measured the consumption Gini coefficient of more than 50 countries since 2015. China's consumption Gini coefficient is higher than 60% of countries in the database, ranking slightly better than its income Gini coefficient.

1.1.3 Wealth Is Concentrated with Economic Development

China's Gini coefficient of wealth has increased significantly along with economic development. Since the reform and opening up in 1978, especially after the accession to the WTO in 2001, personal wealth in China has increased significantly. However,

[6] Data is extracted from China Family Panel Studies 2018 wave (CFPS 2018). Households with an annual income of less than Rmb60,000 are low-income households; households with an annual income of Rmb60,000–310,000 are middle-income households; and households with an annual income of Rmb310,000 or more are high-income households.

[7] The WIID database is based on income (GDP per capita), while PovalNet database is based on income for some countries and consumption for others. The raw data of both are from income or consumption quantile data from national statistical offices or other reliable survey data.

in this process, there was also a trend of wealth concentration. According to the Asian Development Bank, the Gini coefficient of wealth in China rose from 0.34 to 0.73 between 1998 and 2012,[8] far exceeding the rise in the income Gini coefficient over the same period. The NBS does not publish the Gini coefficient of wealth, but scholars have estimated the wealth Gini, showing that from the 1990s to the 2010s, the Gini coefficient of wealth rose significantly in China.[9]

Rising housing prices have been an important driver of wealth concentration in China. For most Chinese urban households, housing is their most important asset. Based on the Urban Household Assets and Liabilities Survey conducted by the People's Bank of China in 2019, the average total assets of urban households are about Rmb3.18 mn, of which housing assets amount to Rmb1.88 mn, accounting for 60% of total household assets.[10] As the home ownership rate in China is high, the concentration of wealth in urban households is more a reflection of the value of their assets as opposed to whether or not they own a home. The poorest quintile of Chinese households has a homeownership rate of 89%, compared to 33% in the US.[11] The disparity in housing prices has widened across regions in China over the past few decades, leading to a significant divergence in wealth among households. In particular, rural housing prices have remained largely unchanged. This has resulted in a concentration of wealth in favor of urban households, exacerbating the urban–rural gap in terms of household wealth. Based on a study released by Southwest University of Finance and Economics in cooperation with Ant Group, from 2020 to 2021, appreciation in the property value explained about 60–77% of the increase in Chinese household assets, while returns from financial investments contributed to another 15–30% of the increase in household assets.[12]

Concentration of financial assets is another contributor to the rising wealth inequality in China. According to estimates from McKinsey, less than 1% of Chinese households have personal financial assets of US$1 mn or more.[13] Only a small proportion of households benefit from high-return financial investment opportunities.

[8] Asian Development Bank [1].

[9] Li et al. [9, 12], Chen et al. [4], Xie and Jin [35], Li and Wan [11], Yang and Gan [38], and Luo and Chen [19].

[10] Guancha.cn [6].

[11] Ibid.

[12] Survey and Research Center for China Household Finance of Southwest University & Ant Group Research Institute [30].

[13] McKinsey [21].

1.2 Income Distribution in China

1.2.1 Income Structure: Pyramid Versus Olive

We believe the ideal income distribution pattern for a society is olive-shaped. What is the current shape of income distribution in China? The NBS only publishes quantile data of household income, making it difficult to measure China's income structure in more detail. The WIID database provides percentile data on personal income in China in 2019, which is often used by academics. Using the WIID data originally compiled by the NBS, we classify China's population into 11 income groups based on disposable income per capita, and calculate the population share in each group. It is important to note that income here refers to per capita household income, not individual income. For example, in a family of four in which the father and mother each earn Rmb10,000 per year and there are two children, the four members of the household are assigned into the income group of Rmb5,000 per capita. According to the above classification criteria, one-third of the population in China is in the income group with less than 0.5 times per capita disposable income, while those in the range of 1.0–1.5 and 1.5–2.0 times per capita disposable income account for 17 and 9% of the population. As shown in Fig. 1.3, the income structure is shaped like a pyramid in China.

Applying the same approach to other countries' income data, we find that the income distribution in the Nordic countries is closer to an olive shape. For example, the middle-income group (0.5–1.0 times per capita disposable income range) accounts for half of the population in Denmark, and the lowest income group (less than 0.5 times per capita disposable income) accounts for only 10% of the population in Denmark. Considering that the Nordic countries are mostly small economies

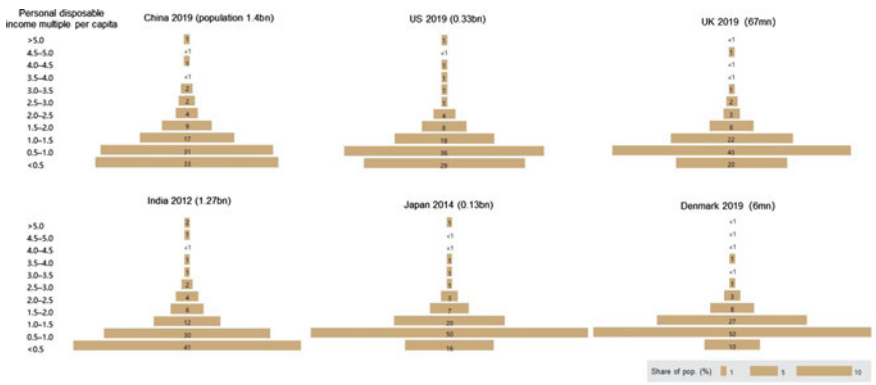

Fig. 1.3 Population share by income groups across countries. *Note* We use the latest available data for each country in the WIID database. Considering that the income structure is stable over a 10-year period, the difference in source years of data is unlikely to bias our analysis. *Source* Calculated from WIID percentile data provided by UNU-WIDER (Version 31 May 2021), CICC Global Institute

and may not represent the income structure of large economies, we conduct estimates for the US, Japan, and India. The share of population in the 0.5–1.0 times per capita disposable income range in the US is 36%, slightly higher than in China. In Japan, this share reaches 50%, being closest to the ideal olive shape among large economies. India also has a pyramid shaped income structure, with a population share of 41% in the lowest-income group.

Improving income distribution does not only mean the expansion of the middle-income group, but also implies a need to raise income levels such as the median income. In fact, as one classifies the population into narrower income groups, income distribution always shows an olive-shaped structure with a gradually smaller bottom. The real question is: At what level is the income of the majority of the population? Given the olive analogy, we have to ask at what height is the waist of the olive? According to the NBS, China's GDP per capita in 2021 is around Rmb80,000, and the disposable income per capita is Rmb35,128, but the median disposable income per capita is only Rmb29,975, equivalent to a monthly disposable income of less than Rmb2500. In fact, in the two decades prior to the reform and opening up in 1978, China's income distribution pattern was close to olive-shaped. However, at that time, the World Bank estimated that more than 45% of the world's people living in poverty were in China.[14] This implies a society featuring widespread poverty during that time, not prosperity. The olive-shaped income distribution of Nordic countries is considered affluent, primarily due to their high level of per capita income. It is the high per capita income level and the large number of middle-income people that are important, rather than the olive-shaped income structure itself. Therefore, to achieve an olive-shaped society in accordance with the meaning of "prosperity," we think China needs to continue to develop its economy, deepen reforms and opening up policies, and raise per capita disposable income. At the same time, redistribution policies need to promote equality.

Though the income structure in some high-income countries is closer to an olive shape, increasing per capita income does not automatically promote economic equality. By analyzing the correlation between the share of population earning 0.5–1.0 times per capita disposable income and GDP per capita across countries over time, we have two findings. First, when GDP per capita is below US$10,000 (2017 PPP), the share of people with 0.5–1.0 times disposable income per capita was mostly in the range of 20–50%. Second, when GDP per capita is above US$30,000, the share of people with 0.5–1.0 times disposable income per capita is mostly in the range of 35–55%. This seems to imply a positive correlation between the income level and the share of middle-income population, but this shift does not happen automatically with economic growth. For example, despite continuous income growth between 1947 and 2018 in the US, income inequality was initially reduced and then increased. Also of note is that when the US, UK, and Japan were at the level of GDP per capita comparable to China's current level, these countries had a higher share

[14] According to World Bank data, in 1981, the global population was 4.5 bn with a poverty rate of 42.7%, and the population of China was 994 mn with a poverty rate of 88.1%.

of the population with 0.5–1.0 times per capita disposable income. Thus, China still has room to improve its income distribution at the current income levels.[15]

1.2.2 Raising the Middle-Income Level and Expanding the Middle-Income Group

According to our analysis of income distribution in China, Chinese households can be roughly divided into four income groups: A very-high-income group, a high-income group, a middle-income group, and a low-income group. Among them, there are significant differences between the very-high-income group and the high-income group. The former group is small and they obtain their wealth mainly by running businesses or through investments. People in the latter group mainly earn salaries, and their wealth levels are far below the very-high-income group. We think the absolute income level of the middle-income group still needs to increase, and the population share of middle-income group in China is considerably lower than that of developed countries. To achieve the goal of common prosperity, it is important to build a stronger middle-income group by increasing the middle-income level and expanding the size of this group.

Market survey data from financial institution paints a picture of the very-high-income group, which in China mainly consists of entrepreneurs and investors. They are also generally referred to as high-net-worth individuals (HNWIs), with the criteria of having more than Rmb10 mn of investable assets.[16] According to *2021 China Private Wealth Report—China's Private Banking Industry: Embracing rivers to form the sea,* a report published by China Merchants Bank (CMB), China's HNWI population reached 2.62 mn in 2020.[17] According to the *2020 Fanta—Hurun Wealth Report*, the number of high-net-worth households in 2019 was about 1.08 mn, corresponding to about 2.82 mn people,[18] roughly consistent with the CMB report. In 2017, CITIC

[15] UNU-WIDER [32].

[16] Investable assets refer to assets with a certain degree of liquidity, including personal financial assets and investment in properties. Financial assets include cash, deposits, stocks, bonds, funds, insurance, bank financial products, overseas investments and other domestic investments (such as trusts, private equity funds, gold, etc.). Investable assets do not include owner-occupied houses, shares of unlisted companies held through means other than private placement, and consumer durables.

[17] The report data is based on the wealth distribution model developed and maintained by China Merchants Bank and Bain & Company. Since the model and methodology are not available to the public, we are unable to further evaluate the accuracy of the results, so other data sources are used.

[18] According to the seventh National Census in 2020, the average size of a Chinese household is 2.62 persons. Hurun Research Institute uses a combination of micro- and macro-level data sources. The micro-level data includes the number of high-end residential buildings in each region, luxury car sales in the last three years, the number of individual income tax returns, registered capital of enterprises, and high-end consumption. The macro data refers to the latest Chinese GDP and GNP numbers released by the National Bureau of Statistics, combined with the Lorenz curve for macro analysis.

Bank and Hurun Report jointly released *Wealth Management: Trends of the Chinese HNWI,* mentioning that business owners accounted for 55% of the HNW population, while the rest were mainly company executives, property speculators, and full-time stock market investors. According to *China Private Banking Report 2017* jointly published by Industrial Bank and Boston Consulting Group (BCG), nearly half of the respondents reported that they accumulated their wealth by founding companies, followed by respondents who gained profits from investments, including real estate investment.

High-income groups can be defined as people whose incomes are in the top ranking of society, but there is a gap between this group and the very-high-income group (i.e., high-net-worth individuals). After we deduct the high-net-worth population share (0.2%) from the top 10% of income earners, we are left with the high-income population. According to China Statistical Yearbook 2021, the per capita disposable income of the top quintile of urban households in China in 2020 is about Rmb96,000. As the NBS urban household survey has difficulty covering the high-net-worth population, we believe Rmb96,000 should be close to the average annual income of China's high-income population. There are income variations within the high-income group. Based on the China Household Financial Survey (CHFS), among the top 1% sampled respondents with highest income, 94% are employees, and their average annual income is about Rmb340,000, roughly equivalent to per capita income in the US.[19]

The size of middle-income group varies depending on definition criteria.[20] Criteria for defining the middle-income group can include income, wealth, occupation, and social class, but income is used as the most fundamental indicator. The middle-income group can be defined based on absolute income levels or relative income range. In the first case, the middle-income group covers all individuals whose income is in a fixed range. For example, the NBS in China defines a household with annual income of Rmb100,000–500,000 as a middle-income household in 2018, and the middle-income population in China under this criterion is about 400 mn, accounting for 28% of the total population.[21] The relative standard of middle income generally constructs an income range based on a benchmark such as the national median income. Thurow [31] defines the middle-income group as those within 75–125% of the median income,[22] and a large number of studies have continued to use this standard.[23] The absolute standard of middle income needs to be adjusted over time as living standards improve. To avoid this adjustment, most researchers in practice prefer to use the relative standard of middle income.

[19] The current micro-level survey data mainly include China Household Income Project (CHIP), China Family Panel Studies (CFPS), Chinese General Social Survey (CGSS), China Health and Nutrition Survey (CHNS), and China Household Finance Survey (CHFS), among which CHFS has the largest sample size. The CHFS 2017 wave covers 29 provinces, 40,000 households, and 127,000 people.

[20] A summary of previous literature defining middle-income groups can be found in the following article: Yang et al. [36].

[21] CCTV com [3].

[22] Thurow [31].

[23] Birdsall et al. [2].

According to the definition of middle income (75–125% of median) proposed by Thurow [31], the median disposable income in China published by the NBS is Rmb27,540 in 2020, implying that the middle-income range in China is Rmb20,655–34,425. Based on the WIID database and population statistics published by NBS, the estimated population share of the middle-income group in China was 22% in 2020,[24] slightly lower than the proportion of middle-income population measured by NBS according to absolute criteria (28%). Other Chinese researchers have estimated the population share of middle-income group in China based on different definition criteria and data sources, and the results are mostly in the range of 20–40%.[25]

It should be emphasized that the middle-income group is not necessarily the same as the middle class. The middle class is a relatively stable, affluent, and secure group that emerges along with long-term economic growth. It corresponds to a certain income, occupation, education, consumption patterns, as well as social status.[26] Given this concept, the middle class is not equivalent to the middle-income group in China, but is closer to the high-income group in the top 10% income quantile. The middle-income group in China has average annual income of less than Rmb30,000 and faces considerable vulnerability. Financial risks relating to mortgages, medical expenditures, and unemployment may prevent these middle-income individuals from improving their finances, and they may even fall into the low-income group. Based on the CFPS 2010–2016 longitudinal surveys, Liu et al. (2021) show that households entering middle-income group face a period of rising vulnerability, and only 74% of these households are able to maintain middle income for more than five years.[27] Therefore, we think helping middle-income households survive the period of vulnerability is important in policymaking aimed at building a strong middle-income group.

Among China's middle-income populations, rural–urban migrant workers are noteworthy. According to *the 2020 Migrant Workers Monitoring Survey Report* published by the NBS, the average monthly income of China's 290 mn rural–urban migrant workers in 2020 was Rmb4072.[28] This number is higher than the per capita income of the top 20% of rural high-income households and comparable to urban middle-income households, both by absolute and relative standards. Thus, many migrant workers are included in middle-income populations. However, families of these rural migrant workers are covered by weaker social protection, such as lower levels of pension and healthcare reimbursement, and migrants are more likely to participate in informal employment, leading to economic instability. The economic instability of migrant workers is an example of a vulnerability of the middle-income group in China. In addition, rural workers are still subject to the urban–rural dual

[24] Calculated from WIID percentile; UNU-WIDER [32].

[25] Ji and Chen [7], Ji and Liu [8], Long [17], Wu and Chang [34], and Yang et al. [37].

[26] Li and Zhu [10].

[27] Liu et al. [16]. This study assumes that the distribution of residents' income is a mixture of three Gaussian distributions: low, medium, and high. Clustering analysis (K-means) is employed to classify the samples, and those falling in the middle are defined as the middle-income group.

[28] National Bureau of Statistics [22].

structure system, which is based on the household registration system and implies differentiated social benefits between rural and urban residents. To make middle-income group stronger, we think policies should help migrant workers settle in cities and make access to social benefits more equal for rural and urban residents.

1.2.3 The Low-Income Group Mainly Lives in Rural Areas

Though absolute poverty, defined as people living below the national poverty line, has been eliminated, China still has a considerably large population with low incomes. According to the NBS, the per capita disposable income of the bottom 20% of urban households was Rmb1300 per month in 2020, while the bottom 20% of rural households was only Rmb400 per month. According to Shen and Li (2020), using 40% of the national median income as the relative poverty line, the relative poverty population in 2020 is about 200 mn, with more than 80% in rural areas.[29] The per capita monthly income of rural residents is less than Rmb2000 in every province in the Chinese mainland except Jiangsu, Zhejiang, Beijing, Shanghai, and Tianjin[30]; it is less than Rmb1000 in Guizhou and Gansu. Thus, most low-income people in China are living in rural areas, especially in western regions.

What kind of people are more likely to fall into the low-income group? Survey data show that people who are older, less educated, and in poor health are more likely to fall into poverty (Figure 1.4). Notably, the incidence of poverty for the poor-health group was 1.5% in 2019, three times as high as for those considered to be in good health. In other words, illness and healthcare expenses may severely deteriorate household finances for families who have only recently been lifted out of poverty.

The difference in income is not directly equivalent to the difference in quality of life as price levels and lifestyles vary greatly across regions. For example, the per capita disposable income was Rmb75,000 in Beijing in 2020, more than seven times that of farmers in Gansu. But considering the difference in prices, the gap in quality of life between the two areas may not be as large as the income gap. Nevertheless, we should not underestimate the importance of income in modern life. Money is the basis for economic choices. Although low incomes can allow farmers to meet their basic consumption needs under rural economic conditions, farmers' economic choices are still greatly limited by their low incomes. A low income also limits the ability to save and protect against risk. In western rural China, although a monthly expenditure of Rmb800 can cover a farmer's basic needs, the farmer may face financial hardship if emergencies such as serious illness or natural disaster occur, while households with higher incomes can cope more ably. In addition, low-income families cannot afford

[29] Shen and Li [29].

[30] Here province refers to all types of provincial-level administrative units in the Chinese mainland, including municipalities directly under the Central Government and autonomous regions.

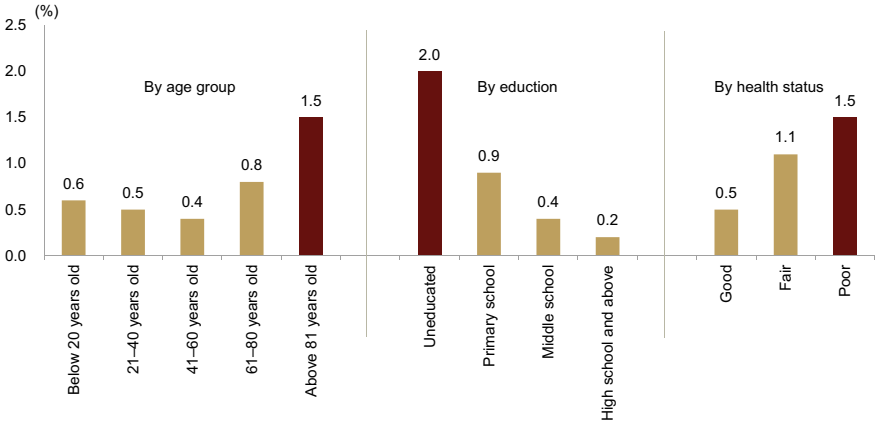

Fig. 1.4 Poverty rate by age, education, and health status in rural China (2019). *Source* Office of Household Survey of the NBS,[31] CICC Global Institute

to invest in financial markets and human capital, making it more difficult for them to improve their economic situation.

The consumption gap between urban and rural areas also reflects the development gap. First, in terms of durable goods, although the penetration rate of refrigerators and TVs in rural areas is close to that of urban levels, the average household ownership of cars and air conditioners in rural areas in 2020 was only 59% and 49% of that in cities, respectively. Second, service consumption is lower in rural areas. In 2019, 39.7% of households' total consumption in rural areas was spent on services, about 8.5 ppt lower than in urban areas, and this gap is widening over time.

1.3 Urban–Rural, Regional, and Intergenerational Disparities in China

1.3.1 Urban–Rural Disparity: Institutional Cost of Rural–Urban Mobility Should Be Reduced

The urban–rural disparity is one important component of income inequality in China. Since economic reforms and opening-up policies were launched in the late 1970s, China has transformed from a country that is heavily reliant on agriculture into an industrial economy. As part of this process, a large number of people working in agriculture moved into non-agricultural jobs. As spatial concentration of manufacturing and service sectors leads to positive spillover, urban areas are formed by

[31] Office of Household Survey, National Bureau of Statistics [24].

the agglomeration of economic activities. Therefore, the transformation of agricultural workers into non-agricultural workers is usually accompanied by rural–urban migration, meaning that industrialization, urbanization, and economic growth coincide.[32]

Free-flowing rural–urban migration is a key factor in bridging the urban–rural income gap. Theoretically, in the early stage of industrialization and urbanization, a certain degree of urban–rural income disparity may be difficult to avoid. However, higher urban wages should eventually attract more rural migrants to cities, reducing the urban–rural income gap. Also, mechanization of agriculture would mean fewer workers were needed in the sector, and more rural residents who previously worked in agriculture would seek jobs in cities. Meanwhile, those staying in rural areas can achieve larger-scale agricultural production and income growth as the rural population declines. Thus, in the later stage of industrialization, the urban–rural income gap is expected to narrow.[33] When the vast majority of rural residents move to cities, the agricultural population decreases significantly and urbanization is basically completed, and the labor productivity between urban and rural areas will equalize, reaching the so-called Lewis Turning Point.[34]

Changes in the urban–rural income ratio have undergone three stages in China (Fig. 1.5). First, from 1978 to 1984, the de-collectivization reform (i.e., Household Contract Responsibility System) helped to raise farmers' income and narrowed the urban–rural gap. Second, from 1985 to 2008, the urban–rural income gap in China continued to widen, reflecting the fact that a certain degree of increase in urban–rural income inequality was unavoidable in the early stage of industrialization and urbanization. Third, after 2008, the urban–rural income gap narrowed again. We see policies promoting urban–rural integration and increases in transfer payments to rural areas as important ways to narrow the urban–rural income gap.

In the future, reforms involving urban–rural integration will remain important in narrowing the urban–rural gap. After the founding of the People's Republic of China in 1949, China concentrated national resources to promote industrialization under the planned economy system given capital scarcity.[35] In the late 1950s, China gradually established the urban–rural dual economic system in which mobility between these two sectors was restricted.[36] This dual economic system facilitated industrialization in that specific period. However, in recent decades, we think this dual economic structure has been detrimental to promoting urbanization, implying a need for further reform.

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[32] Research Group of the Rural Department, Development Research Center of the State Council [28].

[33] World Bank [33].

[34] The Lewis Turning Point, i.e., the turning point from labor surplus to labor shortage, refers to the gradual reduction of surplus rural labor in the process of industrialization with the gradual transfer of surplus rural labor to non-agricultural industries, which eventually reaches the bottleneck state.

[35] Lin [14].

[36] Li [13].

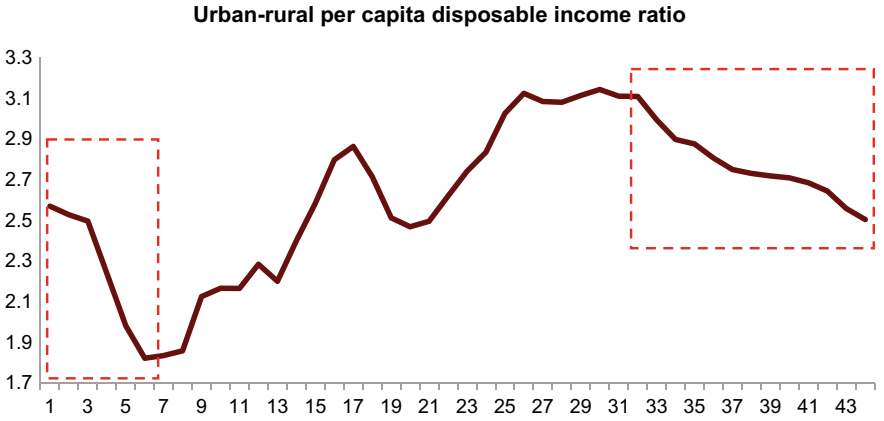

Fig. 1.5 Urban–rural income gap in China has narrowed in the last decade. *Source* National Statistical Yearbook, CICC Global Institute

Before proceeding further, we shall explain the concept of *hukou* first. *Hukou* is the household registration system originally introduced in the 1950s in the Chinese mainland, under which the majority of people in China are classified into either agricultural households or non-agricultural ones (i.e., urban households). In most cases, the *hukou* status of a child is determined by his or her parents' *hukou* rather than the birthplace. For workers originally from rural areas, working in cities does not necessarily mean switching from agricultural *hukou* to non-agricultural *hukou.* Access to social benefits is associated with one's *hukou* status. For example, public pension and social health insurance for rural residents were introduced much later than those for urban residents.

Currently, the urbanization rate calculated according to *hukou* status is lower than that regardless of *hukou* status by nearly 20 ppt,[37] meaning that nearly one-fifth of China's people still live and work in cities, but do not fully benefit from the urban social protections linked to urban household registration (*hukou*). For example, some migrant works have insufficient access to public services such as public education of their children in cities where they work as these services are usually tied to household registration status. These institutional barriers under the dual system have prevented some farmers from moving to cities and raising their household incomes, which may result in China reaching the Lewis Turning Point earlier than expected.[38]

More importantly, it is difficult for migrant workers to settle in cities. Many middle-aged migrant workers often choose to return to rural areas. This career path and its expected returns do not tend to incentivize younger migrant workers to increase their human capital (i.e., pursue additional education), savings levels, or

[37] The urbanization rate calculated according to hukou status is counted as follows: Dividing people with urban hukou (e.g. 100 persons) by the total population (e.g. 500 persons), which is 20%. But the urban rate regardless of hukou status is counted as follows: Dividing people who really live in urban areas (e.g. 200 persons) by the total population, which is 40%. So actually there are 100 persons who do live in urban area without urban hukou.

[38] Liu et al. [15].

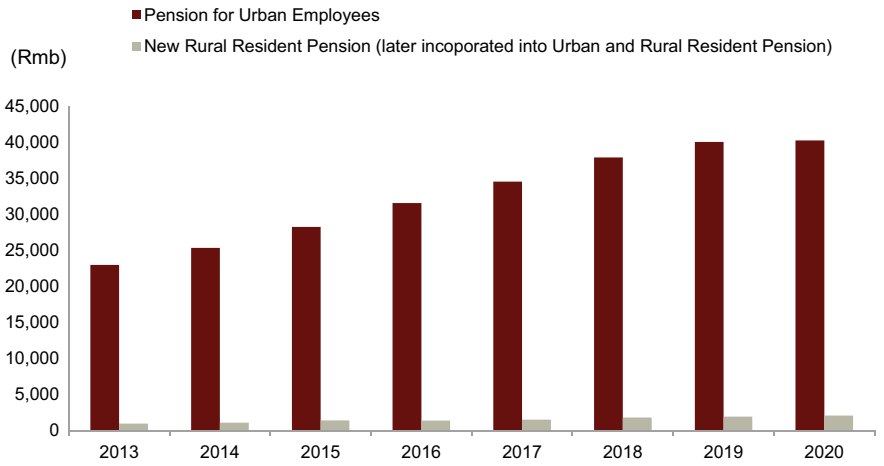

Fig. 1.6 Difference in annual pension between urban and rural pension schemes. *Note* Urban workers' pensions and rural residents' pensions are defined as the quotient of the total expenditure of the pension scheme divided by the number of retirees covered. *Source* Ministry of Human Resources and Social Security, CICC Research

consumption.[39] In addition, some children of migrant workers cannot receive high-quality compulsory education in urban areas, causing an urban–rural educational gap by leaving some children behind. This forms inequality of opportunity and harms social mobility. Also, the large difference between urban and rural pension levels may widen the urban–rural income gap (Fig. 1.6). In short, the urban–rural dual system not only depresses the long-term potential growth rate of China's economy, but also runs the risk of promoting class stratification. We think reform of the urban–rural dual system and reducing the costs of rural–urban labor mobility are important steps to improving market efficiency and raising the income of rural residents.

1.3.2 Regional Disparity: Effective Policy Interventions Help Improve Both Efficiency and Equality

Policy interventions in recent decades have significantly reduced the costs of factor mobility across regions and thus narrowed regional disparities. With large differences in landscape and culture, China has a significant cost of factor mobility across regions, generated by either natural conditions or regional governance. After the reform and opening up in 1978, and especially since 2000, construction of large-scale infrastructure has greatly removed the impediments to cross-regional factor mobility caused by natural conditions, improving resource allocation efficiency and reducing regional disparities.

[39] Lu [18].

Based on per capita GDP at the provincial level, we find that overall regional disparity has been decreasing with fluctuations since 1978. We summarize the changes in regional disparity in three stages. First, from 1978 to the early 1990s, the opening up policy led to rapid growth in Guangdong, Fujian, and other coastal provinces where the initial income levels were low; thus, the regional disparity narrowed. Second, from the early 1990s to 1999, coastal provinces that established export-oriented industrial systems achieved catch-up development and widened the development gap relative to inland provinces. Third, since 1999, China has implemented various projects to narrow the regional development gap, such as the Great Western Development Strategy and the Rise of Central China Plan (Fig. 1.7).

In comparison to other countries, we see a lot of room for reduction in China's regional disparities. In economies with established market mechanisms, the transaction costs of factor mobility across regions are lower, and both capital and labor tend to flow into regions with higher returns, achieving matching efficiency of factor market and economies of agglomeration. In areas with high industrial concentration, the population is also larger, which helps reduce the regional gap in terms of per capita income. The cross-regional Gini coefficient of aggregate GDP and resident population in China is lower than that in Europe, the US, and Japan. However, the Gini coefficient of per capita GDP in China is higher than in those countries, indicating that China's population and industry may not be adequately clustered. This may have contributed to large per capita income gaps between regions.

Reducing regional disparities requires reduction in transaction costs caused by natural conditions, social governance, and other factors. By reducing such costs,

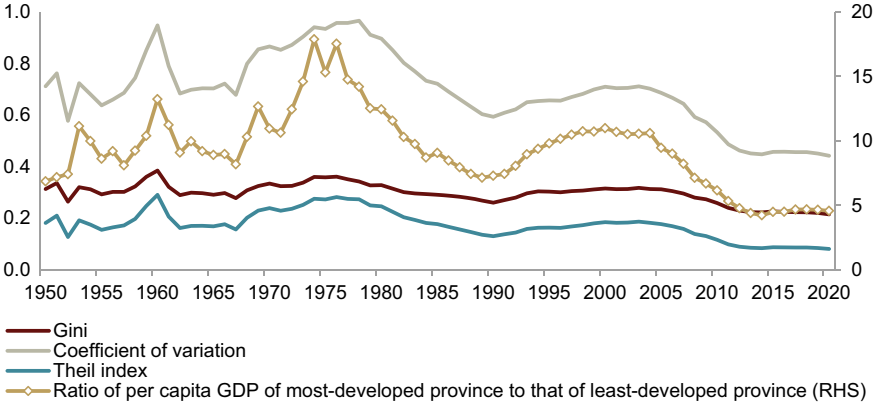

Fig. 1.7 Regional income disparity in China has been decreasing in recent years. *Note* The measure of regional disparity is based on the measure of income disparity across individuals. The 31 provincial-level administrative units (including municipalities and autonomous regions) of the Chinese mainland are treated as independent individuals within the economy, and the Gini coefficient, Theil index, coefficient of variation (standard deviation/mean), and the ratio of the per capita GDP of China's most-developed province to the per capita GDP of China's least-developed province are used to portray the degree of inequality between regions. *Source* NBS, CICC Global Institute

free mobility of production factors should narrow the per capita GDP gap between regions through optimal allocation of resources. Although the cost of cross-regional factor mobility caused by natural conditions has decreased significantly in China, the transaction costs associated with regional governance are still large. For example, local governments can influence the allocation of financial resources, land supply, taxation, and licensing procedures. Considering these hidden transaction costs, the nominal return on capital in less developed regions may not be sufficient to effectively attract capital inflows. In other words, while reducing cross-regional transaction costs of factors caused by natural conditions is important in narrowing regional disparities (i.e., through infrastructure investment), it may be more important to reduce such costs caused by regional governance.

The next step in reducing factor transaction costs across regions may focus on reshaping the relationship between local governments and companies as well as improving the business environment. For developed regions, we think it is necessary to break down institutional barriers that restrict factor inflows, and to provide support for newly established businesses and migrants. One example of this would be creating a more inclusive public service system that equally benefits all residents in the area regardless of *hukou* status. For less developed regions, we believe the key is to attract capital inflow by reducing administrative barriers and improving the business environment, where industrial specialization should be determined by a region's comparative advantages. At the same time, less developed regions should improve their employment and training programs, providing skills training, employment guidance, and other labor protection services for migrant workers, which would further facilitate labor mobility across regions.

1.3.3 Intergenerational Disparity: Urgent Need for Further Policy Intervention

There are two noteworthy intergenerational issues in China. The first is the intergenerational imbalance caused by aging of the baby boom generation.[40] Aging means that the burden of old-age support will increase for the younger generation, with fewer and fewer young people producing goods and services to support the growing number of elderly retirees. To balance intergenerational income distribution, there are several policy options. China could consider raising the social security retirement age in response to longer life expectancy. Also, the pension scheme needs to be reformed. Under the pay-as-you-go system, contributions from current workers are used to support the older generation, whose benefits were often determined when they were young. In the presence of a demographic dividend, pension benefits for the elderly are better. However, given population aging, the pay-as-you-go arrangement will impose a greater burden on the younger generation. We believe there is a need for fiscal reform to raise funding for pension schemes.

[40] Peng [25].

The other intergenerational issue related to population aging concerns property assets. From the perspective of a person's life cycle, property transactions play an important role in intergenerational income transfer. When they are young, people usually accumulate savings and then purchase property. After retirement, people sell the property to younger generations in exchange for income for their own consumption in old age. If the demographic structure is balanced, such a mechanism usually operates smoothly. However, in the context of fast population aging, property assets accumulated by older generations may depreciate significantly by the time older people want to sell them as the number of young home buyers declines. This could be seen as a spontaneous market mechanism to rebalance wealth equality between generations. If policies intervene to keep property prices from falling, the younger generation would bear a heavier financial burden due to formation of real estate bubbles. Thus, this real estate issue is also about intergenerational equity and sustainable development.

Second, economic inequality within one generation can exacerbate inequality of opportunity in the next generation. Equality of opportunity requires that a person's income is determined primarily by his or her level of effort. In reality, however, disparity in family wealth is an important factor in inequality of opportunity. If resources are unevenly distributed across families, the amount of resources received by children differs across families. As a result, younger generations will face unequal opportunities because of differences in the economic conditions of older generations. Over the last few decades, along with the rising inequality, intergenerational mobility has worsened in the US. Children born in the 1940s had a 90% probability of earning more than their parents, but for children born in the 1980s, that probability dropped to 50%.[41] A similar situation exists in China, where those born in the 1980s have less upward mobility than those born in the 1960s or 1970s.[42] Such intergenerational imbalances may de-incentivize young people from working hard, which could be detrimental to social equity and economic efficiency. We think investment in public education and redistribution policies should be emphasized in order to interrupt the intergenerational transmission of social stratification and reduce inequality of opportunity.

1.4 Income Distribution from a Macro Perspective

1.4.1 Two Features of China's Income Distribution

At the macro level, we wish to highlight two features of China's income distribution. One is the relatively low share of GDP received by the household sector. The flow of funds table published by the NBS provides data on China's income distribution

[41] Raj et al. [26].

[42] Gong et al. [5] and Luo and Ru [20].

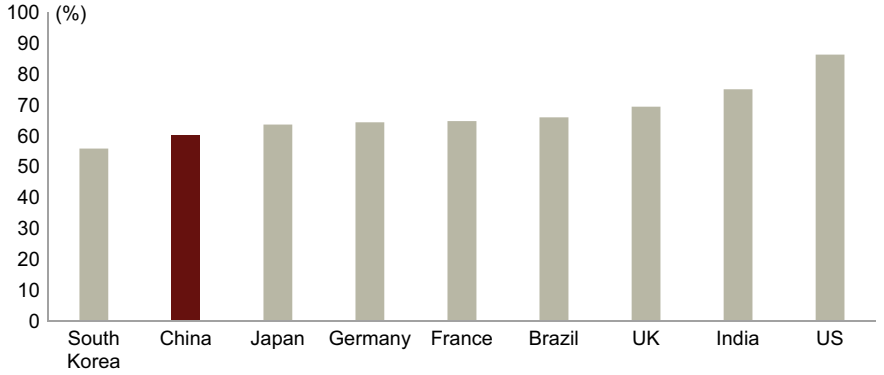

Fig. 1.8 Household disposable income as a share of GDP. *Note* Data for each country is from the latest available year, with 2021 data for the US; 2020 data for the UK, Germany, France, Japan, Brazil, and South Korea; 2019 data for China; and 2018 data for India. *Source* China Statistical Yearbook, Haver, CICC Global Institute

at the macro level. The share of the household sector in China's national income distribution has been declining over the past 30 years. In 1996–2010, disposable income of the household sector as a share of GDP fell from 69 to 56%, though the ratio has risen slightly in the last decade. In 2019, China's household income as a share of GDP was 60%, still lower than that of major developed countries and emerging market economies such as the US, Japan, and India, and only higher than South Korea (Fig. 1.8).

Another feature of China's income distribution is the high share of government income in the primary income distribution. According to the flow of funds table in 2019, the share of GDP distributed to the general government sector was 17.8% in China, compared to 3.4% in the US, 7.7% in Japan, 9.5% in Germany, 10.4% in the UK, and 10.3% in South Korea.[43] The main reason for the government's high share of income is that taxes in China are dominated by indirect taxes such as VAT, which are directly derived from transactions in goods and real estate markets. Unlike direct taxes such as personal income tax, indirect taxes account for income of the government sector in primary distribution. In addition, Chinese governments receive income directly from economic activities, including profits from state-owned enterprises (SOEs) and revenue from selling state-owned land use rights. In 2021, the total profit of SOEs (including the financial sector) was Rmb4.5 trn, and revenue from leasing land use rights was Rmb5.6 trn. In comparison, total profits of industrial companies above a designated size in same year were Rmb8.7 trn.

[43] Data from CEIC and Haver.

1.4.2 Problems of the Primary Distribution

There are three main components of household income in the primary distribution, namely compensation of employees from the labor market, returns from the capital market, and housing rents from the real estate market. The low income share of household sector suggests that these aforementioned markets fail to adequately distribute national income to households.

1.4.2.1 Low Labor Income Share in GDP

Labor compensation is the main source of household income. From the perspective of return on factor, the low income share of the household sector in GDP indicates that labor compensation makes up a relatively low share among factor income. Three sets of data can be used to measure the labor income share in GDP in China. These are the flow of funds table, the input–output table, and GDP data measured by the income approach at the provincial level. Among the three, the flow of funds table shows the highest labor income share, similar to the estimate provided by the International Labor Organization. The flow of funds table shows that labor income as a share of GDP has gradually declined in China since 1992, though it has gradually rebounded after reaching a low point in 2011, standing at 52% in 2019. Meanwhile, capital income as a share of GDP has fallen back from its peak in the early 2010s and has stabilized between 36 and 38% in recent years.

For international comparisons, we use the ratio of labor compensation to the sum of labor compensation and capital income.[44] The share of labor compensation in China is lower than that in most developed economies in the last 20 years (Fig. 1.9), which we attribute to two factors. First, the share of the secondary sector in GDP is much higher in China than in other countries. The high capital intensity of the secondary sector leads to a higher share of capital income and consequently, to a lower share of labor compensation. Over the past decade, as the share of the secondary sector in GDP has declined and the share of the tertiary sector has increased, the labor income share in GDP has also rebounded. Second, China still faces a serious challenge in terms of under-employment among the rural working-age population. The 2010 National Population Census showed that the urbanization rate of the 40–49 age group was 7 ppt lower than that of the 20–29 age group, which implies that middle-aged rural residents had difficulty moving to cities. These working-age people in rural areas remain subject to "hidden unemployment", which can impede their progress in increasing in labor income.

[44] The scope of labor compensation varies by country, with some countries counting both self-employed income and compensation of employees of enterprises as labor compensation (broad scope), while some developed countries distinguish between compensation of employees (narrow scope) and self-employed income. The UN statistics tend to take the narrow scope where the labor compensation is equivalent to the compensation of employees. In general, the share of self-employment income is smaller in developed countries [39].

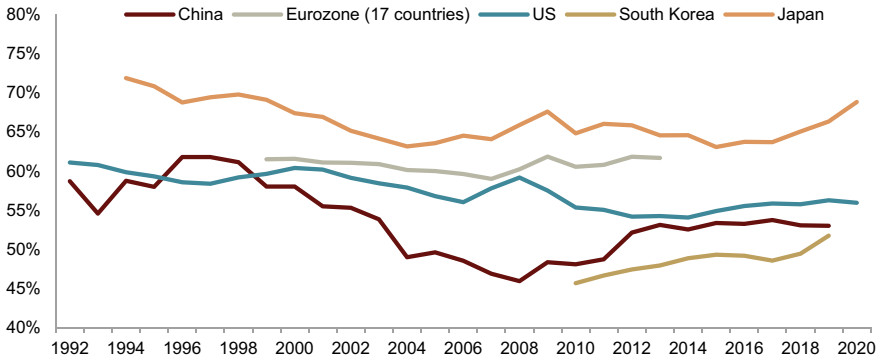

Fig. 1.9 The ratios of labor compensation to the sum of labor compensation and capital income in the enterprise sector. *Note* The International Labor Organization (ILO) adjusts income for each country by harmonizing self-employment income data. *Source* Wind, ILO, CICC Global Institute

It can be difficult for middle-aged rural workers who are included in the hidden unemployment category to find work in either the manufacturing or service sectors and settle in cities. Labor demand in the manufacturing industry is skewed toward young workers, and middle-aged workers have difficulty in performing physically demanding assembly line jobs. At the same time, the rapidly expanding service sector in cities generally requires workers to have higher education and professional backgrounds, and therefore does not do a good job of absorbing middle-aged rural workers who exit the manufacturing industry. Low-skilled service jobs in cities can absorb some middle-aged workers from rural areas, but this is conditional on labor mobility between urban and rural areas. The current urban labor market still has various barriers for rural migrants, and thus middle-aged rural surplus labor cannot easily move to the service sector in cities.

We think the labor market requires policy interventions to increase the share of labor income. The biased income distribution between capital and labor is the fundamental inequality in factor markets. The unequal bargaining power between capital and labor is reflected in the degree of concentration of factor. In general, capital supply is relatively concentrated, while labor supply is highly decentralized. Without institutional protection such as labor unions, labor is inevitably at a bargaining disadvantage relative to capital. In addition to bargaining factors, we believe China can enhance labor protection in the following ways. First, labor market discrimination based on rural or regional backgrounds should be eliminated by equalizing social protection and public services. Second, to address the structural mismatch between labor supply and demand, measures such as guiding employment preferences and providing skills training should improve the matching efficiency in the labor market. In particular, China can explore a worker protection system that is compatible with flexible employment patterns (e.g., gig workers), enabling labor protection keep up with emerging new business sectors.

1.4.2.2 Capital and Real Estate Markets

Over the past 20 years, the average return on capital was about 15% for industrial companies in China. However, the rate of return on household savings was relatively limited. One reason is that the capital market is still underdeveloped, and deposits dominate the financial assets of most households in China. The saving rate in the household sector is high, and the deposit interest rate is much lower than the return on capital. The other reason is the low dividend payments of Chinese enterprises. The flow of funds table shows that the household sector receives only a small portion of the operating surplus of the corporate sector. The dividend payout ratio of listed companies in China is lower than that in other major economies. From 2019 to 2020, the average dividend payout ratio of profitable companies in China's CSI 300 constituents was about 32%. In comparison, the average dividend payout rate of profitable companies in S&P 500 constituents was 40% in 2019 and 54% in 2020.[45]

In the real estate market, the dramatic rise in urban housing prices has increased the household wealth of many urban families. However, because the urban and rural real estate markets are not unified, the vast majority of rural households do not benefit from the urban housing market boom. A large number of migrant workers return to rural areas and build homes using their accumulated income, but do not generally benefit from housing price appreciation. Because of the high housing price-to-income ratio in Chinese cities, most urban households purchase housing for living in. Only a small number of households engage in housing speculation, but they receive extremely high returns from rising housing prices. Meanwhile, the high housing price-to-income ratio means relatively low returns on rents for landlords, resulting in relatively slow development of urban residential rental markets. High housing prices greatly increase the book value of household wealth, but do not necessarily lead to continuously growing income flows for urban households.

The difficulty in allocating factor returns to the household sector is partly related to institutional constraints. In the labor market, the institutional constraints mainly relate to the urban–rural dual structure and the intertwined problems of unequal social services related to employment, education, healthcare, and pensions. In the financial market, one problem is that large SOEs have easier access to credit from banks, but the profits of SOEs do not flow directly to the household sector. In the real estate market, problems mainly stem from the segmentation of urban and rural construction land markets, the monopoly in the primary land market, as well as the resulting land finance system of local governments. By transferring land-use rights, local governments receive high revenue in the primary income distribution, which is often used for government-led investments that circulate between governments, the real estate market, and the financial sector, rather than flowing directly to the household sector.

[45] The data come from Wind. We calculate it based on the earning per share (EPS) disclosed in annual reports and cash dividends disclosed in quarterly reports within a natural year. We also excluded companies with dividend payout ratios higher than 100% from the US sample.

1.4.3 Insufficient Effects of Redistribution

The high share of the government sector in the primary distribution undermines the effect of fiscal redistribution. First, indirect taxes such as VAT account for a large proportion of the government's revenue in the primary distribution. Some indirect taxes such as consumption tax are regressive and thus lack redistributive effect because the marginal propensity to consume is higher for low-income people. Given that there is almost no difference between pre-tax and post-tax Gini coefficients in China, the redistributive effect of taxation is limited.

Second, direct fiscal transfers to households play a major role in redistribution, but in China, government investment accounts for a large proportion of fiscal expenditure, while the share of direct transfers to households is relatively low. This is partly because land finance is an important source of local government revenue. This part of government revenue is usually invested in enterprises or the financial system, instead of being directly transferred to households or paid to civil servants. In the flow of funds table, this allocation result is reflected in the relatively low income share of the household sector after both the primary distribution and fiscal redistribution.

Finally, excessive policy interventions in the market may adversely affect market efficiency by inducing rent-seeking and misallocation of resources. Without effective law enforcement, rent-seeking activities are usually associated with corruption, which is detrimental to economic equality as well as equality of opportunity. It is an obstacle on the road to achieving common prosperity.

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Chapter 2
Building a Unified and Inclusive Labor Market

Abstract What kind of labor market does common prosperity actually require? The development of the labor market results from a combination of market forces and institutions. The introduction of an institutional perspective implies strengthening the inclusiveness of the labor market. It should ensure that employment opportunities are open to all workers equally, that labor compensation is not influenced by factors other than job performance, and that workers are given appropriate protection and a voice. Compared with the requirements, there are three more prominent problems in the current Chinese labor market. Firstly, the labor market presents an obvious dualistic structure along many dimensions such as urban and rural areas, regions, and industries, and free flow is hindered. The segregation of the labor market not only widens the wage income gap, but is also not conducive to giving full play to the advantage of the country's bountiful labor resources. Secondly, the structural contradiction between supply and demand leads to the coexistence of unemployment and labor shortage, and the flexible employment in new industries is likely to impact the effectiveness of the institutional arrangement of the current market. Third, insufficient labor protection restricts the market's ability to allocate labor resources dynamically. Under the existing social security system, in particular, the unemployment insurance system needs to be improved, and there is still room to amplify the voice of workers. With the goal of common prosperity, China should establish a unified and inclusive labor market. First, by reducing inequality among different groups of people in terms of employment, livelihood, and social security, the barriers in the labor market at the urban–rural, regional, and industry levels should be broken down. Secondly, we can guide employment preferences, strengthen skill training, and promote industrial transformation and upgrading to address the structural mismatch between labor supply and demand. In particular, we can actively explore the institutions of labor protection that are compatible with flexible employment patterns so that the labor market system can keep pace with the development of new business models. Finally, the protection of workers should be strengthened through enhancing employment protection, upgrading the level of social security pooling, strengthening the function of unemployment insurance, and amplifying the voice of workers.

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2.1 The Status-Quo and Development Goals of China's Labor Market

As one of the most important production factor markets, the labor market is of profound significance to common prosperity. For one thing, the improvement of labor allocation efficiency and labor productivity is the source of full employment, higher wages, and even long-term economic growth, which is crucial to high-quality development. For another, labor income is the main source of income for most people.[1] According to the National Bureau of Statistics (NBS), the wage income of Chinese workers accounted for 56% of their disposable income in 2020. Wage income is also the main source of income inequality in most countries.[2] A reasonable and fair labor market is essential to achieve "common" prosperity.

Since the country's reform and opening up four decades ago, China's labor market has achieved important results in "preserving growth and promoting employment", enabling workers to share the fruits of economic growth. According to the *China Statistical Yearbook*, by the end of 2020, there were nearly 970 mn people of working age (15–64 years old) and more than 780 mn people in the labor force, of whom 750 mn are working now. In addition to absorbing a large number of working-age people, China's labor market keeps the unemployment rate at a reasonable level, and has made certain achievements in the distribution of the labor force. Structurally, the proportion of urban employment has continued to grow steadily since 1978, indicating that the surplus rural labor force has continued to migrate to the more efficient urban sector in the process of market opening. *China Statistical Yearbook* estimated that by the end of 2020, there were about 130 mn migrant workers living in cities and towns,[3] becoming an important part of urban employment. The rise in the share of nonfarm employment shows the shift of labor from agriculture to secondary and tertiary industries, and the rural workforce is gradually starting to engage in more efficient nonfarm industries (Fig. 2.1). Currently, nearly 290 mn people with rural *hukou* are engaged in nonfarm production in China.[4]

The labor market has helped ordinary workers share the fruits of economic growth, as is shown by the fact that the average wages have continued to grow faster than labor productivity over the same period since 2007 (Fig. 2.2). Since 1995, the fastest growing industries in terms of wages are manufacturing, construction, and low-income services,[5] meaning that blue-collar workers have been benefiting more from economic growth.

The aging issue has become an important variable affecting the sustainable development of China's labor market. As the birth rate in China continues to decline, China's working-age population has been declining since 2013, and we estimate that

[1] Kuhn and Ríos-Rull [15].

[2] Rani and Furrer [29].

[3] National Bureau of Statistics [22].

[4] Id. 2.

[5] Rozelle et al. [30].

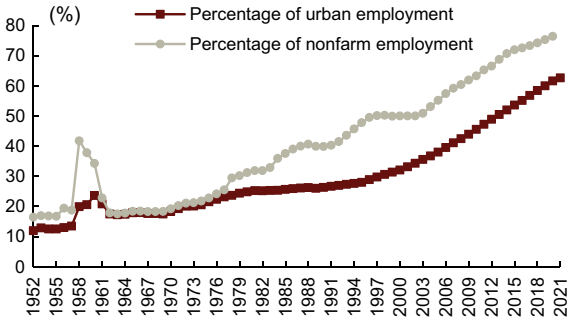

Fig. 2.1 The share of urban employment and nonfarm employment continues to increase. *Source* National Statistical Office, CICC Global Institute

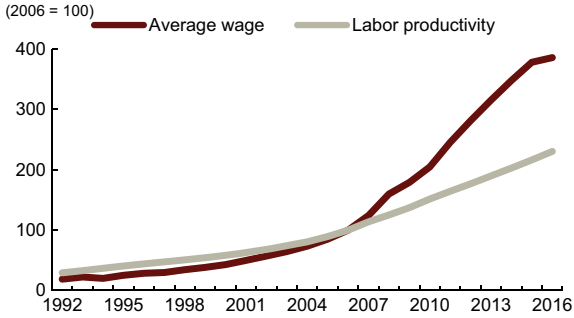

Fig. 2.2 Average wages and labor productivity have increased significantly. *Source* International Labour Organization, CICC Global Institute

the problem of an aging labor force as well as shortages will become increasingly critical in the future. According to the bulletin of the seventh census in 2020, China's working-age (15–64 years old) population was about 969 mn, accounting for 68.55% of the total population. The United Nations predicted in 2019 that China's working-age population would drop to 838 mn in 2050, but the actual rate of decline presented at the moment is even faster than expected.[6] China's elderly population dependency ratio is likely to climb from 46.0 in 2020 to 67.3 in 2050, leading to an increasing social burden. How to cope with the aging trend has become an important issue for the sustainable development of the labor market.

The labor market should consider both efficiency and equity in order to reach the goal of common prosperity by prompting employment and enhancing the efficiency of labor allocation while ensuring equal sharing of economic growth. The development of the labor market results from the interaction between institutions and the market, and the former is the infrastructure of the latter. As a result, balancing the relationship between efficiency and equity in the labor market requires a more inclusive and unified labor market.

Both market and institutional perspectives are useful for analyzing what kind of labor market China should pursue, and the institutional perspective is more balanced between equity and efficiency. The traditional perspective of perfect competition

[6] United Nation [36].

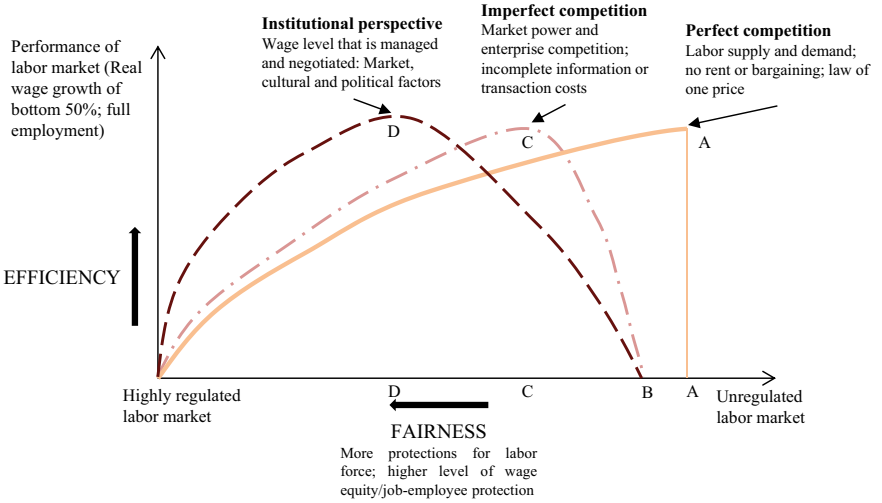

Fig. 2.3 An institutional perspective calls for more equitable labor market institutional arrangements. *Source* Howell and Kalleberg (2019),[10] CICC Global Institute

treats labor the same as other factors, and takes the market mechanism and individual optimal decision-making as the core of analysis, which leads to the conclusion that market efficiency and equity are completely opposed and that there ought to be as little government intervention as possible. However, some scholars point out that there are inherent failures in labor markets due to externalities, public goods, economies of scale, and asymmetric information, and that protective policies can correct market failure and restore competitive equilibrium, meaning that moderate policy interventions can help improve efficiency.[7] Both of the ideas above emphasize the role of market forces in allocating labor resources. In contrast, the institutional perspective points out that labor differs from ordinary commodities in that wages and employment are also related to the social status and self-esteem of workers, rather than simply to price and quantity.[8] The special properties of labor force imply that institutions will influence the behavior of the various participants and thus determine the outcomes of market allocation[9] (Fig. 2.3). Thus, institutions are another major factor affecting the labor market besides market forces.

Good institutions can reconcile equity and efficiency in the labor market. Since the 1990s, the academic and policy communities have realized that labor market institutions are crucial for achieving full employment, inclusive growth, and innovation. More specifically, relying exclusively on the market for labor resource allocation

[7] Krueger [14].

[8] Solow [32].

[9] Howell and Kalleberg [12].

[10] Howell and Kalleberg [12].

may be inefficient, considering the indivisibility of human capital and the incomplete labor insurance market (e.g., due to moral hazard).[11] Instead, the labor market, as an institution, should provide a partial complement to the "missing" protection mechanism,[12] which implies a slower adjustment in employment relations and wages when the economy faces adverse shocks. In other words, by giving workers some security arrangements, the equilibrium outcome of the market is at the same time more efficient because of the following reasons[13]:

First, institutions have a direct impact on the efficient functioning of labor markets.[14] As discussed earlier, wages and employment are related to workers' social status and self-esteem. In addition to price, institutions broadly influence the incentives and bargaining behavior of market participants. For example, workers' bargaining power is constrained by market structure and firm size, and their level of reservation wages and reemployment options are more related to the labor security that society can provide. It has been argued that protective measures such as unions are a substitute for flawed industrial relations,[15] and that the minimum wage was originally intended to prevent firms from falling into "unhealthy competition" in the absence of coordination to keep wages down.[16] In other words, a fair and secure system is not an erosion of efficiency, but rather is designed for the long-term smooth and efficient functioning of the labor market.

Second, proper regulation facilitates coordination between labor and management, and mitigates the damage to efficiency from frictions. The adjustment of labor market equilibrium is a slow growing process, and a completely unregulated market is chaotic and inefficient for both labor and management. Specifically, a response that is too fast implies dramatic fluctuations in labor relations, which is not conducive to profiting from a stable economic relationship. Conversely, too slow a response implies rigidity in labor relations, which is equally detrimental to the optimal allocation of labor. In addition, given the fact that a small number of firms have more market power and are more likely to conspire on economic behavior, workers are at a disadvantage in the search and bargaining process. Moderate regulation can therefore help smooth the process, improve the efficiency of labor matching, and avoid stalemates in negotiations due to information asymmetry and trust issues.

Finally, equity-focused institutions and regulations can enhance long-term economic performance. The relatively fair and stable income from institutions and regulations allows individuals to withstand the risks associated with educational investment, innovation, and entrepreneurship, providing a pathway for human capital enhancement and a long-term growth engine for the economy as a whole. Providing workers with financial, educational, or training assistance can help them get out

[11] Research suggests that information asymmetry and moral hazard will cause private insurance markets to shrink to nonexistence, see Thomas and Worrall [34].

[12] Holmstrom [11].

[13] Nickell and Layard [25].

[14] Freeman [6].

[15] Aghion et al. [1].

[16] Neumark and Wascher [24].

of short-term difficulties and achieve dynamic and effective allocation of labor resources. In an era of globalization and rapid technological development, a fairness-focused security system can also help alleviate the public's need for protectionist policies, which can also benefit economic efficiency in the long run.

The proposition of how to balance equity and efficiency can be further broken down into the dimensions of accessibility, fair pay, labor protection mechanism, and right to a voice.[17]

First, accessibility emphasizes fairness of opportunity, which stresses equal opportunities for workers to work, study, and develop their careers without discrimination on the basis of whether or not they are from urban and rural areas, the industries in which they have worked, and their age. It also means relatively smooth flow of labor across regions and industries.

Second, fair compensation focuses on outcome equity, which means that workers' compensation is based only on job performance and no other factors. The equity should be exhibited in the relationship between labor and capital, and also in the income gap between different groups within workers.

Third, labor protection and right to voice involve long-term equity and the efficiency of labor allocation. Because workers face multiple risks such as search frictions,[18] income instability, and unemployment, they need appropriate protection in terms of unemployment insurance and job search. In addition, given that labor contracts cannot cover all possible situations and need to be adapted to the latest developments in technology, preferences, and supply, the workers' right to a voice raised via mechanisms such as labor unions and collective bargaining can help meet the requirement.

2.2 Three Major Challenges of China's Labor Market from an Institutional Perspective

2.2.1 Challenge 1: Multiple Dualistic Structures Exist in the Labor Market, Which Affects Both Efficiency and Equity

The labor market in China is still not mature enough, and there are multiple dualistic structures. Employment and wages in the labor market are not only related to workers' ability, but are also influenced by external factors such as institutional arrangements, industrial characteristics, discrimination, and other issues, which lead

[17] El-Ganainy et al. [4].

[18] Search friction theory suggests that the coexistence of unemployment and job vacancies is due to the heterogeneity of demand between supply and demand, such as different expectations about wages, working hours, and location, resulting in a failure to match. See Mortensen and Pissarides [21].

to compartmentalization of the labor force. The dualistic structures hinder the free flow of production factors and the improvement of production efficiency, and also bring challenges to the equity of wage income.

2.2.1.1 The Labor Market Is Segmented Across Urban and Rural Areas, Regions, and Industries, and the Labor Endowment Is Not Fully Utilized

The current dual structure of China's labor market at the urban–rural, regional, and industry levels still exists, which hinders the free flow of labor and reduces the efficiency of labor supply, making it difficult to fully transform the volume advantage of labor into efficiency advantage.

There are still obstacles to the free movement of labor, and the dual structure between urban and rural areas is still obvious. First of all, the rural population still faces many barriers to mobility, which restricts their outward transfer, and the labor endowment resources are not fully utilized. The current *hukou* system has gradually disappeared from the labor market, but urban public services mainly serve urban residents with local *hukou*, meaning that rural laborers still face barriers to entering urban areas.[19] For example, high urban housing prices make it difficult for migrant workers to settle in cities, and a study by Jinan University shows that the rate of urban home ownership among the migrant population is only 15.2% because most migrant workers cannot afford the high cost.[20] The gap in availability of resources amid the urban–rural divide reduces the willingness to move, resulting in a considerable amount of redundant labor remaining in rural areas.

Second, the income gap, employment opportunities, public services, and institutional barriers between urban and rural areas all make it difficult for rural areas to attract labor back to the countryside. A study shows that the willingness of rural people working in mega cities to return to rural areas is 5.9%, and the willingness to return starts to rise as the size of cities decreases, which to some extent reflects that cities (especially large-scale cities) reduce the willingness of labor to flow into rural areas because they can provide richer employment opportunities and more sound public service systems.[21] At the same time, in order to live in rural areas and obtain a rural *hukou*, urban laborers must obtain the rights to homestead, contracted land, and the distribution of collective benefits, but this in turn would have an impact on the collective ownership of rural land.[22] The problem of access to land faced by the urban population flowing into the countryside makes it difficult to solve the housing problem,[23] and also reduces their willingness to invest in the land for industrial development.

[19] Ma and Hu [18].

[20] Zhang [42].

[21] Gu et al. [9].

[22] Qian and Zheng [28].

[23] Lai and Wen [16].

The unbalanced development of urban clusters also leads to the regional segmentation of the labor market, which is mainly reflected in the differences between prosperous eastern coastal regions and other regions. The labor flow is often restricted by geographical distance, and the unbalanced economic development of different regions makes the industrial structure diverge and form different employment ecologies, thus leading to the segmentation of the labor market. From the perspective of city cluster development, the eastern coastal city clusters and some central cities have played the role as regional leaders, while the western region lacks large cities to drive it. Consequently, the segmentation of regional labor mobility in China has gradually emerged in recent years, and the degree of free movement of labor varies among regions. Studies show that the barriers for labor to enter the provinces and cities in the eastern coastal region, such as Beijing, Shanghai, Guangdong, and Zhejiang, are increasing,[24] and the labor market in tier-1 cities is becoming increasingly divided from the labor market in other regions.

2.2.1.2 The Existence of Multiple Dualistic Structures Further Polarizes Wage Income Growth

Amid the current urban–rural segmentation of the labor market, there is a large gap between the wage income of urban and rural workers, both in terms of wage level and growth rate. Workers holding rural *hukou* can be divided into two categories: Those who migrate to urban areas for work, mainly young adults and laborers with relatively low levels of education[25]; and those who remain in rural areas with a lack of human capital and resources, mainly traditional low-income farmers.[26] There is a significant gap between migrant workers and their urban *hukou* peers in terms of the size and grow rate of the wage income. NBS data shows that the average annual wage of migrant workers in 2020 was Rmb48,864, significantly lower than that of workers at urban private companies (Rmb57,727) and non-private companies (Rmb97,379). The wage growth of migrant workers is slow, and the average annual growth rate of their average wage in 2016–2020 is 5.8%, which is lower than that of workers at urban private (7.8%) and non-private (9.4%) companies. Moreover, the average wages of urban workers and migrant workers are gradually diverging (Fig. 2.4).

[24] Shi [31].

[25] Han et al. [10].

[26] Fu and Ren [7].

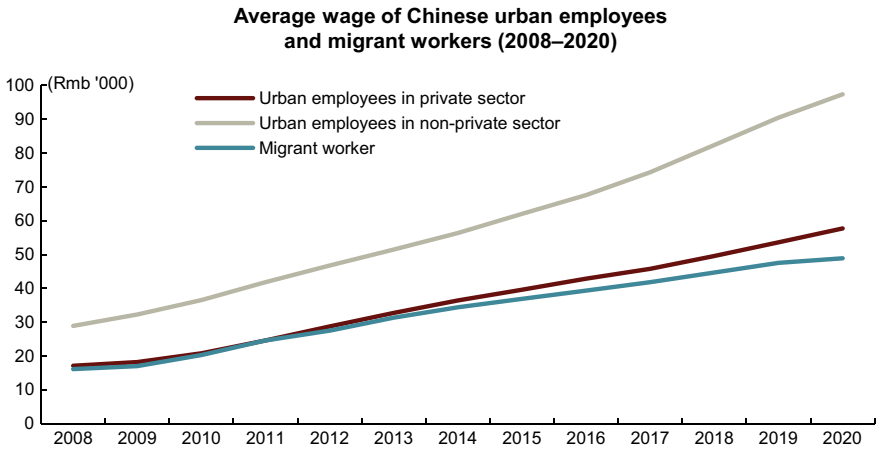

Fig. 2.4 Migrant workers' income is low and growing slowly. *Source* NBS, CICC Global Institute

2.2.2 Challenge 2: Mismatch Between the Labor Market System and the Changing Society

Another major problem facing China's labor market is the mismatch between the labor market system and the rapidly developing economy. Employment difficulties and labor shortages coexist, and workers' age has a significant influence on the income gap, which reflects the mismatch between the characteristics of human capital and industrial structure, the structural contradiction between labor supply and demand, and the low efficiency of market allocation. The new economy has brought new employment patterns and created new labor relations, but the existing labor legal system and protection institution are still based on the traditional "factory system", leaving insufficient protection for workers in new industries. The mismatch between these two aspects has put forward new requirements for the labor market in terms of market mechanism and developing new institutions, respectively.

2.2.2.1 Structural Contradiction Between Labor Supply and Demand

The current labor market in China has long exhibited the phenomenon of coexistence of unemployment and labor shortages. On the one hand, the employment difficulties of college graduates have persisted for over a decade, and helping this group find employment has become an urgent problem to be solved. There were 9.09 mn college graduates in China in 2021, but there were far more young people entering the job market, including graduates who have not yet been employed and returnees from overseas. The pressure of youth employment is thus swelling.[27] On the other hand,

[27] Jiang et al. [13].

China's manufacturing industries, which are especially labor-intensive industries, have not been able to meet the labor demand since 2010, and the problem of labor shortages at certain manufacturing enterprises has been particularly prominent. As a country with a large labor resource endowment, China's labor market shows the coexistence of employment difficulties for young people represented by college graduates and labor shortages for enterprises represented by traditional manufacturing industries.

This phenomenon is related to the mindset of young people and industrial development, but the structural contradiction means that China's labor market is influenced by the changes in population trend on the supply side, and there is a certain mismatch with the industrial structure on the demand side. With the gradual disappearance of China's demographic dividend, the size of the labor force is shrinking and its quality is improving. However, the transformation and upgrading of industries are not synchronized, which has led to the mismatch and also renders the current market mechanism unable to allocate labor resources effectively.

From the supply side, there is a clear trend of a higher quality but shrinking labor force. As mentioned previously, China's labor shortage will worsen in the future, and the quantitative advantage of the population that supported the rapid economic growth in the past will gradually disappear. The continuous transfer of surplus labor from rural to urban areas in recent decades has fueled the supply of low-skilled labor and kept its wage level relatively low, reinforcing the demand for people to upgrade their education level to enter high-end industries. In addition, families prefer to have their children pursue higher education after addressing their basic needs.[28] This has at least two implications: First, individuals become willing to pursue education for a longer period of time; and second, families are more willing to invest resources in their children's education rather than the number of children. According to a 2019 survey,[29] the biggest expense for new middle-class families is their children's education and self-improvement, with children's education topping all expenses at 31.2% of the total. The younger generation is spending more time pursuing education, and the proportion of people with a high school level of education or higher is increasing (Fig. 2.5).

From the demand side, however, the transformation of China's industrial structure is slower than the change in population endowment, leading to a divergence in demand between labor-intensive and knowledge-intensive industries, with the former being in short supply and the latter showing excess demand. In the context of China's labor endowment changing from quantitative to qualitative (Fig. 2.6), the industrial structure has not transformed at the same pace, and it was not until 2012 that the number of people employed in the tertiary sector exceeded that in the primary sector. From a survey of educational background of urban employees in 2020, we find that more educated workers gather in knowledge-intensive industries,[30] among which

[28] Please refer to Chap. 5 of this book.

[29] Tencent Wealth Management [33].

[30] Referenced here from Rozelle et al. [30], labor-intensive industries include: Transportation, warehousing, and postal services; wholesale and retail trade; accommodation and food services; rental

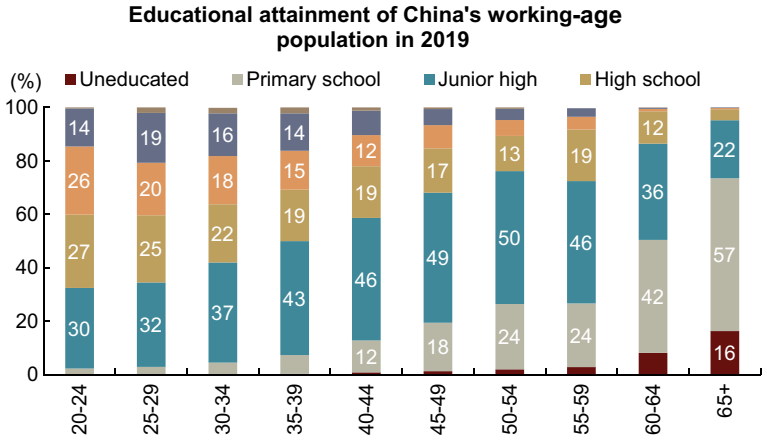

Fig. 2.5 Younger generations are more educated than prior generations. *Source* China Population and Employment Statistics Yearbook 2020, CICC Global Institute

about 46 and 64% of workers with undergraduate and postgraduate backgrounds enter knowledge-intensive industries, while workers with lower education are more likely to be concentrated in primary or secondary industries. The ability of high-end industries to absorb college students, however, cannot keep up with the growth rate of supply,[31] and the demand ratio of graduates with a college level education and above has been less than one since 2005, which also illustrates this problem. As China's population becomes more educated and the outflow of labor from rural areas slows, labor-intensive industries will continue to face insufficient supply, while knowledge-intensive industries may not be able to absorb the rising number of highly educated talent, resulting in a situation in which supply exceeds demand and college students feel difficult to find jobs.

Another problem in China's labor market is the widening intergenerational wage income gap. In the context of industrial structure transformation and the rapid development of new industries, the knowledge and skills of middle-aged and older workers can hardly meet the new demands of the labor market, which increases the difficulty for them to adapt. The percentage of middle-aged and older employed workers engaged in higher paying industries such as scientific research and technical services, information technology software services, culture, sports, and entertainment was less than 1% in 2020.[32] As the digital economy develops, the repetitive jobs engaged by middle-aged and older workers are more likely to be replaced by automated machines, leading to a further decline in their income levels. In addition, it is difficult for them

and business services; and residential services. Knowledge-intensive industries include: Information transmission, computer services and software, finance, real estate, scientific research, technical services and geological exploration, education, health, social security and social welfare, and culture, sports, and entertainment. Comparative Economic Studies.

[31] Zhang and Ru [41].

[32] Data source: China Labor Statistics Yearbook 2020.

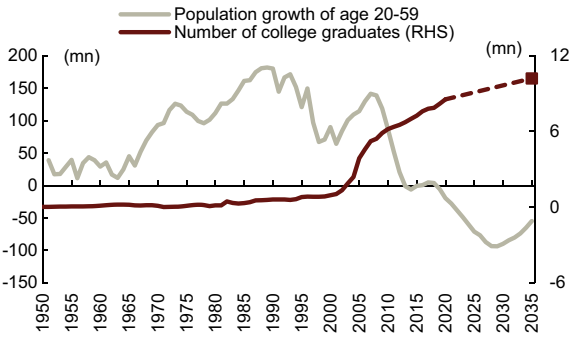

Fig. 2.6 The great transformation of the qualitative endowment of China's labor force. *Source* UN, Wind, CICC Global Institute

to update their skills in time to adapt to the development of new industries, and once they are unemployed, there are more obstacles in returning to the labor market. The aforementioned phenomena have led to the rapid decline in middle-aged and old-aged workers' wage income as they get older. In view of the severe aging of China's society, how to reasonably improve their skills to adapt to the rapid transformation of economic development and create a suitable employment mechanism for them will be an important proposition.

2.2.2.2 The Rise of Flexible Employment Puts New Demands on Institutional Development

In addition to the structural contradiction of supply and demand, the labor market ought to match new employment patterns, i.e., flexible employment. The digital economy currently plays a pivotal role in the national economy, giving rise to a large number of new occupations that are different from the traditional business model. According to the Ministry of Human Resources and Social Security, from 2019 to 2020, China added a total of 38 new occupations, including 23 occupations related to the digital economy. The scale of flexible employment in the digital economy continues to grow, with the number of flexible employment workers in China reaching about 200 million in 2020.[33] A total of 84 mn people work for sharing economy platforms, up 68% from 50 mn in 2015, with a CAGR of 10.9%.[34] However, flexible employment in China is currently deficient in terms of a supporting legal system and labor protection mechanism, which imposes challenges on the current labor market.

The new business model created by the digital economy is largely different from the traditional system in terms of employment relations and flexibility. The traditional labor market had its origins in the Industrial Revolution, which shifted labor from a decentralized to a centralized approach and shaped the modern "factory-centered" employment relationship. However, the booming global digital economy has given rise to business models that are different from traditional employment relationships,

[33] General Office of the State Council [8].

[34] National Information Center [23].

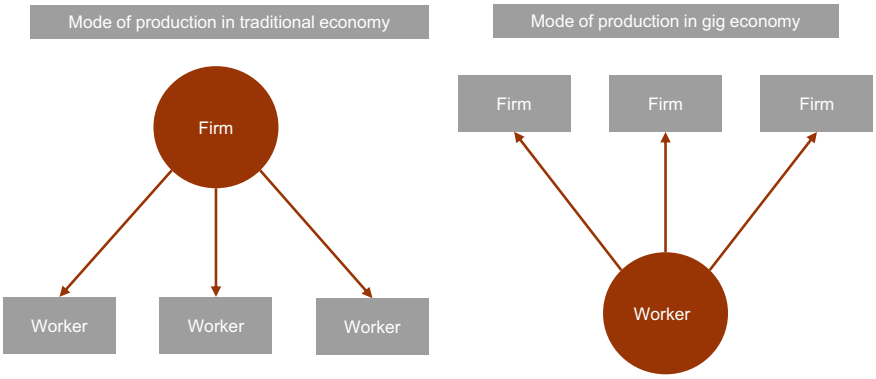

Fig. 2.7 Firm-centered versus worker-centered employment relationship. *Source* CICC Global Institute

especially the production model represented by the "gig economy", which allows people to work across platforms and enterprises at the same time, and employment has taken on a "worker-centered" character. This is clearly different from the traditional "factory-centered" employment relationship (Fig. 2.7).

The traditional labor market system is based on the "factory-centered" employment relationship.[35] For example, the payment of pensions, the regulation of salaries and working hours, and the guarantee of production safety, etc., are all based on factories or enterprises. However, the employment relationships of the gig-economy are more complicated, and the traditional system based on fixed workplace and working hours is not suitable for flexible employment. According to data from the International Labor Organization, only 8% of platform workers were able to establish formal employment relations with their platforms in 2019.[36] Under the current institutional arrangements, all protection for workers should be based on the recognition of employment relations, which leads to the lack of corresponding labor protection for many flexible workers and makes their rights and interests vulnerable to infringement.

Moreover, platforms are in a stronger position compared to workers and are able to gain stronger bargaining power by controlling the way work is organized, which may lead to unequal labor-management relations. More than half of food delivery riders in China worked more than eight hours a day in 2019.[37] Overwork is closely related to the way compensation is denominated. According to a study on food delivery riders in one city in 2020, less than 10% of riders are paid a base salary, and more than 70% are paid a piecemeal rate without a base salary.[38] In addition, if the platform's industry concentration rises, it is possible for the platform to have a

[35] Lin [17].
[36] Zhou [43].
[37] Ibid.
[38] Yilian Labor Law Assistance and Research Center [40].

buyer's monopoly over the labor market, such as lowering the commission for each single delivery. Individuals are in a weak position in terms of resources, time, and legal support to bargain with the platform, and there is internal competition among riders, which invariably reduces their bargaining power. Therefore, how to improve the weak position of workers in labor-management relations is an issue in the design of the new labor system.

2.2.3 Challenge 3: Building a Resilient Labor Protection Regime and Improving Workers' Voice

In the face of economic and social changes in the labor market, the ability to quickly adjust the flexibility of employment relations with a solid labor protection institution is important for helping workers achieve full employment as much as possible, maintaining a balanced supply and demand in the labor market, and sustaining long-term economic growth. China's labor protection institution is relatively new, and is still being refined, but this also gives China the opportunity to take advantage of the latecomer advantage, learn from advanced economies, and thereby refine the system further.

2.2.3.1 International Experience: The Pros and Cons of Rigid and Flexible Protection Institutions

Two policy models to protect labor prevail in the world[39]: One is to protect workers' rights and interests by raising the unemployment threshold, and the other is by strengthening unemployment insurance. The former is represented by Greece, Italy, and other southern European countries before 2007, and the institutional arrangement follows a model of "high protection + low replacement + low expenditure", which establishes a more long-term and stable relationship between enterprises and employees through strict layoff procedures, longer notice periods for leaving employment, and higher financial compensation for layoffs. The latter model, "low protection + high replacement + high expenditure", is represented by countries such as Switzerland and Denmark, where firms are relatively free to terminate labor relations, accompanied by fairly generous unemployment insurance benefits and strong government policies for an active labor market (Table 2.1).

Although the model of "high protection + low replacement + low expenditure" is beneficial to employees, it is not ideal from a society-wide perspective. Strong employment protection protects workers in the short term, but in the long term, it reduces the efficient allocation of labor resources and causes inequality in employment opportunities among different groups of workers. While the "low protection + high replacement + high expenditure" strategy exposes individual workers to a higher

[39] Boeri [2].

Table 2.1 Analysis of the advantages and disadvantages of rigid and flexible labor market institutions

Institution	Pros	Cons
Rigid paradigm (high protection + low replacement + low expenditure)	1. Stable jobs, beneficial for the loyalty and stability of talent 2. Low administrative costs and spending for government	1. Inadequate labor turnover, more difficulties in mismatch adjustments, high burdens for enterprises 2. Unfavorable to skill upgrade and economic transformation; might hinder economic development 3. Prone to unfair employment opportunities for different groups, e.g., intergenerational differences, formal and temporary employment, etc.
Flexible paradigm (low protection + high replacement + high expenditure)	1. Higher level of flexibility, higher ability in rapid adjustments and risk sharing when encountering economic change, reduced frictional labor policies with higher government spending help enhance job security and success rate of job change	1. Insufficient level of stability; significant unemployment may occur due to instant shock 2. Generous unemployment insurance may increase rate of unemployment or prolong the duration of unemployment 3. Requires substantial effort and spending from government; unaffordable for "weak" government

Source Boeri T. Institutional Reforms and Dualism in European Labor Markets. Handbook of Labor Economics, 2011, CICC Global Institute

risk of dismissal, flexible labor relations help promote labor mobility and matching efficiency, thus improving overall economic robustness. Although the employment relationship is not strongly protected by the government, generous unemployment benefits provide sufficient income security for the unemployed, reducing their fear and resistance to unemployment and making workers more open to job mobility and switching.[40] Overall, flexible labor security policies are important in helping workers achieve the fullest possible employment, and maintain a rough balance between labor supply and demand and even long-term economic growth.

[40] OECD [26].

2.2.3.2 Common Prosperity Requires a Flexible Protection Institution of "Low Protection + High Replacement + High Expenditure"

International experience has taught us that the model of "low protection + high replacement + high expenditure" offers better performance in ensuring full employment and maintaining the operation of the labor market. We need social security to enhance the flexibility of the economy so as to reduce the loss of resource mismatch. The increase in fiscal strength also lays the foundation for us to adopt a flexible protection institution.

Regarding low protection, the provisions on resignation should cover a larger group of people. "Low protection" is not "no protection", but rather suggests that more workers should be covered by the flexible protection institution**.** China has not yet designed a clear mechanism for informal employment relations, and the termination of such employment is not governed by the Labor Contract Law because the informal relationship is not regarded as a formal contract, but by the provisions of the Civil Code on contractual relations according to the specific content of the contract.

Regarding the high replacement rate of employment, China's social security insurance needs improvement, especially unemployment insurance. Currently, the basic pension scheme for urban employees in most provinces is managed by local governments, while the basic pension scheme for rural and non-working urban residents and their basic medical insurance are mainly managed by county (district) governments, making fund management fragmented. The current social security system still suffers from systemic frictions such as low levels of pooling of accounts and poor portability, which reduce the willingness of specific groups of people to enroll for insurance. The fact that social security is only pooled at the local level leads to poor portability, which reduces the willingness of the mobile population to pay contributions and leads to weak implementation of social security at the enterprise level, dragging down the actual coverage rate of the employed population as a whole. Ministry of Human Resources and Social Security statistics show that the coverage rates of migrant workers' basic pension,[41] basic medical care, unemployment, and work injury insurance were only 22, 22, 17, and 27% in 2017, lower than the corresponding average levels of the total urban employed population at 69, 51, 44, and 54%.

China's unemployment insurance system currently has the overall problems of low coverage, low replacement rate, and low efficiency of use. In terms of coverage, according to the National Bureau of Statistics, the proportion of unemployment insurance recipients to the total unemployed population in 2020 (unemployment benefit

[41] Ministry of Human Resources and Social Security of the People's Republic of China [19].

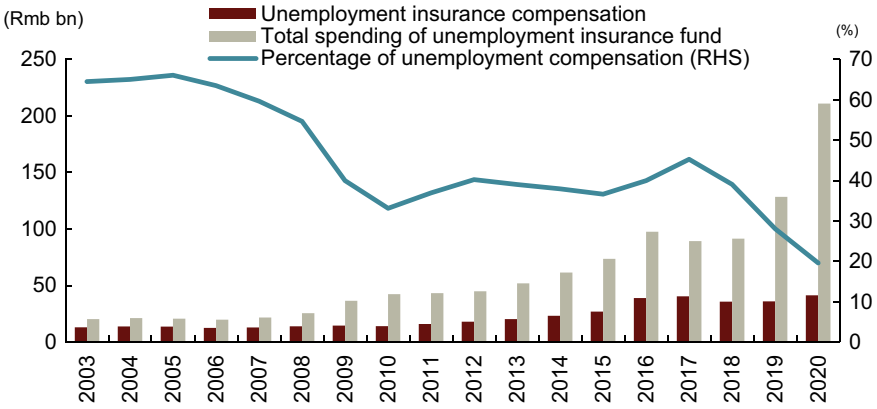

Fig. 2.8 Weakening of the unemployment insurance fund. *Source* National Bureau of Statistics, CICC Global Institute

rate) in China was 23.3%,[42] while it was 48 and 49% in Denmark and Switzerland.[43] In terms of replacement rate, the level of unemployment insurance benefits in China does not consider the personal and family characteristics, and is lower than the local minimum wage. The per capita unemployment insurance benefit in China was Rmb1266 per month and the replacement rate was only 18.4% in 2018. In terms of the efficiency of fund use, insufficient targeting and coverage led to large surpluses in the unemployment insurance fund for several years from 2003 to 2018, and the weakly-functioning insurance was therefore not able to buffer against economic cycles. Despite the significant rise of unemployment insurance fund expenditures to Rmb211bn in 2020, the actual share of expenditures was only 20%, significantly lower compared to 64% in 2003 (Fig. 2.8).

Regarding the high expenditure, China's government support needs to be improved, especially in terms of giving people more access to employment information. The difficulty of finding a job is particularly evident among young people who lack work experience, with the youth unemployment rate in China at 14.3% at the end of 2021, according to the NBS, higher than that in Switzerland (2%) and Denmark (10.8%).[44] This is mainly due to a lack of access to market information and unwillingness among young people to lower their expectations. They prefer to risk a longer period of unemployment and wait for their desired salary.[45] In contrast, online platforms such as "Work in Denmark" and "Job Index" in Denmark and "Jobs.ch" in

[42] Due to the availability of data, the unemployment benefit rate is calculated by dividing the unemployed recipients of unemployment benefits at the end of the year by the registered unemployed persons in urban areas. Due to the narrow scope of urban registered unemployed persons statistics, the unemployment benefit rate calculated by this method is larger than the result calculated by all unemployed persons.

[43] Data source: OECD.

[44] EUROSTAT [5].

[45] Yan [39].

Switzerland offer users the functionality of searching companies' past job postings and guidance on salary negotiations, and provide anonymous salary distribution data by industry, job, and company. China can learn from these platforms to help workers obtain employment information.

The government and enterprises should improve skills training for the unemployed, and we believe the training projects should be systematically arranged and focus on sustainability. The participation rate in skills training is low: A total of 18.77 mn people participated in vocational training in China in 2019,[46] the per capita training hours in enterprises was 68.5 h/year,[47] the government's per capita vocational skills training subsidy was maintained at a relatively low level of approximately Rmb500,[48] and the proportion of unemployed people participating in vocational training was only 14%. In contrast, over 60% of employees participated in vocational training in Denmark, with 82 h/year of training per capita at enterprises. Specifically, the Danish government provides vocational training for the unemployed and temporary short-time workers, with coverage rates of over 50% and 70%, respectively.[49] In addition, because the participation rate in skills training and skills evaluation levels in China are not strongly correlated with labor compensation, workers are less motivated to participate in skills training, which hinders the formation of lifelong learning habits and labor force transfer across industries and occupations.

2.2.3.3 Inadequate Protection Is also Reflected in the Lack of Workers' Voice

The right of voice plays an important role in the protection of workers' rights and interests, and also contributes to maintaining equity and efficiency in the labor market. The formulation of labor market regulations and the negotiation of wages and working conditions require negotiations between labor and management, and the right to voice determines which party dominates the process.[50] Generally speaking, in mature labor markets, workers are able to express their demands through collective bargaining and election of labor representatives. Some countries have strengthened the voice of all workers by expanding the benefits of collective bargaining, i.e., the benefits of collective bargaining are shared by all workers, including union members. Some countries have also reduced the likelihood of dismissal by electing work councils to represent workers and requiring that all dismissal and termination decisions be approved by the council.

The voice of workers in China is inadequate and does not provide sufficient protection. With the increasing importance attached to the protection of workers'

[46] Ministry of Human Resources and Social Security [20].

[47] Training Magazine, Andyman Consulting [35].

[48] Xinhua [38].

[49] Refer to OECD Survey of Adult Skills (PIAAC, 2012 & 2015) data. Retrieved from https://www.oecd.org/skills/piaac/data/.

[50] El-Ganainy et al. [4].

rights and interests, the establishment of organizations representing workers' voices, such as labor unions and staff congress,[51] are in the early stages of development, but the actual outcomes need to be improved.[52] Workers are more satisfied with the work of labor unions in terms of cultural and sports activities and helping the poor and needy, while only 9.3% of workers were satisfied with the resolution of labor disputes, according to a study.[53] Meanwhile, collective bargaining is a way for workers to have a voice, but collective bargaining represented by unions suffers from the problem of insiders crowding out outsiders and usually focuses only on the rights and interests of union insiders. Finally, the continued evolution of new employment patterns also poses new challenges to enhancing workers' voice. As the employment patterns of new industries are quite different from the traditional ones, they suffer from the lack of unions and insufficient coverage, making it difficult to protect workers' right to voice,[54] which makes it difficult for the needs of vulnerable workers to be recognized by society.

2.3 Concluding Remarks

In China, the government should coordinate and promote the construction of a unified, mature, and fair labor factor market. We believe it is necessary to give full play to the advantages of China's large market, to attempt to break down the market segmentation, and to make full use of the labor resource endowment. While China's demographic dividend is diminishing, it is necessary to further break down the segmentation of the labor market at the urban–rural, regional, and industry levels; make more effective use of untapped labor supply; and steadily promote the equality of different people across employment, social security, and other aspects.

We believe China should take full advantage of its large number of university graduates to promote industrial transformation and upgrading, and expand the scale of knowledge-intensive industries. China should also take advantage of the job opportunities created by new industries and strengthen their attractiveness to highly-educated people. To address the problem of low-skilled labor being stuck in low-income industries, the government should guide and motivate enterprises to invest more in skills training. The government should establish targeted knowledge and skills training for middle-aged and older workers so that they can better adapt to new work patterns in the new economy.

We also believe China should establish a labor market that is compatible with flexible employment. It is necessary to adapt to the needs of flexible employment,

[51] Staff congress in China's enterprises is composed of staff representatives elected by all staff. They exercise the power of democratic management on behalf of all employees and express the will of all employees.

[52] Qiao and Qian [27].

[53] Dong [3].

[54] Xie [37].

change the factory-centered concept of labor relations and labor legislation, and build a worker-centered institutional framework. In addition, the anti-monopoly regulation of platform enterprises in the labor market should be strengthened, and the rules for transactions set by the platform should meet the requirements of labor standards and regulatory standards.

Finally, a more flexible labor protection system is necessary. In terms of employment protection, the flexibility of labor contracts and severance and layoff standards should be enhanced. In terms of social insurance, the scope of coverage should be expanded and the level of pooling should be improved. In terms of right to voice, the role of labor unions should be strengthened and their coverage expanded to new industries and disadvantaged groups.

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Chapter 3
Real Estate: Returning to Real Demand and Reducing Excessive Financialization

Abstract Housing is a basic necessity, and it is essential to properly balance its dual properties as both a consumer product and an asset for investment. However, historically, China's real estate market has taken the path of excessive financialization in the process of accelerating economic development and urban modernization. The deviation from its attribute as an essential consumer product has negatively affected people's livelihood, economic growth, and financial stability, and has even limited the effectiveness of counter-cyclical macroeconomic policies, which has hindered, to some extent, the progress towards common prosperity. The financialization of land and the commoditization of housing have caused the excessive financialization of China's real estate market. They are the core issues on the supply and demand sides of this market, respectively. On the supply side, local governments have been raising financial resources through land asset liquidation and mortgage financing, which has deepened the financial cycle spanning from land prices to housing prices, and to credit supply. The balance sheet of local governments is "tied" to the land market, pushing up land prices and leading to the continuous expansion of hidden debts and real estate bubbles. On the demand side, since the institutional reform of the housing market in 1998, China has created an imbalanced supply structure characterized by a boom in developer-built housing and a shortage of low-income housing as well as long-term rental housing, with the majority of households relying on mortgages and other financial instruments to meet their housing needs. Moreover, the financialization of land and the commoditization of housing are mutually reinforcing, strengthening the dependence of local governments on land, incentivizing developers to raise debt and leverage, and guiding the allocation of bank loans to the housing market. The problem has been exacerbated by the connections between banks and some real estate companies. We believe the real estate sector should reduce excessive financialization, and that housing revert to its primary attribute as an essential consumer product. Therefore, the supply-side reform should be vigorously pursued, whereas speculative demand must be resolutely suppressed. The legislation on real estate tax should be accelerated to revamp local government funding sources. We believe China should expand the supply of high-quality low-income housing, build a multi-tiered and

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laddered supply system, and vigorously develop the rental housing market with legal protection.

Since the launch of the institutional reform of the housing market in 1998, China's urban households have achieved a significant and rapid improvement in their quality of living. However, the phenomenon of "commoditization of housing" and "financialization of land" has intensified, especially in the last decade, giving rise to the excessive financialization of the entire real estate sector. High housing prices have begun to squeeze consumption, inhibit innovation, and weaken economic growth potential. The gap between urban and rural land prices and living standards has been widening, becoming one of the major obstacles to promoting common prosperity.

As a special factor of production, land has prominent features of being both monopoly goods and financial assets. China has a special dual land system that separates urban and rural land. Urban land for development is monopolized by local governments. Under the land leasehold system, the government charges a one-time rent for the right to use residential land for a 70-year period, and this rent becomes the most important component of the housing price. High land prices and high housing prices are mutually reinforcing and make banking credit a necessity, triggering the financial attribute of real estate. The pro-cyclicality of finance tends to mask problems or leads to real estate price bubbles and irrational market booms. The rising value of existing housing is mainly captured by a few groups such as home and land buyers, developers, and financial institutions, increasing the incentive for different actors in society as a whole to invest in the real estate market and further pushing up land and housing prices.

The financialization of land has been transmitted to the housing market, causing housing price to rise excessively without the support of the real economy. In this process, the ability of ordinary households to pay for housing has been weakening, while the incentive for high-net-worth groups to invest in speculation has been strengthening, further exacerbating the uneven distribution of housing resources. Moreover, the housing market has a biased supply structure that is dominated by developer-built housing but lacks enough low-income housing, and the rental market as well as its supporting mechanisms have yet to be developed. Especially in big cities, new residents and young people generally have difficulties in both purchasing and renting housing. In addition, the policy-driven housing finance system is still weak, and the supply of low-income and rental housing and the support for low- and middle-income households are both inadequate.

The excessive financialization of the real estate market has also caused the Chinese financial system to accumulate greater risk. The financing of real estate developers has relied more on debt than equity, and their business model—featuring high debt, high leverage, and high turnover—has led to serious debt risks. Many developers have also become major shareholders of local commercial banks, which enables them to leverage up much more aggressively than other industries and expand their capital in a disorderly manner until they are "too big to fail".

In order to promote common prosperity, China should solve the various problems of the old development models in the real estate sector. Promoting high-quality, inclusive development of this sector is essentially a process of reducing excessive financialization, ensuring that the real demand is met and restoring the status of housing as an essential consumer product.

3.1 Excessive Financialization of China's Land Market and Uneven Distribution of Land Rent

3.1.1 As a Factor of Production, Land Has Features of Being Both Monopoly Goods and Financial Assets

3.1.1.1 The Feature of Land as Monopoly Goods

The features of land as monopoly goods are primarily reflected in the determination of ownership. Unlike general capital goods, land ownership is more subject to political and legal influence. In times of peace and in a market economy, changes in land ownership and land use rights are mainly accomplished through market transactions. But unlike other capital goods, since the purchase and sale of land involve large sums of money, only a few people or enterprises with sufficient funding can purchase land.

The features of land as monopoly goods can amplify the negative externality to the economy as land prices rise. Among the three factors of production, i.e., labor, capital, and land, land is the most durable. Instead of promoting the formation of industrial capital, rising land rent or land price, which is part of the fixed cost of enterprise production and business operations, squeezes investment and reduces the supply capacity of the economy, thus increasing the divergence of wealth and capital.

3.1.1.2 The Features of Land as Financial Assets

The special status of land as a factor of production makes its valuation less objective and highly sensitive to interest rates. The lack of specific use and the uncertainty of future cash flows makes land price estimates less objective, and determined more by people's psychological expectations (e.g., herding effect). Moreover, land is more durable than other productive capital, making its transaction price highly sensitive to interest rates. In addition, the high financial threshold for purchasing land often requires external financing, and buyers receiving the financing will have an advantage in land transactions and allocations. Factors affecting financing terms include credit ratings and the value of collateral. As land itself is high-quality collateral, large firms and individuals who own land tend to have an advantage in financing land purchases, resulting in an increasingly concentrated ownership of land.

Financing facilitates land transactions, and land used as collateral also promotes the expansion of financing. While collateral helps address information asymmetry in the financing process, it also reduces the willingness and incentive of lenders to do due diligence. Financing is based more on the availability and value of collateral rather than project viability and output efficiency. This gives rise to further disconnection between financial credit and the real economy. The over-expansion of debt may incur default and a deepening financial cycle spanning from real estate to credit supply.

3.1.2 Financialization and Uneven Distribution of Land Rent Increases Wealth Inequality

3.1.2.1 China's Land Transfer Process

China practices socialist public ownership of land, i.e., national ownership and collective ownership by the working people. Land for urban development belongs to the state, while land in rural and suburban areas belongs to the rural collectives, except for land stipulated by law to be owned by the state; homesteads,[1] self-reserved land, and hills also belong to the rural collectives. Land can be granted to organizations or individuals for use, and land use rights can be transferred in accordance with the law. The state can expropriate land for public interest and compensate the owners of the expropriated land. In addition, there is a difference between the urban and rural land use systems in China. According to the 2004 version of the amended Land Management Law, in cities, "any unit or individual who needs to use land for construction must apply for the use of state-owned land in accordance with the law". Rural land must be collected by the government before becoming tradable in the urban land market, and this rule did not change until 2020. This has led directly to the urban–rural dual structure of China's land market in the past two decades.

The land transfer process in China involves land expropriation, government storage, transfer of land use rights, and market transactions of land use rights (Fig. 3.1):

- At the stage of land expropriation, the compensation for urban land, rural homesteads, and collective land for development is based on the replacement cost, whereas owners of agricultural land should be compensated according to a multiple of land production value. The total compensation for owners of agricultural land comprises land compensation fee, compensation for local attachments and seedlings, resettlement subsidies, and social insurance fee. The land compensation fee belongs to the rural collective economic organization, whereas the other parts belong to the leasehold farmers. As urbanization advances and the amount

[1] Rural homestead is a special kind of land reserved for rural household or individual to use as residential base.

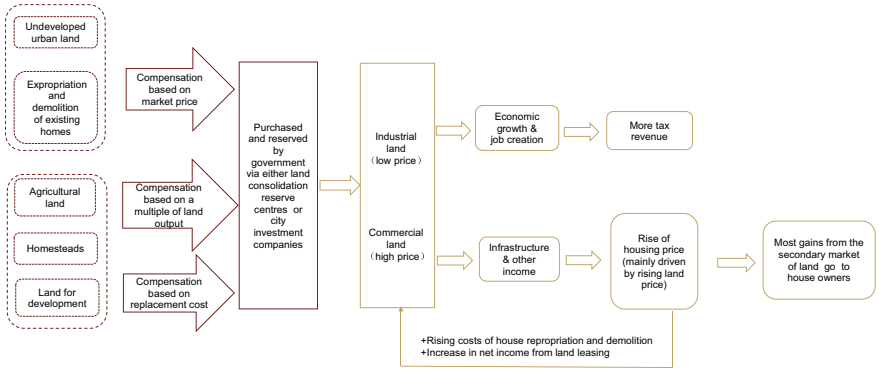


Fig. 3.1 Steps for transfer of land use rights in China. *Source* CICC Research

of undeveloped urban land gradually diminishes, the amount of expropriated rural land has been increasing.

- At the government storage stage, the land is mainly stored on behalf of the government through the land consolidation and reserve center,[2] a special agency, or directly bought by city investment companies. Because the land consolidation and reserve centers have no financing function, local governments grant the land storage function to city investment companies for rapid urbanization. The companies use the future returns from land use rights as collateral for financing and carry out land preparation and infrastructure investment. Since 2016, the land storage function of the companies has been gradually divested, but they are still responsible for the development and improvement of land already on their books.
- In the primary and secondary transactions of land use rights, the government first offers well-developed land in the primary market. Commercial land is more often offered through auction and bidding at relatively high prices, while industrial land was more often offered in a non-market way before 2006 with large supply and low prices. In the secondary market, properties and land are usually traded and priced together, and after the payment of transaction and VAT fees, the net proceeds from the sale mostly go to the original holder of the land use rights. The features of land as being both monopoly goods and financial assets push up land prices, and rising land prices further increases the government's net proceeds from land sales. The cost of land expropriation and demolition, however, has also gradually increased, and therefore, in recent years, it has become increasingly difficult for local governments to demolish and relocate old homes in urban centers.

[2] Land reserve refers to the act of organizing pre-development and storage for future land supply. The land consolidation and reserve centers undertake the specific implementation of land reserve work.

3.1.2.2 Collection and Distribution of Land Rent

There are two imbalances in China's land market:

First, the phenomena of over-compensation and under-compensation to the farmers from whom land is expropriated exist simultaneously. The difference between the two depends on the nature and location of the expropriated land. The compensation standard of land expropriation is mainly linked to the original land use and the surrounding land price. For example, in the case of homesteads in collective land, if it is located in an urban village, the compensation rate will be higher with reference to the surrounding urban land price; but if it is located in a suburban area, farmers will receive a lower compensation fee. The latter situation became more prevalent in recent years as more than 40% of land expropriated in China's cities has been arable land,[3] mostly on the outskirts of cities. The Land Management Law in 2004 also stipulates that compensation for expropriated farmers cannot exceed 30 times the average annual land production value (though this ceiling was removed in 2019). This has led to disparate compensation for expropriated farmers, which in turn has led to uneven distribution of wealth. Moreover, since land has a certain social security function for farmers, the issue of their social security after losing land has not been properly addressed.

Second, the price difference between industrial land and commercial land is substantial. From an international comparison perspective, industrial land prices are lower than commercial and residential land prices in all countries, but the price difference between different sites in China is even greater (Fig. 3.2). Due to the high mobility of capital, enterprises can vote with their feet to choose where to locate their operations, and local governments tend to attract enterprises by supplying a large amount of land at low price. The practice may seem to damage local interests in the short term, but the employment opportunities provided by enterprises can effectively promote local economic growth, attract population inflow, and improve tax revenue in the medium term. Therefore, local governments have a natural urge to expand the supply of industrial land and reduce that of residential land. In the long run, the government makes a rational choice by offering industrial land at low price to attract investment, which creates employment and tax revenue. However, the low price of industrial land has certain negative effects, such as excessive competition and duplicate construction among local governments, low efficiency of land use, waste of resources, and crowding of urban living and ecological space.

The reasons behind both of these aforementioned phenomena, which have given rise to increased wealth disparity among the population, are:

- First, the excessive financialization of land. After 2002, auctions have become the main method of land transfer. The government charges a one-time rent for the right to use residential land for the next 70 years, which few people could pay in a lump sum. Most of them have to take out loans, thus exacerbating the features of land as a financial asset. The pro-cyclicality of finance conceals the problem,

[3] Ministry of Housing and Urban–Rural Development, P.R. China [1].

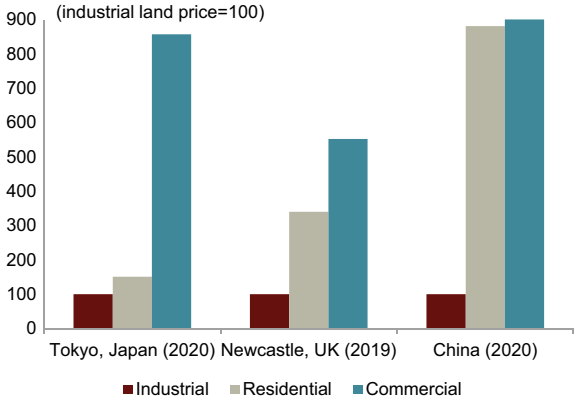


Fig. 3.2 Price of residential land is much higher than that of industrial land in China. *Source* CEIC, UK HM, CICC Research

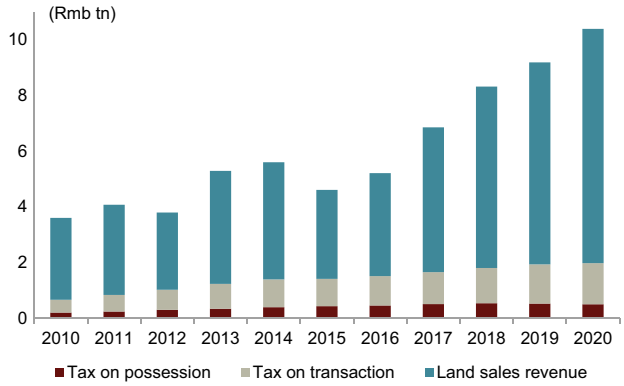
and leads to the price bubble and irrational prosperity in the market. Moreover, the government liquidates land assets or uses land as collateral for leveraged financial activities. Under the land financialization model, the level of land price directly determines the size of local financial resources. The proceeds from land use rights sales and taxes in China rose from Rmb3.3trn to Rmb10trn between 2010 and 2020, accounting for about 50% of total income of local governments. Since being included in the budget of local government-managed funds in 2007, the proceeds have been accounting for about 90% of total budget revenue. Because how much land prices can rise depends on property prices, the financialization of land means that property price is in fact linked to local balance sheets by determining land price. As a result, the financialization of land has thus evolved into an implicit guarantee provided by local authorities to the real estate sector, giving it an unfair competitive advantage over other industries.

- Second, the distribution of land rents is not as reasonable as it should be. The value-added portion of land in the secondary market is mainly captured by a few groups such as land buyers and real estate developers. Financial institutions that provide land financing also benefit from the related business. The situation stimulates people's incentive to invest in the housing market and pushes up land and housing prices further. The rise in urban housing price is mainly due to the rise in land price, which is backed by the increase in differential land rent mainly because of the improvement in surrounding public services such as education, transportation, and medical facilities. Such improvement results from government investment and has little relationship with the private sector. According to the theory of land rent, the increase in land rent due to such improvement should go to the government as a result. However, the lack of real estate tax makes the net benefit mostly go to homeowners. This exacerbates the wealth inequality within the household sector, because whether or not residents buy homes and how soon they do so affect the distribution of wealth.
- Third, the infrastructure investment boom in the urbanization process may suppress the supply of residential land. In the case of limited government debt, it

is probable that local governments may weigh in favor of industrial land supply but against that of commercial land, which then leads to higher monopoly land rents. In addition, China's regional land supply has favored the central and western parts of the country since 2003, and land constraints in the eastern region have intensified, pushing up the price of residential land there. In recent years, China has started to implement relevant reforms in coordinating land supply between regions, emphasizing market-based supply of industrial land, and raising the proportion of residential land supply.

- Fourth, the strengthening connections between real estate enterprises and banks have created a financial "binge" for some real estate enterprises, giving rise to significant financial risk. China's new homes are normally sold for future delivery. Developers therefore operate with high leverage, high turnover, and high profitability, which has not only boosted land prices but also increased risks. Developers also participate in bank operations, which is a problem particularly prominent at municipal commercial banks. In addition to being a major shareholder of banks, some real estate enterprises also issue wealth management products. As the government offers explicit guarantees for banks, the close connections between banks and real estate companies means that the latter also have de facto access to the government's financial safety net. This may further enhance their unfair competitive advantage over other industries by allowing them to leverage up much more aggressively than other industries until they are "too big to fail".

If the problem of unreasonable distribution of land rent is solved, the features of land as a financial asset should be reduced and a real estate tax should be imposed. If the proceeds from the sale of land use rights is viewed as a tax, the regressive nature of the entire tax system may deepen further and worsen social wealth inequality when urban residential land prices continue to rise. The government efforts to tax the real estate are not sufficient now (Fig. 3.3). The tax should reduce local governments' reliance on land proceeds and enable the government to gain a major portion of land appreciation brought through public service provision. The government can redistribute the tax to alleviate the uneven wealth distribution. In addition, it is necessary to build a unified land market in urban and rural areas; to focus on the reasonable distribution of land appreciation income among the government, collectives, and farmers; and to explore more ways for farmers to continuously benefit from economic and social development with their land equity.



Note: Chinese government collects land rent from: 1) Sale of land-use rights; 2) tax on land transaction including value-added tax, contract tax, farmland use tax; 3) tax on land possession including property tax (mainly on business properties), urban land utilization tax. tax.

Fig. 3.3 Most of Chinese government's land rents are derived from land transactions. *Note* Chinese government collects land rent from: (1) Sale of land-use rights; (2) tax on land transaction including value-added tax, contract tax, farmland use tax; (3) tax on land possession including property tax (mainly on business properties), urban land utilization tax. *Source* Wind, CICC Research

3.2 Housing Market: Imbalanced Resource Distribution and an Imperative Need to Restore the Status of Housing as a Consumer Product

3.2.1 Major Problems in China's Housing Market

3.2.1.1 Imbalance in Housing Distribution

Housing is an essential consumer product. Excessive increase in housing price has led to a continued erosion of affordability of housing. New residents, young people, and other groups in large cities face difficulties in solving the problem in a market-based way, whereas the older generation occupies more properties. Rising housing prices have led to a growing imbalance and widened the gap between urban and rural residents' housing assets, with urban residents enjoying much more housing value per capita than their rural peers in 2019,[4] according to our calculation. The distribution of housing resources is the most important indicator of housing inequality, as measured by the 2017 China Household Financial Survey (CHFS),[5] which shows that:

[4] The per capita value of properties owned by urban and rural residents in 2019 was Rmb370,000 and Rmb59,000, respectively.

[5] This comprises three major databases on Chinese households, small and micro enterprises, and urban and rural community governance. The fourth-round survey samples in 2017 covers 29 provinces, 355 counties, and 1428 village across China, with a sample size of 40,011 households.

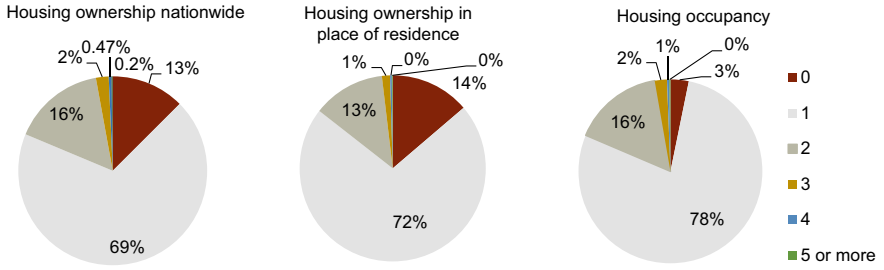


Fig. 3.4 More than 10% of households own no housing; about 20% own at least two homes. *Source* 2017 CHFS, CICC Research

- The imbalance seems to be low in terms of the number of housing units. In terms of the number of units owned by urban households within the country's towns (Fig. 3.4), 13% of urban households do not own a housing unit, 69% own one, and 18% own two or more. The average ratio of the number of housing units to the number of households is 1.10 (similar to that of mature markets overseas) and the Gini coefficient of the number of units is 0.27, indicating fairly balanced distribution. If we only count the housing in towns and cities where people currently live (not considering their housing in other towns and cities), the concentration of distribution would rise, with about 16% owning no housing unit, 66% owning one, and 18% owning two or more. The average ratio of the number of housing units to the number of households would be 1.03, indicating a slight supply shortage based on the experience of mature markets that tend to see relatively stable housing prices with a reasonable vacancy rate of 10–15%.
- The distribution of housing area and value is more uneven. The Gini coefficients for the floor area, market value, and disposable income of households are 0.48, 0.72, and 0.54, respectively, with the wealthiest 10% of households owning one-third of the total housing floor area and 40% of the total household income, and the bottom 50% owning only about 20% of the floor area and market value, as well as 20% of the total income.
- The possession of housing resources (and purchase leverage) is highly correlated with income level. Because housing price kept rising in the past decade and there is no real estate tax, housing has become an important means of investment for high-income households. "Buy-to-let" and hoarding of housing resources have led to a continuous pooling of housing resources to high-income households. We measured the housing resource possession of households in different income groups in 2017, and found out that the top 1% and 10% wealthiest households owned 3.1 and 2.2 housing units on average (Fig. 3.5). In terms of level of leverage, the bottom 20% of households have a borrowing balance equivalent to 46% of the total housing value, while the percentage for the highest 20% income group is 14%. Debt repayment pressure is also significantly negatively correlated with income level, with the ratio of borrowing balance to average disposable income

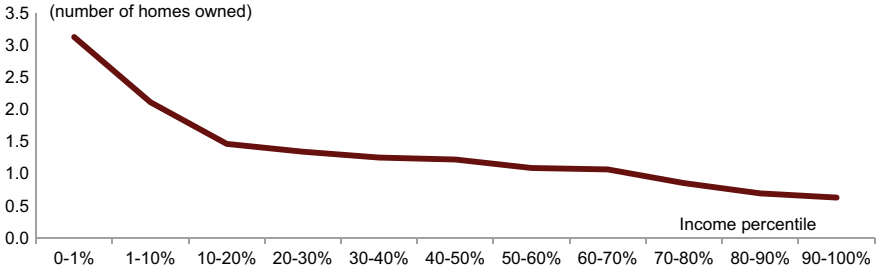


Fig. 3.5 High-income households own more homes than low-income ones. *Source* 2017 CHFS, CICC Research

standing at 4.5 times and 1.5 times for the lowest and highest income groups, respectively.

3.2.1.2 Difficulty in Meeting Demand for Rental Housing

Demand for rental housing in China's major cities is strong, but the market is unable provide high-quality and stable supply of rental housing. According to our estimation, by the end of 2021, the number of urban renters exceeded 200 mn people, concentrated in the eastern coastal city clusters and regional hub cities. The concentration rates of the top 10, 30, and 50 biggest cities were 31%, 49%, and 59%, respectively. However, from the supply side, the market and supporting system are relatively underdeveloped, which makes it more difficult for new residents, young people, and other groups to find a place to live in big cities.

- The living environment is crowded, and the quality of old housing is declining. The total housing supply is insufficient, which makes it difficult for renters to live in a decent way. According to the 2015 statistical census data and our estimation, the per capita living area of urban rental households is less than 27 m^2, only 60% of that of home-owning households (Fig. 3.6). In cities where the demand for rental housing is strong, the difference in living environment between renters and owners is even greater. Moreover, the existing housing stock is old and lacks living facilities, and tend to be of poor quality. The average age of rental housing in tier-1 and new tier-1 cities is 18 and 12 years, and the proportion of houses built before 2000 is over 40%. About 30% of the housing rented by migrant workers lack basic living facilities such as refrigerators, washing machines, and independent toilets (Fig. 3.7).
- Second, the rights and interests of tenants are not effectively protected. Influenced by supply and demand, the rental housing market shows certain characteristics of a seller's market. Tenants generally lack bargaining power and bear many risks of breach of contract, and violations of rights and interests occur frequently, typically including arbitrary rent increases, early termination of contracts, non-refundable or less refundable deposits after expiration of contracts, and lack of repair and

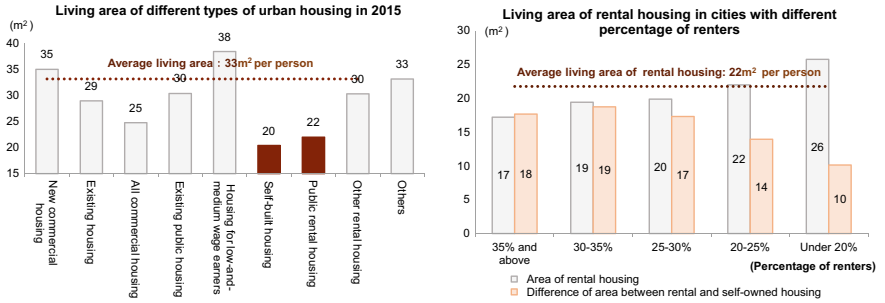


Fig. 3.6 Rental housing is usually crowed, especially in cities with a higher percentage of renters. *Source* National Bureau of Statistics, CICC Research

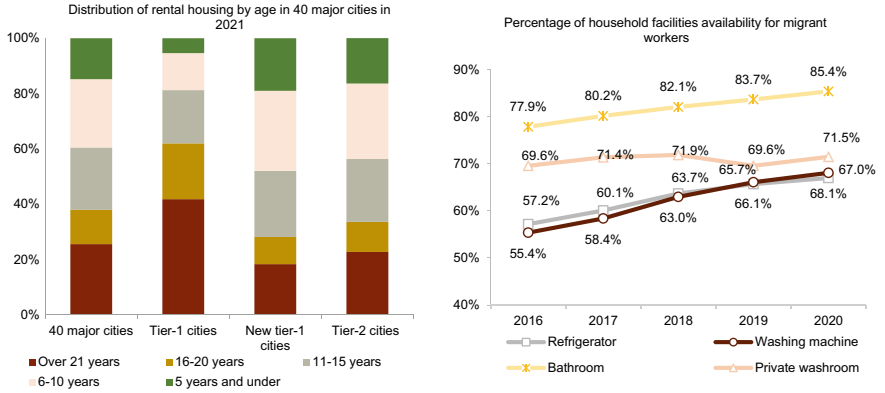


Fig. 3.7 Rental housing is usually old and lacks household facilities. *Source* BeiKe Holdings, National Bureau of Statistics, CICC Research

maintenance services for indoor facilities. Therefore, it is difficult for renters to live comfortably and sustainably. According to statistics from the Anjuke Research Institute, about 40% of tenant groups experienced infringement incidents in 2020.

- Third, renters do not have the same access to social public services as homeowners. The price of housing not only includes the value of residential use, but also involves the capitalization of access to education, medical care, and other public services. The household registration system is linked to social public resources, resulting in most renters not enjoying the same public services as homeowners (i.e., "different rights for the same residence"), and problems relating to their children's education, and their basic medical care and social security are more prominent.

3.2.1.3 The Quality of Old Housing Is Deteriorating

With the decline in basic functions (including residence, employment, consumption, etc.), areas that developed decades ago may have difficulty in meeting the daily work and living requirements of local residents. According to a Ministry of Housing and Construction announcement, in 2020, the country had approximately 170,000 old districts to be renovated, with a total construction area of approximately 4bn sqm, involving 42 mn households.[6] According to the small-scale census data from the National Bureau of Statistics, in 2015, it was estimated that about 50% of the urban housing stock was built before 2000, dominated by residents' self-built properties and public housing. Considering the scale of new housing supply and demolition of old housing in recent years, the stock of housing aged over 20 years accounted for 30% of the total area (8–10 bn sqm) by the end of 2021, of which "old villages", "old factories", and "old commercial districts" occupied at least 3–4bn square meters, involving 30–40 mn households.

There are hidden dangers in old houses and incomplete housing facilities. On the one hand, due to the low construction standard, unreasonable design, low quality of some construction materials, and the lack of professional property management services, some of the older housing stock has been exposed to quality and safety hazards, such as aging of pipelines and settlement of the main structure. On the other hand, since urban construction is carried out in neighborhoods, the problem of old cities is not only a decline in the quality of housing in individual neighborhoods, but also an overall decline in the basic functions of the neighborhoods in which they are located, such as deterioration of the living environment, damage to municipal facilities, abandonment of factories and shopping streets, and relocation of public facilities (such as education and medical care), which reduces the livability of the neighborhoods.

Moreover, older communities tend not to be age-friendly. At the individual home level, there are many indoor thresholds, poor air circulation, and a lack of facilities to help the elderly; at the community level, there are a shortage of elevators installed, obstacles in the front space of the building (such as floor locks and flying wires), and a lack of home care and community dining services for single elderly or physically disabled elderly.

3.2.1.4 Relative Lag in Development of Housing Finance

China's real estate financial system emerged simultaneously with the housing market reform. Development loans and mortgage loans were created to solve the problem of insufficient housing supply and affordability. However, the level of financial services and the variety of financial products today have yet to improve. The problem of the relatively lagging development of the housing financial system is reflected on both the supply and demand sides of the market.

[6] People's Daily Overseas Edition [2].

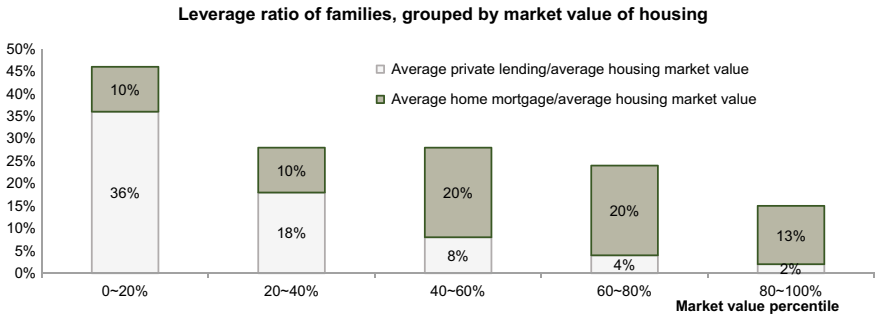


Fig. 3.8 Households with low housing asset value tend to purchase housing with more private lending, and thus bear a higher leverage ratio. *Source* 2017 CHFS, CICC Research

From the demand side, low- and middle-income households lack financial support to buy homes. To guard against financial risk, the down payment threshold for mortgage loans is high, with an average actual down payment ratio of 50–60% because of limited mortgage quotas. Middle and low-middle income households need to turn to private lending, which involve higher cost and risk, while high-income households are more advantaged. The situation exacerbates the uneven distribution of housing resources. According to our calculation, among all of the households that borrow to purchase housing, over 70% of the households holding the 0–20% and 20–40% percentile of the home market value in 2017 have sought private lending, creating leverage of 36% and 18%, respectively. In contrast, only 19% of the highest percentile group (80–100%) have used private lending, corresponding to leverage of about 2% (Fig. 3.8).

From the supply side, the fiscal support for housing finance is insufficient, while corporate financing of developers relies more on debt than equity. Low-income housing is the main category in the supply system for serving low- and middle-income families. At present, the policy-based housing finance system for the investment and financing of low-income housing remains weak. In addition, real estate enterprises are increasingly reliant on debt financing because of limited access to equity financing. The business model of borrowing money with short maturity for medium- and long-term investment has led to the high debt, high leverage, and high turnover for real estate companies. This has also increased their vulnerability to the industry slowdown and increased debt pressure.

3.2.2 Restoring the Attribute of Housing as a Consumer Product

3.2.2.1 Building a Stratified Supply Ladder of Housing Products

The current situation of housing inequality reflects, to a large extent, the contradiction between diversified demand and a supply structure dominated by developer-built housing. While bridging the gap between supply and demand, efforts should be made to deepen the reform of the housing supply structure, realize sufficient stratification on the supply side to build a ladder of housing products, and guarantee the basic rights of residents to live decently.

Two aspects are worthy of attention. First, focusing on the development of a multi-level and continuous housing supply system. The multi-level property supply is reflected in two dimensions. The first is the balanced development of rental and for-sale housing sub-markets, and the second is a balance between market-oriented and low-income products. The continuous housing supply reflects that housing products, whether for rent or sale, should be abundant enough to realize the transition from pure low-income housing supply to pure market-oriented housing supply. Second, a fully stratified supply system must meet the housing needs of different individuals during their life-cycles. From a static perspective, the supply system should be able to meet the reasonable needs of households with different affordability levels and preferences for renting and purchasing homes. More importantly, from a dynamic perspective, as their consumption power increases, people can independently choose different upgrade patterns of housing products.

3.2.2.2 Establishing a Real Estate Tax System

Real estate tax is prevalent in major developed countries, and provides a source of fiscal revenue and helps curb housing speculation too. Solving the land and housing problems in China entails a tax system targeting housing possession, which is important for the long-term development of the housing market. Taxes on housing possession mainly include real estate tax, vacancy tax, and inheritance tax, among which real estate tax is the most common, the most discussed, and the least controversial in economics. It can improve the structure of housing possession and realize the secondary distribution of wealth.

Real estate tax can also help promote the reform of local governments' fiscal system and reduce their dependence on land finance. As the focus of China's urban development gradually shifts from green-field development to long-term renewal and maintenance, it is difficult for local governments to maintain their finance through large-scale transfer of land use rights. Taxes on real estate ownership, which are difficult to hide, are counter-cyclical, and have a large tax base, may become a reliable source of revenue for local governments and promote the reform of the fiscal system that reduces the dependence on land finance. In addition, the standardization of real

estate tax collection and management may facilitate the functional transformation of local governments. They may invest more resources in improving public services and maintaining infrastructure in order to obtain a sufficient tax base, and the positive feedback from real estate tax to public expenditure and then to population migration will reward city governments with superior management capabilities. The concern is that this may aggravate the financial and economic disparities among different regions, and it remains to be explored whether or not to establish a mechanism for the redistribution of real estate tax among them to reduce disparities.

3.2.2.3 Developing the Rental Housing Market and Strengthening Legal Protection

The shortage of rental housing supply in large cities is essentially a problem of the housing supply structure amid the total shortage of housing supply. The supply channels of rental housing include individual rentals, informal housing (such as urban villages and work sheds), business-run apartments, and government-provided housing. More than 80% of the current supply relies on the transfer of unused housing resources. This structure creates a "trickle-down effect", i.e., families may satisfy their own needs before releasing housing of poor quality and location to the rental market, which may amplify the problem of insufficient rental supply in large cities. Continuous expansion of the rental housing market is the key direction of China's housing policy, which focuses on adjusting the housing supply structure while supplementing the supply.

From a long-term perspective, protecting the rights and interests of tenants is as important as supplementing supply, which is a key aspect affecting the development of the rental housing market. In order to offer affordable and stable housing for tenants, it is necessary to adjust the relationship between the rights and obligations of the parties concerned through special legislation and protect the rights and interests of tenants sufficiently.

3.2.2.4 Accelerating Sustainable Urban Renewal

A long cycle of urban renewal, high financial pressure, and the difficulty in aligning the interests of different parties are the main challenges faced by urban renewal work, but there are still successful cases of urban renewal and renovation. The UK government established a special fund to support urban renewal in 2001, and regularly injects capital into the fund through the fiscal budget. According to the profitability of the projects and the need to implement the projects, the fund provides full subsidies, low-interest loans, and equity investment to attract social capital. At the same time, a multi-party partnership model involving community residents, social capital, and the public sector has been established, and the degree of participation of residents and the degree of public–private partnership are important selection indicators to consider at the bidding stage.

In order to accelerate the promotion of urban renewal and renovation, we believe it is necessary to pay attention to asset-light operation and accelerate the cultivation of large-scale operators by reducing taxes and fees and providing renovation subsidies. It is also necessary to emphasize the role of industrial development in promoting urban renewal, to pay attention to restoring the original employment function of industrial development, and to bring into play the industrial promotion ability of urban renewal enterprises, in our view.

3.2.2.5 Improving the Policy-Based Housing Finance System

We believe that while promoting the stratification of the housing supply structure, a multi-level finance system should be established to meet the reasonable demand of households with different income levels. China's housing finance framework should be a multi-level system that combines open commercial finance and closed policy-based finance. The former should be the main channel, with the latter serving as a supplement.

To sum up, solving problems in the real estate market to promote common prosperity is essentially a process of exploring a new development model for the real estate market. The key is to curb excessive financialization and to restore the status of housing as an essential consumer product. Potential solutions include rationalizing the land pricing mechanism, implementing real estate tax, building a ladder of housing products, and promoting the reform of the financial sector. In order to fundamentally reverse the excessive financialization of real estate, it is necessary to resolutely curb investment and speculative demand and to push ahead on supply-side reforms which include de-financializing the land market and accelerating the implementation of real estate tax. Moreover, the real estate market is facing the challenge of resolving the debt risk accumulated from excessive financialization. We need to find effective ways to accelerate the resolution of the debt problems of real estate enterprises and urban investment companies.

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Chapter 4
Balancing Regional Development and Carbon Emission Constraints

Abstract In the next 40 years, China will need to achieve high-quality development under carbon emission constraints. Among the critical challenges China needs to face is the potential for increased imbalances in regional development. This chapter seeks to answer three questions. First, will carbon emission constraints aggravate the imbalance in China's regional development? Since the 11th Five-Year Plan period (2006–2010), the government has promoted energy conservation and emission reduction through control of energy consumption and intensity. Under energy conservation and emission reduction policies, the gap in GDP per capita between high-carbon, more-developed and low-carbon, less-developed regions has widened to a certain extent. In the future, will the imbalance in regional development intensify as carbon constraints grow? We conducted multi-scenario analysis using a computable general equilibrium (CGE) model, and the findings show that if carbon neutrality is promoted by prioritizing efficiency of emissions reduction, then regional development imbalances may be the exacerbated, creating significant challenges to high-quality development. Second, why do carbon emission constraints exacerbate imbalances in regional development? Answering this question requires an understanding of who bears the major cost of emissions reduction. High-energy-consuming industries in the midstream of the industry chain may bear the highest abatement costs due to their limited bargaining power over the upstream energy sector and downstream consumption sector. High-energy-consuming industries bear more abatement costs at this stage due to their own transformation and upgrading demand and lower marginal abatement costs compared to other industries. As economic development in less-developed regions is more dependent on these industries, the uniform imposition of carbon emission constraints will exacerbate imbalances in regional development. Third, how can imbalances in regional development be eliminated? On one hand, through "dual control" of carbon emission, a carbon market and carbon tax policies, the costs of emission reduction can be more reasonably shared and more equity issues can be considered while pursuing efficiency. On the other hand, a compensation mechanism could smooth the transition and support less-developed, high-carbon regions through transfer payments and transition finance tools. We compared various policy scenarios

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using the CGE model, and conclude that in the process of achieving carbon neutrality, dual control of carbon emission, will play a major role in sharing the responsibilities of emission reduction more equitably; that transfer payments are the most effective means to eliminate regional disparities; and dynamically determining the inflow of transfer funds according to the progress of the transition will reduce the decline of national GDP and eliminate imbalances in regional development. Transition finance can also promote equity in regional development at the cost of a potential decline in GDP.

Common prosperity and carbon neutrality are major national strategies that will affect China's development. This chapter asks the following questions: Does carbon neutrality further widen the regional development gap and why? How might China build an effective policy system to eliminate imbalances in regional development given the carbon emission constraints?

Our answers to these questions are four-fold. First, through analysis of the current situation, we argue that the cost of emissions reduction varies greatly among China's province-level regions, and the pursuit of efficient emission reduction alone will bring inequality, and that achieving carbon neutrality may lead to a wider regional development gap. The second section explores the issue of cost allocation for carbon reduction from the perspective of industry cost transmission, and digs into the deeper reasons why carbon emission constraints exacerbate regional imbalance. The third section proposes that in order to prevent carbon emission constraints from exacerbating regional imbalances, it is necessary to establish a policy system for reasonable emission reduction cost sharing and fair compensation transformation. Finally, the CGE model is used to construct different emission reduction scenarios and pathways, and we discuss the policy roles of each stage in emission reduction.

4.1 High-Quality Development Under Carbon Emission Constraints: Focusing on the Imbalance in Regional Development

4.1.1 Abatement Costs Vary Greatly Among Chinese Province-Level Regions; Pursuit of Efficiency Alone Will Bring Challenges to Fairness

The greenhouse effect generated by carbon emission affects every country on the planet. Although the abatement cost of carbon emission subjects varies among regions, industries, and periods, the unit abatement effect is the same. This means that the most efficient solution for emissions reduction is to let emitters with low abatement costs take on more responsibility for abatement and as far as possible until

regions with high abatement costs reach their targets. The total cost is minimized when the marginal abatement costs of each subject is equal.[1]

The cost of emission reduction is closely related to the level of economic development. Using panel data for 165 countries worldwide for 2000–2014, Liu and Feng found that the marginal cost of emissions reduction is generally highest in developed countries.[2] The Intergovernmental Panel on Climate Change (IPCC) and OECD studies conclude that the cost of emission reduction in less developed regions is usually lower than in developed regions.[3] There are four main reasons. Firstly, that energy use in less developed regions is often lower and economic cost is higher in developed regions because the technology is more advanced and there is less room to reduce carbon emission or reduce production activities. Less developed regions tend to have less advanced technology and are less efficient energy users. They can achieve synergy between efficiency and increased production, while developed regions have higher technology levels and less room to further reduce carbon emission, or they even need to reduce production activities, which is more economically costly.[4] Secondly, there is a scale effect in reducing carbon emission; the higher the level or intensity of carbon emission, the more room for emission reduction and the smaller the marginal cost of emission reduction.[5] Thirdly, less developed regions tend to have a higher share of fossil energy consumption, and the cost of emission reduction through energy substitution is low. Developed regions have a higher share of clean energy consumption, and further emission reduction may require an adjustment to output.[6] Finally, less developed regions have a higher share of secondary production, while developed regions have a higher share of tertiary production, and the former has a relatively lower cost of emission reduction.[7]

There are differences in economic development, industrial systems, and energy structures between China's province-level regions, and carbon emission vary among the regions. In 2019, the difference between the Ningxia Hui Autonomous Region, the region with the highest carbon emission intensity in China, and the Tibet Autonomous Region, the lowest, was 120 times. Ningxia's carbon emission is about 20 times that of developed low-carbon regions such as the municipalities of Beijing and Shanghai.[8] Differences in economic development cause greater differences in abatement costs between regions, with research suggesting that marginal abatement costs are low and are rising relatively slowly in regions with low levels of economic development such as Ningxia, Xinjiang, Liaoning, Inner Mongolia, and Shanxi, while marginal abatement costs are higher and rising faster in Beijing, Tianjin, Guangdong, and Henan. In

[1] IPCC [6].

[2] Liu and Feng [7].

[3] OECD [10].

[4] Liu et al. [8].

[5] Tu [12].

[6] Auffhammer and Carson [1].

[7] Xue et al. [15].

[8] National Bureau of Statistics of China [9].

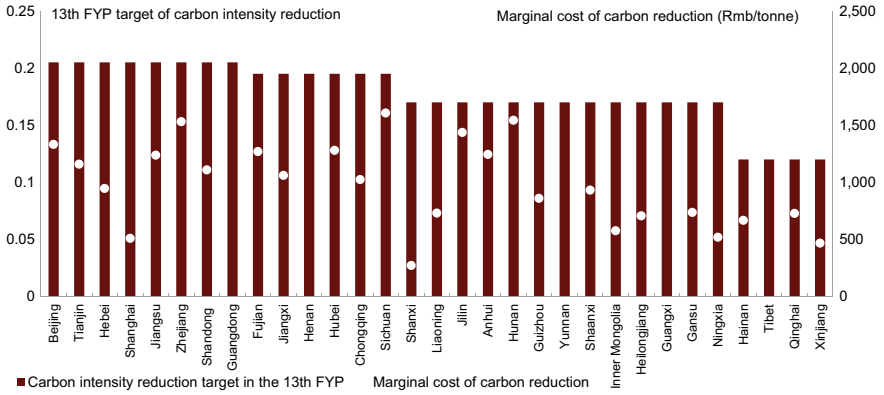

Fig. 4.1 A comparison of carbon intensity reduction targets and emission reduction costs by region in the 13th Five-Year Plan. *Source* State Council, *13th Five-Year Plan for Controlling Greenhouse Gas Emissions.* Zhao Qiaozhi and Yan Qingyou, *Spatial evolution trajectory of marginal CO_2 abatement costs in Chinese provinces* Statistics and Decision Making, Vol. 14, 2019. CICC Global Institute

the efficiency of emission reduction-first scenario, regions with low marginal abatement costs will be first to act, and their marginal abatement costs will rise with the amount of abatement until they reach the level of regions with high abatement costs. Before abatement costs are caught up, regions with high marginal abatement costs are less constrained by carbon abatement and may increase their emissions and production at early stages of abatement due to higher output per unit of carbon emission. The uneven responsibility for emission reduction will exacerbate the regional development gap, to a certain extent.

In fact, from the very beginning of its energy conservation and emission reduction policy, China has incorporated considerations relating to regional equity. Since 2006, the government has updated its provincial energy consumption intensity reduction or carbon emission intensity reduction targets every five years. The targets are set by considering the "development stage, resource endowment, strategic positioning, ecological and environmental protection" of each province-level region, and the energy consumption intensity and carbon intensity reduction targets of 31 administrative regions are graded. Comparing regional emissions reduction targets for the 13th Five-Year Plan (FYP) period with the marginal emission reduction costs of each region,[9] it is clear that the responsibility sharing scheme does not make efficiency the primary consideration, which influences regions with lower emissions reduction costs to further reduce emission. Currently, the policy allows regions with higher emission reduction costs but stronger economic capacity to take on more emission reduction responsibilities, reflecting a degree of equity (Fig. 4.1).

However, the equity considerations of the current policy have not reversed the trend of greater negative impacts on high-carbon, less developed regions. Our

[9] Zhao and Yan [18].

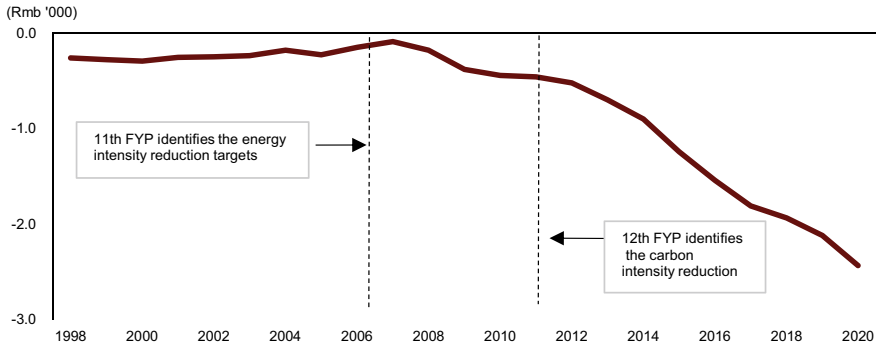

Fig. 4.2 Gap in GDP per capita between high-carbon, less developed regions and less developed regions in China (1998–2020). *Note* Based on 2004 carbon emission intensity and GDP per capita, province-level regions are divided into developed, high-carbon less developed and less developed regions. High-carbon less developed regions include Shanxi, Anhui, Henan, Sichuan, Guizhou, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang, while less developed regions include Jiangxi, Hunan, Guangxi, Hainan, Chongqing, Yunnan, and Tibet; GDP at constant 1998 prices. *Source* China Statistical Yearbook, Carbon Emission Accounts & Datasets (CEADs), CICC Global Institute

comparative analysis of GDP per capita in high-carbon and low-carbon less developed regions finds that since the implementation of energy and carbon emission control policies, the gap between GDP per capita in high-carbon less developed regions and less developed regions has started to widen, which shows that energy constraints and carbon emission constraints still exacerbate the uneven development between regions (Fig. 4.2).

4.1.2 The Carbon Constraint Will Become Tight Under the Carbon Neutral Strategy, and the Problem of Unbalanced Regional Economic Development May Intensify

Looking ahead, will imbalances in regional development continue to intensify as China's carbon emission constraints strengthen? We conducted multi-scenario analysis using a CGE model. The results show that if carbon neutrality is promoted by prioritizing efficiency of emission reduction, it may bring serious regional development imbalances to China and pose a great challenge to high-quality development.

In our baseline scenario, we assume higher future growth rates in regions with lower GDP per capita and a gradual reduction in the gap between less developed and developed regions. The Gini coefficient of the province-level regions' GDP per capita gradually decreases from 0.19 in 2020 to 0.08 in 2060. However, due to the absence of carbon emission controls, carbon emission will not reach the peak of

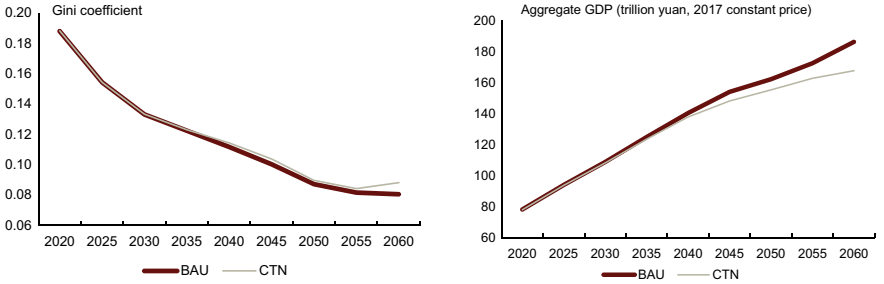

Fig. 4.3 Simulation of Gini coefficient of GDP per capita and total GDP under our baseline scenario and the optimal efficiency scenario of emission reduction. *Note* BAU (business as usual) indicates the no carbon reduction development scenario and CTN (carbon trading national) is the carbon reduction efficiency first scenario. *Source* CICC Global Institute

13.3bn tonnes until around 2040, after which they slowly decrease to 12.5bn tonnes in 2060, which is higher than the current level. Compared with our baseline scenario, our optimal efficiency scenario leads to uneven development across regions, and the degree of unevenness is more pronounced after the rapid reduction phase in 2030.

Specifically, the Gini coefficient of GDP per capita under our optimal efficiency scenario is consistently higher than that of our baseline scenario, implying more inequitable regional economic development and more pronounced inequality in development in terms of per-capita income and per-capita consumption. In addition, we expect carbon emission constraints to reduce China's GDP by 1% in 2030 and 10% in 2060 under our optimal efficiency scenario compared to our baseline scenario (Fig. 4.3).

By region, the decline in GDP per capita is greater in less developed province-level regions than in developed province-level regions under our optimal efficiency scenario, implying that the pursuit of efficiency in emission reduction alone will result in more severe negative impacts on development in less developed regions. Specifically, compared to our baseline scenario, less developed regions such as Tibet, Yunnan, Henan, and Jiangxi have larger declines in GDP per capita in 2060 in our optimal efficiency scenario, generally exceeding 15%, while more developed regions such as Shanghai, Guangdong, and Zhejiang have smaller declines in GDP per capita that do not exceed 1% (Fig. 4.4).

4.2 Carbon Emission Constraints Exacerbate Regional Imbalances: Who Is Bearing the Cost of Abatement?

From the above analysis, it is clear that China's less developed regions, with their heavy industrial structure, high carbon intensity, and low marginal abatement costs, may need to bear more responsibility for emission reduction. However, it is important to note that most of the energy-intensive industrial products produced in these less

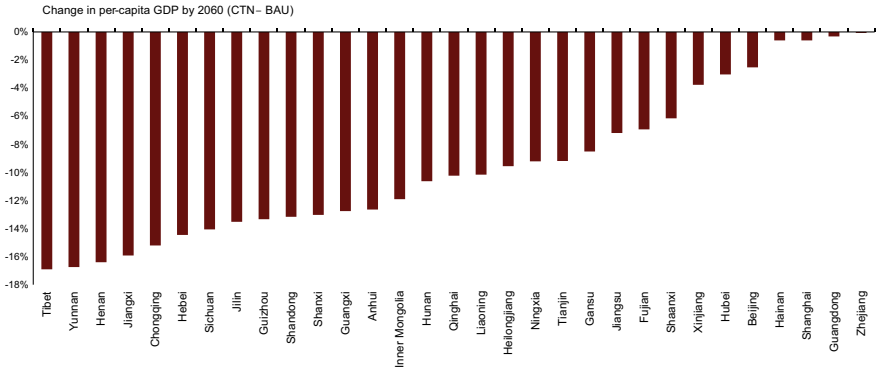

Fig. 4.4 Simulated difference of decline in GDP per capita between the baseline and optimal efficiency scenarios. *Source* CICC Global Institute

developed regions are not for local consumption but are sold to more developed regions or exported abroad. Can the costs of reducing the emission of the production process be passed onto the end-consumer? We explore which industries and regions will carry more of the costs of emission reduction from the perspective of industry chain cost transmission.

4.2.1 China's High-Energy-Consuming Industries Have Weak Cost Pass-through Capabilities, and They May Bear Most of the Cost of Emission Reduction

Generally speaking, the cost of carbon emission reduction is first shared by the production side and then passed to the downstream consumption side. Some supply chains have insufficient pass-through capacity, which may result in uneven cost sharing. Therefore, the initial sharing of emission reduction responsibilities and the cost pass-through capacity of the industry chain will affect the final distribution of carbon reduction costs.

The ability of an industry to pass on costs mainly depends on factors such as market supply and demand, industry concentration, and government price controls. When industry concentration is high and supply is tight, the bargaining power to the downstream is higher. Focusing on high-carbon industries, energy sectors such as coal, oil, and electricity are in the upstream of the industrial chain, while energy-intensive industrial sectors such as chemicals, iron and steel, non-ferrous metals, and building materials are mostly in the midstream. We measured the cost transmission capacity index of each industry during 2016–2019 with reference to the analysis framework of Wu et al. [14],[10] and find that the cost pass-through capacity of coal

[10] Wu et al. [14].

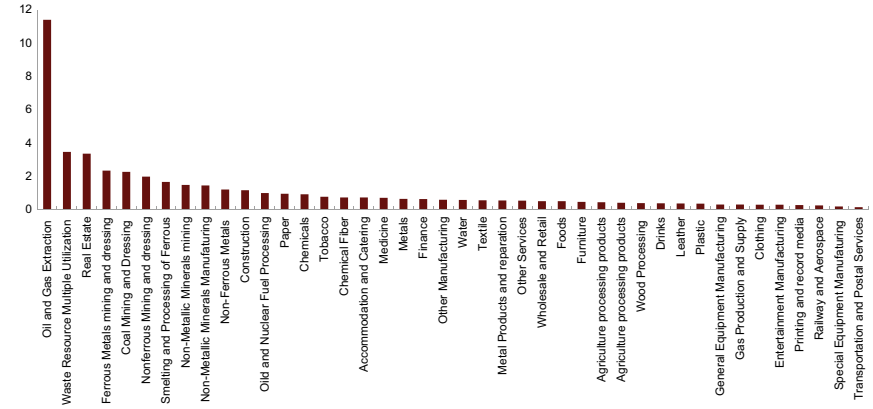

Fig. 4.5 Cost conductivity index by industry for the period 2016–2019. *Note* Cost pass-through capacity is the downward transmission capacity of costs, measured by the price increase/cost increase in a certain period of time. *Source* 2018 Annual China Input–Output Tables, National Bureau of Statistics, CICC Global Institute

and oil mining industries in the upstream is substantially higher than that of the midstream energy-intensive industrial sectors (Fig. 4.5).

The upstream energy sector has a relatively smooth cost pass-through to the midstream industrial sector. Looking at the power industry as an example, in terms of supply and demand, power has been in "tight balance" in recent years. This is because, on one hand, the vast majority of renewable energy in the clean transition needs to be used by the end-user as electricity, instead of electricity generated from fossil fuels, and these alternative scenarios continue to push up power demand. On the other hand, data centers, 5G-base stations, and other new areas of high-power consumption have emerged, meaning that the power consumption elasticity coefficient has rebounded in recent years, reflecting increased reliance on electricity for economic growth. In terms of industry concentration, China's two major power grid companies cover most of the country's electricity supply, making the industry highly concentrated. In terms of price diversion, as market-oriented reforms in the energy sector such as for electricity and oil and gas are advanced, the pass-through of energy prices to the middle and lower reaches will be smoother, which will facilitate the pass-through of more carbon emission reduction costs in the energy sector to the middle and lower reaches.

The midstream industrial sector has weak cost pass-through capability and will face carbon reduction costs. Considering China's current industrial structure and economic development, it is difficult for midstream energy-consuming industries to pass on costs to the downstream consumption side. In the steel and cement industries, as the peak of urbanization and industrialization has passed, the demand for crude steel, cement, and other building materials is low, and the capacity utilization rate of cement went much less in recent years, reflecting obvious excess capacity. At the

same time, cement, steel, and other products face competition in import and export trade, and with excess capacity, the capacity to transfer cost to the downstream is even lower, facing the dilemma of squeezed profits. In other words, although the carbon cost is initially imposed on the production side, theoretically, it can be transferred to the consumption side through the industrial chain. However, under the current industrial structure and supply and demand environment, a large amount of carbon cost will be silted up in the midstream of energy-consuming supply chains.

4.2.2 High-Carbon Industries Should Bear More Abatement Costs, but the Distribution Is Unequal

Freely passing on carbon cost will accelerate the transformation and upgrading of high-energy-consuming industries, which are seeing sluggish growth. It is foreseeable that under the dual control of energy consumption (through a trading market and carbon tax), higher electricity costs, the approaching launch of a carbon market, and other emission reduction pressures, high-energy-consuming industries will accelerate the elimination of excess capacity and inefficient technologies, and will enhance industrial concentration.

Leading enterprises compete for internal advantages in their industries by reducing energy consumption and technology upgrades, which leads to higher profit margins. Middle-tier enterprises will face a more serious squeeze from both upstream and downstream, and carbon emission constraints may be implemented to cut down outputs, reduce emissions, and purchase carbon quotas, among other measures, resulting in reduced profit margins. Enterprises at the tail-end of industry because of the outdated capacity will be forced out. This is in line with the dual logic of industrial optimization and upgrading and promoting carbon emission reduction.

Differences in the supply and demand environment and the pattern of competition of each industry cause uneven carbon cost pass-through from the upstream to downstream of the industrial chain, while differences in industrial structure of different regions will cause uneven sharing of carbon reduction costs among regions. In terms of absolute amounts, regions with high added value from high energy-consuming manufacturing industries, such as Shandong, Jiangsu, and Guangdong, will bear higher carbon reduction costs. Meanwhile, in terms of capacity to bear costs, Hebei, Ningxia, Jiangxi, Henan, and Shandong have high added value from high energy-consuming manufacturing industries as a proportion of regional GDP and are less able to cover any cost (Fig. 4.6). Therefore, it is necessary to consider the absolute amount of costs borne and affordability, among other factors.

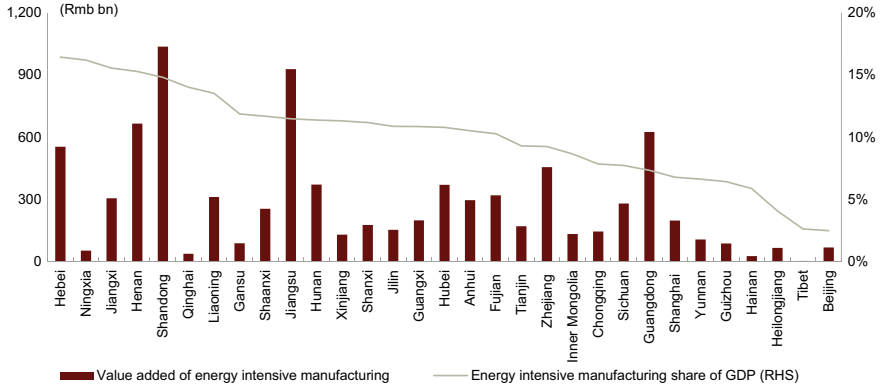

Fig. 4.6 Value added by high energy-consuming manufacturing industries by region and share of regional GDP. *Source* China Carbon Accounting Database, CICC Global Institute

4.3 Building an Effective Policy System: Reasonable Sharing of Costs and Fair Compensation for Green Transformation

Under the carbon constraints, high-energy-consuming industries bear most of the abatement costs, resulting in regions with more concentrated high-carbon industries bearing greater abatement costs, thus further aggravating the imbalance in regional development. However, from the perspective of efficiency, greater emission reductions in high-carbon industries are conducive to solving the problem of overcapacity and promoting technological innovation in existing capacity. From the dimension of marginal abatement costs, high energy-consuming industries that take on more emission reduction tasks can reduce overall abatement costs nationwide. Can a policy system effectively balance equity in inter-regional development and efficiency?

We believe that an effective policy system should include two aspects. First, reasonable distribution of costs. Considering that no policy can be considered completely reasonable, our analysis focuses on how to consider equity in the implementation of cost sharing policies. The second aspect is compensation for just transition, compared to reflecting equity through cost sharing policy tools. The policy tools of equitable compensation can play a greater role in mitigating or even avoiding the widening of regional disparities under the carbon emission constraints.

4.3.1 Reasonable Cost-Sharing Policy Tools

4.3.1.1 Dual Control Over Carbon Emission

The current dual control policy on carbon emissions benefits low-income and high-emission areas, to a certain extent, when allocating the responsibility for emission reduction to regions. In the future, the allocation of carbon emission reduction might be further optimized, and the carbon emission constraints on high-emission industries should be maintained. Moreover, more sectors should be allowed to bear a larger share of the cost of emission reduction. For example, the EU allocates carbon credits[11] to three sectors—power generation, energy-intensive industries, and others, mainly residential and transportation—and the sectors allocate carbon credits of their respective sectors among member states. The essential difference between China's and the EU's allocation of carbon emission rights is that China allocates carbon emission rights to the regions first, then the regions allocate the credit to the industry sectors (by giving them to large enterprises). The EU directly allocates carbon emission rights to the sectors, and the rights are then allocated within the sectors and finally, to localities.

In China, after being assigned targets to reduce management difficulties, the regions often further decompose the targets to large-scale enterprises with heavy energy consumption or carbon emission. For example, in 2011, the National Development and Reform Commission (NDRC) launched the Implementation Plan for the Energy Saving and Low Carbon Action of Ten Thousand Enterprises, which requires the participation of enterprises with an annual energy consumption of more than 10,000 tonnes of standard coal. These enterprises tend to be concentrated in a few high-energy-consuming industries. In China, the marginal cost of emission reduction in these industries is relatively low and the cost of supervision and management is also relatively low because the industries are large enterprises. Therefore, China's dual energy consumption control system, in practice, tends to allow large enterprises in high-energy-consuming industries to undertake emission reduction tasks.

4.3.1.2 Emissions Trading Market

The responsibility for carbon emission reduction is achieved through the initial allocation of carbon quotas. China launched a national carbon market in July 2021, starting with the power industry, with subsequent plans to include more high-carbon emission industries such as steel, construction materials, petrochemicals, non-ferrous metals, paper, and aviation. As more industries are included, the market will face the problem of rational allocation of carbon quotas among multiple industries. There are complex production relationships among different industries, and there are large

[11] The actual determination of carbon reduction targets varies in the specifics determined in different segments. For example, the power industry determines the growth rate of power generation. To facilitate readers' understanding, we unify the simplified expression as carbon emission rights.

differences in technology levels, emission reduction potential, and energy consumption intensity, among others. The distribution of emission reduction responsibilities among industries will have an impact on the balanced development, transformation, and upgrading of related industries. With reference to the operational experience of foreign carbon markets and the research of domestic and foreign academics, factors to be considered in sharing emission reduction responsibilities among industries mainly include efficiency, responsibility, capacity, and potential of emission reduction, as well as the impact on national or regional industrial structure and economic development.

Efficiency in emission reduction: If the "green premium", i.e., the premium in choosing zero carbon substitution over traditional technologies, is used as an indicator to characterize the cost of emission reduction in different industries, the cost of emissions reduction varies greatly. If efficiency is pursued, i.e., the total emission reduction cost of each industry is minimized, the non-ferrous and petrochemical industries, which have a lower green premium, need to take more responsibility for emission reduction. However, if quota allocation is based on this strategy, there is a risk of "whipping the lead cow," which punishes the best-performing sector and is not conducive to technological progress in other industries where emission reduction is more complex.

Responsibility for and capacity of emission reduction: Generally, the current level of carbon emission (or the cumulative amount of carbon emissions in a certain historical period) is used to characterize the level of responsibility for emission reduction of an industry, and the value added of the industry is used to measure its emission reduction capacity. In terms of responsibility, the EU's principle of free allocation of allowances takes into account cumulative emissions within a historical period, and industries with high historical emissions assume greater responsibility for reduction. In terms of capacity, if based on the principle of vertical equity, industries with higher output value, i.e., higher capacity, assume more responsibility for emission reductions and pay more economic costs. When apportioning responsibility, the responsibility and capacity of the industry can be taken into account, and the responsibility and capacity of industries with high emissions and high value added will be matched and will moderately increase the pressure from emission reduction.

Emission reduction potential: There are large differences in the potential for carbon intensity reductions in different industries. Some industries are close to the global, advanced level of energy intensity and face a technological ceiling, with little room for further reduction. Some industries see a large gap between domestic and global levels of energy intensity and, and have large potential for emission reduction. For industries with greater potential for emission reduction, quotas can be reduced accordingly to stimulate the adoption of existing advanced technologies for emission reductions and upgrading.

Industry synergy: In addition to factors such as efficiency in, responsibility for, and capacity for emission reduction, the impact of allocation of carbon allowance on the coordinated development of industry is an essential consideration. Looking at the

EU experience as an example, policymakers believed that the power sector was more efficient in reducing emissions and had a higher capacity to transfer carbon costs to end-users, and hence favored the industrial sector in the allocation of free allowances, which eventually led to an overburdened power sector and weaker incentive for the industrial sector to reduce emissions. Later, a "cross-industry correction factor" was added to dynamically adjust the allowance allocation mechanism based on changes in efficiency, responsibility, capacity, and trade in each industry.

4.3.1.3 Carbon Tax

Carbon taxes mainly adopt price interventions to guide the tax subject to optimize production and operation methods to reduce carbon emissions.[12] If the tax rate is too high, it will lead to an excessive cost burden on enterprises, which would in turn have a negative impact on their competitiveness and regional economic and social development. If the tax rate is too low, it may lead to an inability to complete the task of carbon emission reductions and a loss of efficiency. Considering the reality that the marginal cost of carbon emission reduction varies greatly across China, a question concerning the balance between equity and efficiency is, if China levies a carbon tax in the future, should the tax rate be set uniformly across the country or vary across regions?

A flat tax rate theoretically gives a uniform carbon price across the country, and regions with large total carbon emissions will bear more of the abatement costs. Compared with a differentiated tax rate, a uniform tax rate achieves a larger scale of emission reduction, i.e., greater efficiency of emission reduction. A differentiated tax rate can account for factors such as carbon emission, abatement costs, and tax capacity of different regions and industries, which is more feasible and focuses more on equity. At present, China's relatively mature environment-based tax system mainly reflects the idea of differentiated tax rate design. Environmental protection tax was formally introduced by the central government in January 2018 to delineate a uniform tax band and implement differentiated tax rates in each region (Table 4.1). The environmental protection tax fully reflects the characteristics of differentiated taxation, especially the large difference in tax between developed and less developed regions, which can effectively alleviate the problem of equitable development between regions due to taxation.

[12] Yao and Liu [16].

Table 4.1 Current status of environmental protection tax in China

Group	Province-level region	Tax level	
Low tax rate	Heilongjiang, Liaoning, Jilin, Zhejiang, Anhui, Fujian, Jiangxi, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang	The tax rates for air and water pollution are Rmb1.20 and Rmb1.40 per equivalent value	
Medium tax rate	Shanxi, Inner Mongolia, Shandong, Hubei, Hunan, Guangdong, Guangxi, Hainan, Chongqing, Sichuan, Guizhou, Yunnan	Rates for air pollution are Rmb1.80–6.00 per equivalent value	Rates for water pollution are Rmb2.10–3.50 per equivalent value
High tax rate	Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Henan	Rates for air pollution are Rmb4.80–12.00 per equivalent value	Rates for water pollution are Rmb4.80–14.00 per equivalent value

Source: Tang and Ming et al., Ministry of Ecology and Environment, CICC Global Institute

4.3.2 Policy Tools for Equitable Compensation for Green Transformation

4.3.2.1 Transfer of Payments

High-carbon industries subject to carbon[13] emission constraints will force the regions where they are located to face the substantial challenge of economic transformation. For regions that are highly dependent on high-carbon industries, this challenge will be reflected more notably in local fiscal revenues (Fig. 4.7). Looking at resource tax as an example, the share of resource tax revenue in local public finance was substantially higher in resource-dependent regions in 2020. Within some heavily resource-dependent regions, the ratio is more than 20%. In Shanxi province, which has the highest proportion of resource tax collection in China, the coal and coke industry's proportion of total tax revenue in 2020 peaked at 44.6%.[14] However, in the process of economic transformation, local public finance needs to play an important supporting role due to large initial investments, long return cycle, and low initial return rate in the development of new industries. In addition, the high levels of unemployment in the transition process create a need for fiscal support in providing basic security and necessary expenditures such as retraining. In short, areas in transition and under carbon emission constraints will face a double challenge of declining tax revenue and increasing expenditures. Transfer payments from the central government are the most effective way to help the local green transformation, which also reflects fair compensation for high-carbon regions.

[13] Tang and Ming [11].

[14] Zhang [17].

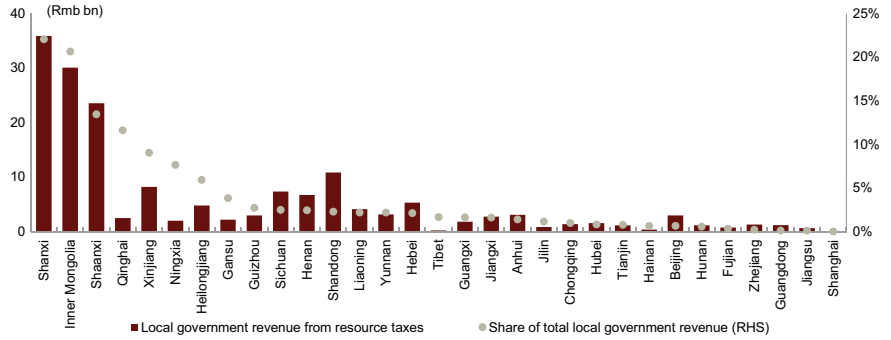

Fig. 4.7 Resource tax and its proportion in local fiscal revenue in 2020. *Source* National Bureau of Statistics, CICC Global Institute

Transfer payments for achieving carbon neutrality should promote the just transition of regions: These can help the introduction and development of new industries, and reduce the negative social and economic impacts of the transformation of traditional industries. China currently focuses on general transfers and special transfers. General transfers do not specify how funds should be used, adding flexibility and autonomy to local financing. Special transfers are used for specific projects and are earmarked for specific purposes, effectively avoiding local governments' preference for economic performance and providing more financial efficiency in environmental protection and social habitat. Although China's transfer payment system is relatively comprehensive, the transfer payment mechanism directly related to carbon neutrality has not yet been put into practice. The area of energy conservation and environmental protection is dominated by special transfer payments, but these payments do not take carbon neutrality into consideration. The special transfer payments for ecological and environmental protection have three aspects—subsidies for energy-saving and emission reduction, special funds for clean energy development, and transfer funds for ecological and environmental protection—which aim to address ecological and environmental governance and sustainable energy use in a targeted manner and have a limited role in alleviating regional inequalities caused by carbon emission constraints.

4.3.2.2 Transition Finance

Another way to fairly compensate high-carbon industries is to vigorously implement transition finance. Just as green finance focuses on providing financial support to green projects, transition finance focuses specifically on providing preferential financial services for the economic and social impacts of the transition. In recent years, the concept of transition finance has gained international attention and has focused primarily on giving previously high-carbon companies in low-carbon transition the financial support necessary to help them better access the necessary resources

and avoid the formation of excessive stranded and non-performing assets. Research has shown that too rapid a curtailment of normal funding for traditional energy-intensive and high-carbon industries can lead to difficulties in accessing the resources necessary for technological innovation and transformation and upgrading.[15] The EU, the Climate Bonds Initiative (CBI), and the International Capital Markets Association (ICMA) have published reports, recommendations, and framework principles on transition finance. Domestically, Bank of China and China Construction Bank have developed and shared their perceptions on and approaches to classifying transformation bonds.[16]

As mentioned, the cost of carbon abatement in China is mainly borne by high energy-consuming industries, and the main task of transition finance is to support these industries, which bear most of the abatement costs, to provide a fair transition opportunity. Financial support specifically includes bonds and preferential monetary policies, e.g., targeted RRR cuts and targeted refinancing, in the form of low-cost capital for local financial institutions, thereby reducing the cost of financing for local economic development and meeting capital needs.

Compared with fiscal transfers, the advantage of using the support policies of transition finance is the allocation of funds in a market-oriented manner, allowing financial institutions rather than the government to select projects and provide support. Meanwhile, enterprises and individuals that are willing and able can apply for credit from financial institutions. As a result, the market can spontaneously match the supply and demand and reduce intervention in the market. It is worth noting that in the process of implementing transition finance, a balance should be kept between supporting transformation and preventing "greenwashing". Efforts should be made to avoid situations in which financial support is a mere formality. To this end, it is necessary to further standardize the entry criteria and information disclosure system for transition finance support projects, and to establish a green project supervision system that combines regular self-inspection by commercial banking institutions as well as verification and random inspection by regulators.

4.4 Policy Actors in Different Stages of Emission Reduction

If a policy system that balances emissions reduction and development equity is established, will China achieve high-quality development under the carbon emission constraints? What is the cost of economic development in this process? What are the roles of the various policy instruments? To answer these questions, we use the

[15] Wen et al. [13].

[16] EU Platform on Sustainable Finance [4], Climate Bond Initiative [3], ICMA [5], and Bank of China [2].

CGE model[17] to analyze eight policy scenarios, including a baseline scenario without carbon reduction that achieves high-quality development without carbon emission constraints; a carbon reduction efficiency priority scenario that pursues carbon reduction efficiency without equity; a carbon market scenario, in which power and high energy-consuming industries are included in the carbon market; a carbon market and carbon tax scenario, in which high power- and energy-consuming industries are included in the carbon market and other industries are subject to a uniform carbon tax; a carbon emissions double control scenario; a carbon transfer scenario, which gives transfer payments to high-carbon and low-income regions; a dynamic transfer scenario, which is based on the carbon transfer scenario; and a transition finance scenario, which provides financial support for the transformation of high-carbon and low-income regions.

Achieving carbon neutrality involves three stages.

- **Carbon peak stage (before 2030)**: Before achieving carbon neutrality, the main goal of carbon emission policy is to achieve peak carbon emissions. Total carbon emission before the peak will grow, but the growth rate decreases as the peak approaches, so the carbon emission constraints on economic development will go through a weak and gradually strengthening process.
- **Rapid emissions reduction stage (2030–2045)**: The greatest constraint on economic development is imposed in this phase, and the strength of the constraint is accelerated because decarbonization technology needs to be deployed on a large scale and the related investment needs to be strengthened continuously. Industries related to traditional energy sources also need to accelerate the transformation, and the contribution to economic development is gradually weakened.
- **Deep decarbonization stage (2045–2060)**: Innovative decarbonization technology and its related industries have matured, and large-scale deployment is complete or nearly complete, the degree of decoupling between economic development and carbon emission everywhere is accelerated and completed, and the carbon constraint gradually weakens.

[17] We use the CGE model of Prof. Can Wang and Dr. Shihui Zhang's team in the School of Environment, Tsinghua University, to construct all scenario analyses in this chapter. The model is a quantitative simulation system based on general equilibrium theory, macroeconomic structural relationships, and national accounting data to describe the operation of economic systems, and it has become a standard modeling tool for global macroeconomic and environmental policy analysis. Specifically, the model used in this paper chooses 2017 as the base year and includes 31 administrative regions (excluding Hong Kong SAR, Macao SAR, and the Taiwan region of China, due to data limitations) and 11 sectors (agriculture, coal, crude oil, mining, natural gas, electricity, high energy-consuming manufacturing, other manufacturing, construction, transportation, and services). The main data sources include: (1) Social accounting matrix, constructed based on the 2017 Chinese multi-regional input–output tables in the CEADs database; (2) exogenously given elasticities of substitution, including elasticities of substitution in the production function and in the utility function, from existing studies; and (3) energy consumption and carbon emissions data, using the 2017 energy consumption and carbon by industry by province-level region in the CEADs database emissions data from CEADs database as a benchmark. Detailed information of this CGE model can be found at http://cheer.nsccwx.cn.

We have estimated the Gini coefficient and lost GDP in eight scenarios of the three stages: Peak carbon, rapid emission reduction, and deep decarbonization (Figs. 4.8 and 4.9). Based on our results, we explore the role of each policy instrument at different stages in emissions reduction. The dual control of carbon emission plays an important role in the reasonable sharing of responsibility for emission reduction. In the dual carbon emission control scenario, we keep the inter-provincial decomposition of carbon emission intensity reduction targets implemented since the 13th FYP period to 2060 and divide China's regions into five types. The rate of reduction of carbon emission intensity for each grouping will be increased in phases over 2015–2034, 2035–2044, and 2045–2060.[18] Overall, this upholds equity in sharing emission reduction among regions, allowing regions with lower emission intensity but better economic conditions to take on more intensity reduction targets. In terms of the per-capita GDP Gini coefficient between regions, the decline seen in the dual control carbon emission scenario is similar to that of the other scenarios during the carbon peaking phase, and all scenarios show a faster decline, which indicates that the difference in the effect of regional emission reduction efficiency and development equity among policies cannot be clearly reflected due to the relatively low pressure of carbon emission reduction. This indicates that the difference in the effect of regional efficiency in emission reduction and development equity among policies is not obvious due to the relatively low pressure of carbon reduction. The Gini coefficient curve is notably lower than that of the other scenarios. In the deep decarbonization stage, the inter-provincial development gap of the dual control scenario gradually approaches that of the other scenarios, which reflects that the decoupling of economic development and carbon emission in each province-level region is strengthened, and the effect of the "double carbon" policy intervention is gradually weakened.

The role of carbon markets in curbing development imbalances between regions will be gradually strengthened in the middle and late stages of carbon neutrality. In the peak carbon stage, due to the less emission reduction constraint and strength, the gap between the dual control policy, which emphasizes equity, and the carbon pricing policy, which emphasizes efficiency, on development equity is barely visible. In the rapid emission reduction stage, the gap between the carbon pricing policy and the dual control policy on equity gradually widens. In the deep emission reduction stage, China has largely achieved transformation of its industrial structure, and the goals of carbon emission and development tend to be decoupled, so the impact of the two emission reduction tools on development equity between regions converges. At this stage, as the total amount of carbon emission around the country would already be small, finding lower-cost emission reduction technologies will become a major task.

[18] Group I (Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Shandong) had an annual decrease in carbon emissions intensity of 4.5, 5.5, and 8.2%; Group II (Fujian, Jiangxi, Henan, Hubei, Chongqing, Sichuan) had an annual decrease in carbon emissions intensity of 4, 6.2, and 7.8%; Group III (Shanxi, Liaoning, Jilin, Anhui, Hunan, Guizhou, Yunnan, Shaanxi) had an annual decrease in carbon emissions intensity of 3.8, 4.6, and 7.1%. The annual decrease rate of carbon emission intensity of the fourth group (Inner Mongolia, Heilongjiang, Guangxi, Gansu, Ningxia) is 3.5, 4.4, and 6.5%, and the annual decrease rate of carbon emission intensity of the fifth group (Hainan, Tibet, Qinghai, Xinjiang) is 3, 3.7, and 5.1%.

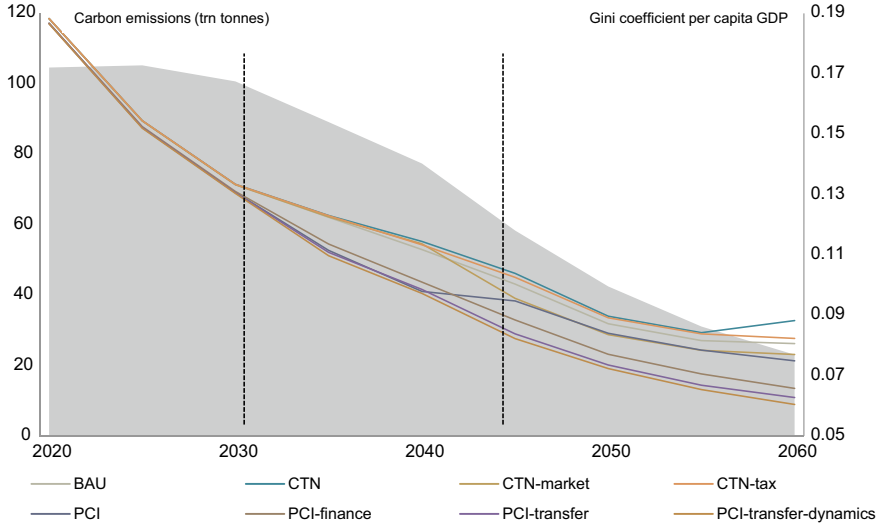

Fig. 4.8 Carbon neutral emissions pathways and development equity. *Note* In this chart, the BAU indicates the no emission reduction development scenario, CTN indicates the carbon reduction efficiency first scenario, CTN-market indicates the carbon market scenario, CTN-tax indicates the carbon tax scenario, PCI indicates dual control scenario of carbon emission and intensity, PCI-transfer indicates the direct transfer payments scenario, and finally PCI-transfer-dynamics indicates the dynamic transfer payments scenario. *Source* CICC Global Institute

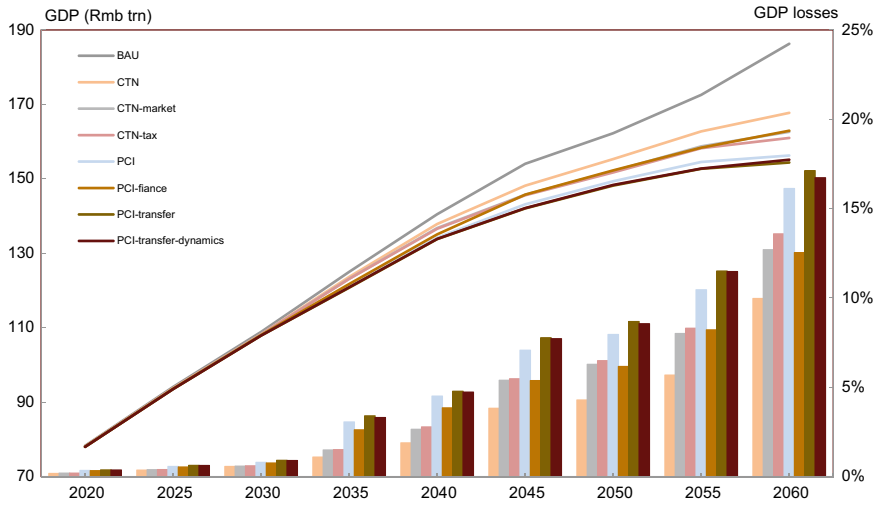

Fig. 4.9 Comparison of economic development and lost GDP by scenario.[19] *Source* CICC Global Institute

[19] National GDP loss refers to the difference in GDP between a given scenario and a no-carbon reduction development scenario.

Meanwhile, the carbon market, a softer and more precise market-based instrument, should play a greater role than the cruder administrative instrument of dual control of carbon emission.

Differentiated carbon tax policies have the potential to curb the increase in regional imbalances under the carbon emission constraints. In the carbon tax scenario, we assume that the carbon tax policy will start to be implemented and will play an abatement role when the carbon market has reached a more mature stage of operation after 2030. Looking at countries that have imposed carbon taxes, rates range from about Rmb80–800/tonne of carbon, with a common practice of initially setting a lower rate and gradually increasing it. We suggest the following rates: US$100/tonne for 2030–2034, US$300/tonne for 2035–2044, and US$500/tonne for 2045–2060. From the model's output, none of the inter-region GDP per capita Gini coefficients decrease at a rate as pronounced as the other scenarios. The uniform carbon tax does not demonstrate fairness. It can be seen that if a one-size-fits-all non-differential tax rate is applied, the same pressure to reduce emission is applied to all non-electricity and energy-intensive industries such as construction, transportation, and other services. Therefore, a superimposed non-discriminatory carbon tax would further widen the regional development gap, making it difficult to play a role in balancing emission reduction and equity. China's carbon tax policy has yet to be introduced, and the design criteria of environmental tax can be referred to set regional differentiated tax rates in the future.

The equitable compensation effect of transition finance gradually emerges in the middle and late stages of the carbon neutrality process, as the model shows. We test the effect of targeted transition finance policy support through a CGE model based on differentiated provincial carbon intensity targets and reduced financing rates for less developed regions.[20] The results show that by providing low-cost financing for the transition of less developed regions which rely on traditional fossil fuel energy, the Gini coefficient of per capita GDP decreases more substantially between regions in the "transition finance scenario" after 2040, indicating more equitable regional economic development outcomes. It is worth noting that although the effect of

[20] The initial interest rate in China is estimated to be about 4.5% in 2022 and the natural rate is about 1.6% in 2060. Assuming that China finances less developed regions with green transformation at the refinancing rate for supporting agriculture and small-scale loans (about 2%, which is about 2.5 ppt lower than the market rate), and considering the gradual successful transformation of the less developed regions, the gap between the interest rate in less developed regions and the normal market rate will gradually converge, we set preferential financing rates for less developed regions in the model in three time intervals: 2022–2030 rates for less developed regions are 2% lower than other regions, 1.5% lower over 2031–2040, and 1% lower over 2041–2060. The rationale for these settings is twofold. First, the current one-year refinancing rate for China's agricultural and small-scale loans is about 2%, which is about 2.5 percentage points lower than the normal market rate. Assuming that China's green transition to less developed regions is financed at the rate of support for agriculture and small-scale refinancing, then 2% lower than normal is a reasonable initial setting. Second, considering the gradual successful transition of less developed regions, the gap between interest rates in less developed regions and normal market rates should converge. The level of the normal market interest rate is gradually declining and may fall to 1.6% in 2060. To avoid a negative interest rate, it is reasonable to set the gap between the two at 1% before 2060. For the sake of simplicity, we set a three-step gap of 2, 1.5, and 1%, which declines over time.

targeted financial support only becomes visible after 2040, the financial policies should still be implemented upfront. There are two reasons for this. First, to alleviate the local initial resistance to green transformation and to allow the low-carbon transformation to start as soon as possible. Second, the goal of targeted financial support is to enable local governments to invest in technological transformation and upgrading as well as infrastructure renovation at low cost, among others, and to accumulate fixed capital, which takes time to accumulate, e.g., construction cycle and patent audit. Usually, the process has a time lag in its effect on economic growth. In addition, according to the model, the GDP drag in the financial policy scenario is smaller than that in the carbon emission reduction dual control scenario, where the latter GDP is 0.02% higher than the former in 2020 and the gap widens to 4.15% in 2060. Therefore, giving more financial support to some of the less developed regions that are traditionally resource-dependent can have a substantial effect on alleviating social inequality during the green transition, without compromising the efficiency of economic development.

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Chapter 5
Sharing Infrastructure and Improving Operational Efficiency

Abstract Infrastructure, as a public good, has obvious spillover effects which contribute to economic efficiency while safeguarding the provision of public services. It balances efficiency and equity, and may effectively promote inclusive growth. China has already achieved significant accomplishments in infrastructure development: 5,198,000 km of roads and 146,000 km of railways (ranking No. 3 and No. 2 in the world in terms of total length, respectively), were in use as of end-2020. All the country's urban and rural areas are connected to power grid, and 4G communication covers 99% of the country's territory. According to the World Economic Forum, in 2019, China ranked No. 36 globally in infrastructure, which is higher than its ranking for GDP per capita. While production-oriented infrastructure (such as transportation, electricity supply, and communications) is evenly developed across the country, in terms of accessibility and affordability, there is still a gap between urban and rural areas. In contrast, there is a more pronounced regional and urban–rural gap in consumption-oriented infrastructure (such as water supply, gas supply, and environmental protection). Production-oriented infrastructure is attractive to investors, easily yields economic output, and the network effect is stronger, so local governments have greater incentives for investment. Future infrastructure construction should pay more attention to the issues of capital and operational efficiency. China's future infrastructure construction focuses mainly on toll-free production-oriented infrastructure and consumption-oriented infrastructure, which generally lacks a profit base. Responsibility for investment is mainly borne by local governments, but the gap between local government revenues and expenditures has widened in recent years. Moreover, the government invests in and runs most infrastructure, resulting in a process that usually lacks healthy competition and efficiency. It is better for China to diversify financing and improve the operational quality and efficiency of its infrastructure.

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5.1 Status-Quo of China's Infrastructure Development

As a public good, infrastructure has obvious externalities, and its development could enhance economic efficiency and guarantee society's access to public services. However, this does not mean that the goal of inclusive growth may be automatically achieved by developing infrastructure arbitrarily. How to develop infrastructure in a manner that better promotes inclusive growth is the question this chapter attempts to explore, including defining the scope of infrastructure, analyzing the status-quo of infrastructure development, and clarifying the problems and better options for infrastructure development.

5.1.1 Infrastructure Promotes Efficiency and Contributes to Equity

Infrastructure refers to the physical engineering facilities that provide public services for social production and residential life, and is a public service system that is designed to safeguard social and economic activities in a country or region. Generally speaking, infrastructure is non-exclusive, features non-rivalry, and generates positive externalities. Infrastructure development drives economic growth and also enables the provision of better public services, contributing to inclusive growth. Specifically,[1] we believe that investment in infrastructure contributes to inclusive growth in four ways.

(1) Job creation and economic activity. According to the National Bureau of Statistics, the number of people in China employed in the infrastructure construction industry in the public sector of urban areas was about 40.78 mn in 2020, accounting for 8.8% of urban employment nationwide. In addition, investment in infrastructure may also create new demand for economic activities, such as the construction of high-speed railways enhancing accessibility and establishing sustainable endogenous development in cities along the routes, effectively contributing to job creation and GDP growth.[2]

(2) Improve output efficiency. Upon completion, infrastructure raises the production efficiency of each participant and thus increases output. For example, the development of drip irrigation, sprinkler irrigation, pipe irrigation, and other water-saving irrigation projects significantly improves irrigation efficiency and facilitates large-scale operation

(3) Reduce transaction, logistics, and trade costs. For example, highways reduce transportation time and lower the cost of transporting goods. In turn, the reduction in travel costs supports the circulation of labor (the migration of workers between their homes and more urban areas), while the reduction in material

[1] Asian Development Bank [1].

[2] Zhang and Wan [5], Jiang et al. [4], and He [3].

transportation costs enhances the flow of products and indirectly raises personal incomes.

(4) Improving the living conditions of low-income people and their access to public services. The construction of infrastructure and public utilities benefits low-income people. For example, assured access to safe drinking water improves the living conditions of residents.

Infrastructure development contributes to both efficiency and equity, thus achieving inclusive growth. The first three points discussed above focus more on the ability of infrastructure to improve the efficiency of economic production, while the last point centers more on people's assured access to basic services.

The mechanisms by which production- and consumption-oriented infrastructure contributes to inclusive growth are slightly different. Production-oriented infrastructure (transportation, electricity supply, and communications) has stronger positive externalities and scale effects. This type of infrastructure also promotes greater networking between domestic and external markets (as roads connect people across vast distances), attracting investment to local markets and improving the efficiency of economic production. Consumption-oriented infrastructure (such as water supply, gas supply, and environmental protection) has stronger regional attributes and scale effects, and focuses more on the equity of access to public services.

5.1.2 Achievements and Problems of China's Infrastructure Development

5.1.2.1 Large Scale and Fast Growth

According to the National Bureau of Statistics, in 2017, investment in infrastructure was about Rmb18 trn,[3] with the CAGR for 2011–2017 reaching 17.3% (Rmb6.9 trn in 2011). The proportion of infrastructure investment to total social fixed asset investment rose about 5.9 ppt during this period, reaching 28.1% in 2017. The infrastructure investment as a share of GDP rose by about 8.0 ppt, reaching 21.3% in 2017. The total amount of infrastructure investment in China in 2017 was eight times that of the US and 16 times that of Japan, and the proportion of infrastructure investment to GDP in the US and Japan was 1.7% and 3.7%, respectively. Whether in terms of overall scale or growth rate, infrastructure investment is very important for China's economic development. In 2017, investment in water supply, environmental protection, and public facilities amounted to 46% of overall infrastructure investment, transportation 34%; electricity supply, heating, and gas supply 17%; and communications infrastructure 3%.

China's infrastructure competitiveness, which is a comprehensive index defined by the World Economic Forum (2019), ranks in the mid to upper range globally,

[3] Only YoY growth rates are published after 2017, but there may be changes of measurement, so we do not use the latest year's data here.

		China	US	Japan
Transportation	Railway operating mileage ('000 km)	130	230	30
	Railway density (km/'000 sq km)	13.7	24.6	74.9
	Highway mileage ('000 km)	5,020	6,720	1,220
	Highway density (km/'000 sq km)	504.9	734.9	33.4
	Number of airports	235	506	175
	Urban rail transit (km)	5,767	1,297	887
Water supply	Water sustainability assessment (out of 100)	65	86	95
	Access rate to unsafe water	18%	0.3%	1.9%
	Assessment of sewage treatment (out of 100)	80	93	94
Electricity supply, heating, gas supply	Power generation (TWh)	7,112	4,461	1,052
	Electricity consumption per capita (kW)	5,106	13,635	8,311
	Gas access rate	43%	72%	56%
	Primary energy consumption (mn tonnes to equivalent value)	3,274	2,301	454
	Primary energy consumption per capita (tonnes to equivalent value)	2	7	4
Communications	Internet coverage	61%	87%	85%
	Mobile speed (Mbps)	68.2	41.2	32.1
	Broadband speed (Mbps)	99.5	134.8	100.4
Global ranking in infrastructure assessment		**36**	**13**	**5**
GDP (US$ trn)		14.3	21.4	5.1
GDP global ranking		**2**	**1**	**3**
GDP per capita ('000 US$)		10	65	41
Global ranking of GDP per capita		**65**	**7**	**22**

Fig. 5.1 The global ranking of China's infrastructure. *Note* Color shades represent numerical magnitude. *Source* Vanderbilt, World Economic Forum, Global Competitiveness Report 2019, CICC Research

but still lags behind advanced economies. The country ranked as the No. 36 most competitive out of 141 economies worldwide, (higher than its ranking for per capita GDP, which stands at No. 65), but remaining lower than that of advanced economies (with the US at No. 13 and Japan at No. 5). Communications and electricity supply are industries with smaller gaps between China and developed countries (Fig. 5.1).

5.1.2.2 Declining Marginal Product of Investment

From 2008 to 2017, China experienced three boom and bust cycles of infrastructure construction in 2008, 2012, and 2016. However, the marginal impact of infrastructure investment on GDP growth is decreasing (Fig. 5.2). In investing in highways, for example, the internal rate of return (IRR) of toll expressways fell from 7–15% in the early years to 3–6% at present. The main cause is the rising cost of land appropriation, demolition, and raw materials. As a result, the construction cost of highways rose about 3–5 times (from about Rmb30 mn/km in the early years to about Rmb100–200 mn/km at present), but toll rates have not risen so much.

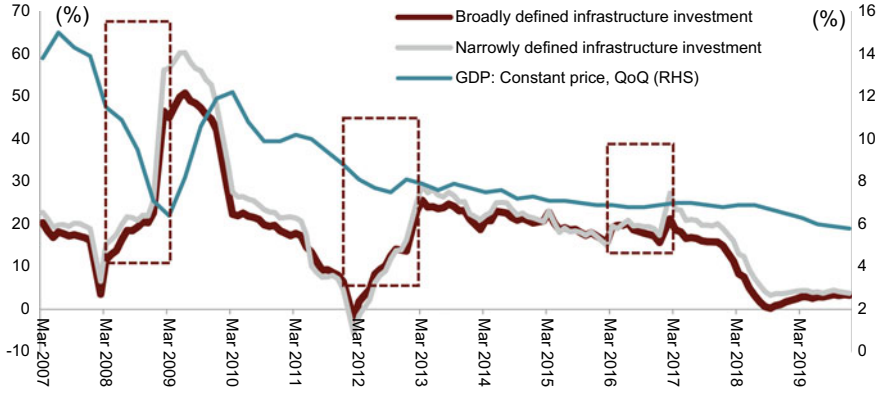

Fig. 5.2 The marginal benefit of an infrastructure-driven economy is weakening. *Source* National Bureau of Statistics, CICC Research

For better development of infrastructure, two questions should be properly addressed: Is there disparity in the distribution of infrastructure now (with reference to regional, urban, and rural disparities)? What is an ideal management model for infrastructure development with respect to the source of funds, investors and operators, and the role of government?

5.2 Disparities in Infrastructure Development in China

Disparities can be defined as: (1) Accessibility, which measures whether residents have the same level of access to infrastructure services; and (2) affordability, which is the share of disposable income spent by users on infrastructure services.

5.2.1 Regional Disparity in Infrastructure Is Narrowing, but Urban–Rural Gap Remains Wide

There is still some regional disparities in China's infrastructure as a whole. In terms of accessibility, there is a wide gap between urban and rural areas, whereas regional disparities exist but are gradually narrowing. In terms of affordability, spending on infrastructure as a share of disposable income is trending downward, and remains lower in China than in the US.

In terms of accessibility, there is inter-regional disparity, but the gap is narrowing. According to the National Bureau of Statistics, eastern China accounted for 37%, western China 31%, central China 25%, and northern China 7% of the cumulative infrastructure investment during 2003–2017. The CAGR in western and central China

was 21.6 and 21.2%, which was higher than the 16.5% in eastern China. China's Western Development Strategy formulated in 2000 has promoted a gradual reduction in the infrastructure accessibility gap between regions. However, the gap between urban and rural areas remains significant. Investment in fixed assets in rural areas was Rmb0.95 trn in 2017, while the total investment in the country was Rmb18 trn.[4] According to the Ministry of Housing and Urban–Rural Development, fixed asset investment per capita for public utilities in 2020 was Rmb5122 in cities, which is 8.6 times the amount in counties.

China's infrastructure affordability is improving. According to the China Statistical Yearbook and the US Bureau of Labor Statistics, China's infrastructure spending per capita as a percentage of disposable income was 12.1% in 2019 (compared to 20.9% in the US during the same year),[5] with China's transportation accounting for 7.1%, gas supply 2.8%, and communications 2.2% (compared to 15.1% and 5.8% in the US for transportation and gas supply & communications). Meanwhile, China's infrastructure spending as a percentage of disposable income declined by 0.8 ppt between 2014 and 2019, indicating improved affordability.

5.2.2 Disparity Is Narrow in Production-Oriented Infrastructure, but Remains Significant in Consumption-oriented Infrastructure

China's production-oriented infrastructure is relatively well developed, and the accessibility to and affordability of some infrastructure even outpaces international levels.

- Transportation: In terms of accessibility, there are regional disparities in China's transportation infrastructure, but the gap is narrowing. While there are still regional differences in rail and road density (in 2020, rail and road density in western China was about 20–25% compared to eastern and central regions). Rail and road density per capita in western and northeastern China were close to or even exceeded levels in the eastern and central regions (the road density per capita in the western region was 2.7 times that of the eastern region and 1.5 times that of the central region) in 2020.

Over the past 15 years, the gap in highway and rail density between regions has been shrinking, with a particularly significant decrease in western China. China's transportation infrastructure may be more affordable than that of advanced economies: (1) The absolute road tolls and ticket prices of China's transportation

[4] The two figures are not fully comparable, as the amount of rural fixed asset investment also includes non-infrastructure such as real estate, and is used here for comparison purposes only.

[5] Vehicle acquisition costs are included in US transportation spending (41.6% of total transportation spending in 2019, according to the US Department of Transportation) and are not included in the calculation for China.

infrastructure range from 30 to 50% of that of advanced economies; and (2) transportation spending as a percentage of disposable income in China (7.1%) is about 8 ppt lower than that in the US (15.0%),[6] and if broken down into urban and rural areas, the urban-rural gap in China (1.8 ppt) is narrower than in the US (6.0 ppt).

- Electricity supply: According to the World Bank, the rural electricity accessibility level in China reached 100% in 2016, and there is now no gap between urban and rural areas (cities reached 100% electricity access rate in 2000), which exceeds the world average (a 15 ppt gap between urban and rural areas). Affordability is more balanced among provinces. Residential electricity prices were around Rmb0.5/kWh in 2019, and the average ratio of domestic electricity expenditure to disposable income was 1.2%. According to the Pacific Northwest National Laboratory of the US Department of Energy, about 30% of states had a residential electricity bill to income ratio of 3–4% in 2017, and another 30% had a ratio that was higher than 5%, making China's electricity price comparatively more affordable.
- Communications: In terms of accessibility, disparities in China's communications infrastructure are gradually shrinking in all regions, with accessibility generally better than the global average. According to the China Academy of Information and Communications Technology and the Ministry of Industry and Information Technology, China's 4G base stations cover 99% of the country's land area, and all villages are connected to broadband. The fixed broadband user penetration rate is 33.6 households per 100 people in 2020, higher than the global average. The gap in internet penetration rate between urban and rural areas has narrowed and is better than the global level.

According to the China Internet Network Information Center, as of June 2021, China's overall internet penetration rate reached 71.6%, better than the global average of 65.6%, with rural internet penetration reaching 59.2% and urban internet penetration at 78.3%, and the gap continues to shrink. The affordability of China's communications infrastructure is also generally better than the global average. According to the report "The affordability of ICT services 2020" released by ITU and A4AI Alliance, the median price of entry-level fixed broadband in China in 2020 was 0.5% of monthly per capita income, much lower than the global average of 2.9%. The median price for mobile broadband in China in 2020 was only 0.5% of monthly per capita income, much lower than the global average of 1.7%.

Consumption-oriented infrastructure, such as water supply, sanitation, environmental protection, and gas supply, presents higher regional disparity and rural–urban gap, and is less accessible overall than abroad.

- Water supply: China's water supply penetration rate needs to improve to reduce the obvious gap between urban and rural areas. According to the Ministry of

[6] Data is for 2019, and transportation expenditures in China include expenditures for various services, maintenance, and vehicle insurance for transportation; transportation expenditures in the US include vehicle acquisition costs (41.6% of total transportation expenditures in 2019, according to the US Department of Transportation).

Housing and Urban–Rural Development, in 2020, China's urban water supply penetration rate was 99.0%, while that in counties, towns, and rural areas was 96.7%, 89.1%, and 83.9%, respectively. In rural areas, about 48% of usage is from pipe borne water, while 41% is from protected well water and springs.[7] In terms of affordability, the price of water supply in China is also unevenly balanced between the northern and southern regions. The average unit price of tap water for southern residents is Rmb1.88/cbm, which is lower than that of Rmb2.85/cbm in the northern provinces, mainly resulting from the uneven distribution of water resources in the south and north of the country.

- Environmental protection: The sewage treatment rate in China's towns and villages significantly lags behind those in cities and counties. According to the Ministry of Housing and Urban–Rural Development, the sewage treatment rate in cities and counties in 2020 was close to 100%, but the sewage treatment rate in the countryside was only 21.7% because the population in rural areas is scattered, and it is not convenient to provide centralized sewage treatment. In addition, there is still a regional gap. The average sewage treatment capacity per 10,000 people in the eastern region has reached 1900 cbm per day, significantly higher than in the central (1200 cbm) and western (1000 cbm) regions. In terms of solid waste treatment, there is also a wide gap between China's urban and rural treatment capacity. According to *China Statistical Yearbook*, the treatment rate of domestic waste in cities and counties reached 99.8% and 98.3% in 2020, but in towns and rural areas it was 69.6% and 48.5%, respectively. In addition, in terms of regional treatment capacity, the average daily non-hazardous waste treatment capacity per 10,000 people in the eastern region reached 8.80 tonnes/day, while it was only 5.25 tonnes/day in the central region and 4.92 tonnes/day in the western region.
- Gas supply: There is a gap between urban and rural areas in terms of gas supply penetration rate, and the overall level is also far below that in the US. According to the data disclosed by the National Bureau of Statistics and the Ministry of Housing and Urban–Rural Development, China's urban gas penetration rate was as high as 97.9% in 2020, while the rate in rural areas was only 35.1%. The gas supply penetration rate in the US reached 71.6% in 2020 (all natural gas), while China's rate during the same year was only 55.3% (including natural gas, LPG, and town gas). In terms of affordability, gas is more affordable in urban areas than in rural areas, and there is still a gap between China's overall level and that of the US. According to the National Bureau of Statistics, China's urban residents spent 0.5% of final consumption expenditure on gas supply in 2017, while the ratio in rural areas was 1.2%, with the average overall ratio in China at 0.7%. According to EIA data, in 2019, the US spent 0.4% of final consumption expenditure on gas, so the affordability of gas in China is still weaker than in the US (Table 5.1).

In summary, due to strong economies of scale, China's production-oriented infrastructure (transportation, power, communications) is well developed and affordable overall. Despite the low price, production-oriented infrastructure remains profitable

[7] Chen and Zhu [2].

Table 5.1 Assessment of the current state of disparity in China's infrastructure subsectors

Type of infrastructure	Industry	Disparity in China		Compared with foreign countries		Disparity level
		Accessibility	Affordability	Accessibility	Affordability	
Production-oriented infrastructure	Transportation	• Highways connect 99.3% of villages • Although there is a gap between railway and highway density, the gap is narrowing	• Constitutes 7% of disposable income; pronounced urban–rural gap	• In terms of highway and railway density, there is disparity between China and the US	• The fares and tolls are 30–50% of those in the US; high affordability in China	Medium
	Electricity supply	• 100% access to electricity supply • Urban–rural gap exists but less so in terms of supply reliability	• Constitutes 1.2% of total income	• Accessibility is above global average (90%) • Urban–rural gap is relatively narrower than the global average level	• Electricity bills in most states in the US constitute more than 3% of income, higher than in China	Low
	Communications	• Over 99% coverage of 4G and broadband • Urban–rural gap exists in internet accessibility	• Communications in urban areas constitutes about 2% of disposable income, about 3% in rural areas, resulting in high affordability	• Access to internet and use of broadband and mobile phones in China is above global average	• Communication cost is lower in China	Low

(continued)

Table 5.1 (continued)

Type of infrastructure	Industry	Disparity in China		Compared with foreign countries		Disparity level
		Accessibility	Affordability	Accessibility	Affordability	
Consumption-oriented infrastructure	Water supply and sanitation	• Sizeable urban–rural gap in public toilet services, water supply, and water pipe density	• Sizeable price gap between northern and southern regions	• The water supply rate in rural areas (about 85%) still lags behind that in the developed world (e.g., 98% in Japan) • There is a large gap in toilets per capita between China and the developed world	• Lower water affordability in China	High

(continued)

Table 5.1 (continued)

Type of infrastructure	Industry	Disparity in China		Compared with foreign countries		Disparity level
		Accessibility	Affordability	Accessibility	Affordability	
	Environmental protection	• Sizeable urban–rural gap in sewage treatment rate and harmless treatment of waste	• Free of charge for households	• There is still an urban–rural gap in sewage treatment (towns 53% vs. villages 19%), and the treatment rate is below that in developed countries (almost 100%)	• Garbage removal fees in the US amount to 1% of overall income, whereas China's households do not pay	High
	Gas supply	• Sizeable urban–rural gap in access to gas supply	• Gas consumption in urban areas constitutes 0.5% of overall consumption, and 1.2% in rural areas	• Rate of access to gas supply (55%) in China is well below that of the US (72%)	• Gas consumption constitutes 0.69% of overall consumption in China versus 0.39% in the US	High

Source National Bureau of Statistics, World Bank, Ministry of Transport, US Bureau of Transportation, Ministry of Housing and Urban–Rural Development, CICC Research Department

and has a reasonable ROE (e.g., China's data traffic prices are a third of that of the US, but the average net profit margin of China's three major carriers over the past five years was 9.9%, while that of major carriers in the US was 10.7%). However, there are still large urban–rural and regional disparities in consumption-oriented infrastructure, and accessibility is lower than in most developed countries. Production-oriented infrastructure is more attractive to investors given its more visible performance and stronger network effect, giving local governments more incentive to invest in construction, which is probably one of the main reasons for its better development.

5.3 The Operation and Management of China's Infrastructure

Globally, many countries continue to wrestle with the problem of infrastructure management. The properties of strong infrastructure externalities and long payback periods dictate that investment should mainly be led by government. However, China is not alone in its attempts to strike a balance between the kind of long-term management that governments can provide while ensuring the type of efficiency that has long been associated with the private sector.

China's infrastructure management features the following characteristics.

- Local governments account for a relatively high proportion of infrastructure investment, but the fiscal gap has widened in recent years.
- Local governments' infrastructure investment focuses mainly on toll-free production-oriented infrastructure and consumption-oriented infrastructure which generate either no fees or low fees.
- State-owned enterprises (SOEs) invest in most production-oriented infrastructure (e.g., railroad networks by the National Railway Group, communication networks by the three major operators, and power generation and power supply systems by the five major power companies and the two power grids), and usually operate it as well. Due to economies of scale in China, such investment provides a reasonable return, but is subject to inefficiency in industries in which there is heavy industry concentration.

5.3.1 Sources of Funding: Local Governments Accounts for a High Proportion of Funding Which Should Be Diversified

Chinese infrastructure investment is dominated by the government and SOEs. In 2017, total investment reached Rmb15.6 trn, and funding from the government accounted for 69.4%, SOEs 16.2%, public–private-partnerships (PPPs) 14.1%, and foreign capital 0.3%, corresponding to Rmb10.8 trn, Rmb2.5 trn, Rmb2.2 trn, and

Rmb0.05 trn,[8] respectively. We estimate that government-managed funds and the general public budget account for 19% and 16% of all funding from the government, corresponding to Rmb2.0 trn and Rmb1.8 trn, respectively,[9] and the remaining government funding mainly comprises urban investment bonds (total issuance of about Rmb1.75 trn in 2017), special-purpose bonds (total issuance of about Rmb2 trn in 2017), and non-standard financial instruments (total issuance of about Rmb4 trn in 2017). In other words, except for PPP, infrastructure investment is basically led by the government or SOEs.

Local infrastructure investment accounts for a relatively high proportion of government investment, but the local deficits have widened. Government funding for infrastructure investment generally consists of fiscal funds (general public budget and government-managed funds) and debt funds (such as issuance of urban investment bonds or special-purpose bonds). As mentioned previously, after deducting investment by PPPs and SOEs (the total share of both being about 30%), the remainder is dominated by the government, with local governments bearing a majority of the investments.

Local governments provide 96% of the financial resources for infrastructure investment.[10] According to China's Ministry of Finance, in 2017, Rmb1.8 trn of the general public budget and Rmb2.0 trn in government-managed funds were invested in infrastructure, totaling about Rmb3.8 trn, of which the central government contributed about 4% (about Rmb140 bn) and local governments contributed 96% (about Rmb3.65 trn). The proportion of funds allocated for infrastructure investment in the general public budget and government-managed funds fluctuated from 15 to 17% at the local level from 2013 to 2017, while the funding from central government declined from 6 to 4%. Special-purpose bonds and urban investment bonds among debt funding are mostly issued by local governments which bear the majority of infrastructure investment (Fig. 5.3).

The gap between revenues and expenditures of local finance has widened. According to the Ministry of Finance, central and local fiscal revenue maintains a relatively stable 50–50 split following the tax reform of 1994. The share of local fiscal expenditure has expanded and reached 86% in 2020 (compared with about 70% in 1994). The local finance deficit, even after considering the transfer of payments

[8] The calculation of SOE investment includes the fixed asset investment of National Railway Group, five major power generation groups, State Grid, Southern Power Grid, provincial traffic investment groups, gas pipeline network, and three major operators; PPP is calculated based on the investment amount of PPP landed projects in municipal engineering, transportation, comprehensive urban development, water conservancy construction, government infrastructure, and ecological and environmental protection; foreign investment is directly adopted from the National Bureau of Statistics.

[9] The government-managed funds and general public budget are summed up based on the published expenditure breakdown, and there is a possibility of inaccuracy; among other items, special bonds and urban investment bonds cannot be disaggregated into the amount invested in infrastructure because the investment data at the aggregate level is not published.

[10] The fiscal funds split between local and central share is based on the summation of central and local expenditure line items, and there is a possibility of inaccuracy.

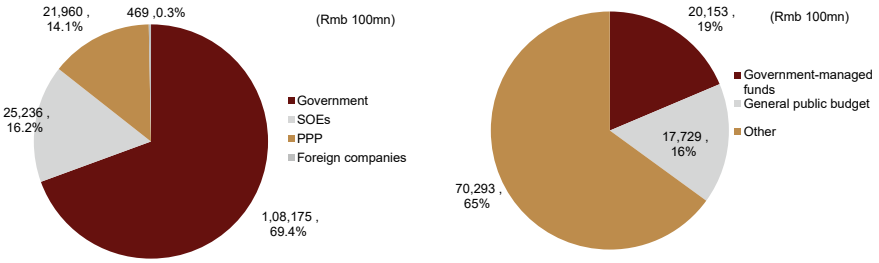

Fig. 5.3 Percentage of sources of investment (left panel) and percentage of detailed sources of investment by government entities (right panel) in infrastructure (2017). *Source* National Bureau of Statistics, CICC Research

from the central government to local governments, expanded from Rmb190 bn in 2008 to Rmb2.7 trn in 2020.

5.3.2 The Operational Efficiency Needs Improvement

As China's infrastructure enjoys economies of scale, even with low fees, there are certain returns in the long term. For this type of infrastructure, the pace of marketization should be accelerated and social capital should be introduced. Laws and regulations also need to be improved to protect the rights and interests of social capital and to allow reasonable returns. As a result, we believe that operational efficiency should be improved.

In general, the nature of infrastructure in which local governments and SOEs invest differs, and therefore, the degree of marketization and efficiency of operation also differs. Local governments invest in infrastructure with a low degree of market-based operation, and invest in infrastructure that is generally consumption-oriented or production-oriented and which levies no fees. The economic returns for this type of infrastructure investment are not strong, and such infrastructure is usually operated by local SOEs and governments. For example, the main operators of urban water supply infrastructure are mostly SOEs which are usually not market-based, so operational efficiency is usually not high (Table 5.2).

To improve the operation of local infrastructure, it may be necessary to introduce a market-based model. The phenomenon of insufficient competition in the infrastructure sector is a legacy issue that persists, and is one of the factors leading to inefficient operations. For example, according to the Statistical Yearbook of Urban Drainage, the idle rate for sewage treatment capacity in counties reached 30% in 2016, and the load rate of sewage treatment ranged from 30 to 80%. The government should lower, in an appropriate manner, the barriers to entry for private firms in order to create competition. The role of the government may change from being an operator to a rule-maker, thus finding a balance between reasonable returns for enterprises and protecting consumers' access to public services.

Table 5.2 Government-led infrastructure investment and operating entities

Type	Infrastructure	Investing entity	Operating entity
Consumption-oriented infrastructure	Water supply	Mainly local investment, supplemented by the central government	Mainly SOEs in urban areas and collective enterprises in rural areas
	Sewage treatment	The government mainly invests in the construction of sewage treatment plants and pipe networks	Mainly local state-owned enterprises, supplemented by private enterprises
	Solid waste treatment	Local government	Mainly local state-owned enterprises, supplemented by private enterprises
	Sanitation	Local government	Local government
Production-oriented infrastructure (levying no fees)	National highways, provincial highways, rural roads	Local government invests in 80% of construction	Administration of Highways or local government

Source CICC Research

SOEs mainly invest in production-oriented infrastructure, including railroads, toll roads, electricity supply, and telecommunications, which achieves economies of scale and has the potential for profitability through market-based operations. For example, the average net profit margin of the A-share listed toll road sector over the past five years is 30%, and ROE is 11%; the average net profit margin of China's three major telecom operators over the past five years is 10% and ROE is 8%. SOEs usually serve as both investors and operators. For example, the State Railway Group invests in railroads as the investment entity, and is also responsible for the unified scheduling and command of railroad transportation as the operation entity (Table 5.3).

Moreover, SOEs invest in infrastructure in industries with high market concentration, and insufficient competition results in low operational efficiency. For example, the railroad industry is highly concentrated (the State Railway Group is the main operating entity), and the operational efficiency needs to improve. According to the Ministry of Transport, China's rail freight market share has been declining since 1986. Its share of rail freight turnover declined from 44% in 1986 to 13% in 2016. After 2016, the country began to keenly promote rail freight, resulting in the share of rail freight recovering to 15% in 2020. China's rail freight turnover per capita in 2019 was 1.58 mn tonne-km. These figures of efficiency of China fall behind those of benchmark countries in the world. Its inflexible pricing mechanism and lack of competitiveness (compared to the more flexible road transport), negatively affects the operational efficiency of railroads in China.

Table 5.3 SOEs tend to integrate investment and operation

Type	Infrastructure	Investing and operating entity
Production-oriented infrastructure	Railway	China Railway Group accounts for 60%, with 40% from government and social capital
	Highway	Provincial Transportation Investment Groups
	Power	Power generation mainly invested in and operated by five major power groups, with transmission and distribution mainly being carried out by the State Grid and China Southern Power Grid
	Gas supply	In the early years, the gas supply was provided by China National Petroleum Corporation (CNPC), China Petroleum & Chemical Corporation (Sinopec), and China National Offshore Oil Corporation (CNOOC), but is now concentrated in the National Pipeline Network
	Telecommunication	Three major telecom operators

Source CICC Research

To improve the operational efficiency of China's infrastructure, we believe that further effort is needed with regard to the following aspects. Firstly, the operation of consumption-oriented infrastructure is currently mainly the responsibility of local SOEs or government agencies. Competition and clear assessment indicators may be introduced in an appropriate manner, but the government must balance the relationship between the reasonable returns for operating enterprises and the basic guarantee of infrastructure services for residents. Secondly, for production-oriented infrastructure in industries with high concentration, efficiency can be improved through reform. Where it is possible to generate investment returns, infrastructure should be invested in and operated by corporate entities.

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Chapter 6
Establishing Equitable and Efficient Systems for Education and Healthcare

Abstract Education and healthcare are central to successfully sharing the fruits of economic development and promoting social equity. Both can contribute to human capital accumulation, labor productivity promotion, and economic growth. Improvements in education and health also help to close the gap between human capital and income, promoting social equity. They can also be mutually reinforcing. Achieving the development goal of "common prosperity" requires the establishment of equitable and efficient nationwide systems for education and healthcare. Insufficient funding and incomplete institutional systems are two long-term constraints hindering China's approach to achieving a high-quality education system. On the one hand, public funding for education in China is insufficient and unevenly distributed. Public funding for early childhood education (for ages 0–3) and vocational education is relatively insufficient in China, with significant regional disparities. Guidance and supervision of the education system is insufficient, particularly in public childcare services, the integration between vocational education and general education, participation of enterprises, and autonomy of universities. Insufficient funding and incomplete institutional systems have led to unequally distributed resources in education, thereby weakening the role of education in promoting economic growth and social equity. The limited financial protection provided by health insurance and the uneven allocation of medical resources are the primary reasons for "kan-bing-nan" (seeking care is difficult) and "kan-bing-gui" (seeking care is expensive) in China. "Seeking care is expensive" is manifested as a heavy burden for patients, which can easily result in catastrophic medical expenditure, and even push them into poverty due to illness. "Seeking care is difficult" results from insufficient high-quality medical resources. Patients often struggle to find good doctors when faced with serious illnesses, and the number of physicians in rural areas is relatively low compared with urban areas. "Seeking care is expensive" in China reveals that there is still a long way to go before the country develops a fully comprehensive healthcare security system, and significant disparities persist between urban and rural areas. "Seeking care is difficult" in China reflects the unbalanced allocation of medical resources, with an excessive concentration of high-quality resources and large differences in clinical quality across

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different levels of medical institutions. The limited financial protection and unbalanced allocation of medical resources undermine the ability of healthcare to promote economic growth and social equity. To establish an equitable and efficient education system, China needs to increase fiscal investment in education and improve the overall environment for the development of young teachers. China should also clarify the focus of its education policies based on the unique characteristics of each stage of education. The government needs to commit more resources to inclusive childcare services in early childhood, expand the supply of in-school resources for basic education, diversify the assessment system, and modernize the vocational education system. To promote equity in basic medical services, China needs boost its financial resources, improve the efficiency of healthcare spending, and encourage innovation in commercial insurance. China should also develop an integrated, people-centered healthcare system with primary care at the core. This includes strengthening the capacity of community-level healthcare institutions, integrating healthcare and social care services at the community level, and promoting the training and development of healthcare professionals.

6.1 Education and Healthcare Are the Cornerstones for Sharing the Fruits of Economic Development and Promoting Social Equity

The education and healthcare systems can contribute to achieving the goal of common prosperity by promoting economic growth and social equity. Improving education and healthcare systems can effectively promote the accumulation of human capital and health human capital, which in turn can drive economic development. Furthermore, ensuring equitable access to education and healthcare can effectively prevent the intergenerational and intra-generational transmission of poverty, and promote social equity. Therefore, the establishment of equitable and efficient education and healthcare systems is crucial for achieving the goal of common prosperity.

6.1.1 The Mutual Promotion Between Education, Healthcare, and Economic Growth

Education contributes to economic growth by increasing human capital and improving labor productivity. In the late 1950s, economists began to incorporate

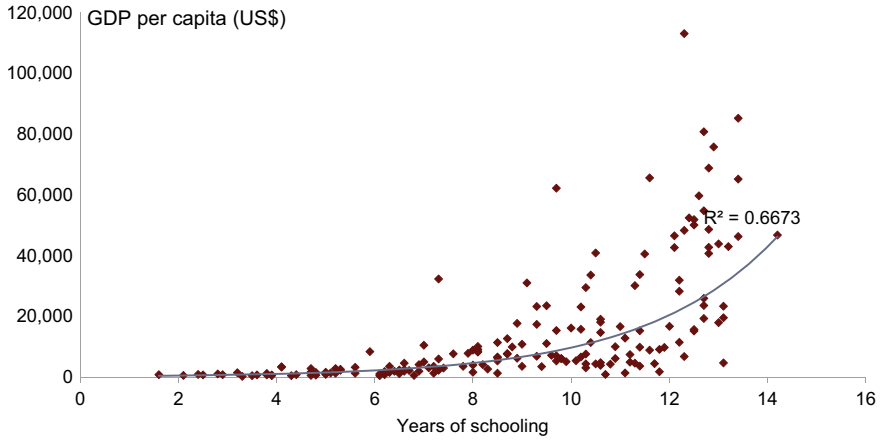

Fig. 6.1 The correlation between average years of schooling and GDP per capita. *Note* The sample contains 176 countries for which data is available. *Source* World Bank, UNDP, CICC Research, CICC Global Institute

human capital into the neoclassical growth model, treating it as a factor of production.[1] The contribution of education to economic growth is through two dimensions: Quantitative and qualitative. The quantity of education can be measured by indicators such as the average years of schooling of the population.

National cross-sectional data suggests that countries with higher average years of schooling tend to have higher GDP per capita (Fig. 6.1). Empirical studies strongly correlate human capital stock with economic growth.[2] The quality of education also plays an important role in economic growth as the same number of years of schooling can result in varying levels of knowledge accumulation depending on the quality of education. A country's education level, measured by the average science and mathematics scores of the Program for International Student Assessment (PISA), demonstrates a significant positive correlation with GDP growth. This correlation has a higher explanatory power than when education level is measured by average years of schooling.[3]

Healthcare plays a vital role in promoting economic growth by enhancing health human capital and expanding the labor supply and boosting labor productivity. In the 1970s, economists started to incorporate health into economic models, with health being considered both a consumer good that affects current utility and an investment good that impacts future labor supply and labor productivity.[4] Free from physical and mental illnesses and the resulting stress, individuals can develop and increase their labor productivity, extend their working lives, and increase their personal income and

[1] Mincer [17] and Becker [1].

[2] Mankiw et al. [16].

[3] Hanushek and Woessmann [11].

[4] Grossman [10].

wealth. Good health for all is also a crucial long-term driver of sustained economic growth. A large and healthy workforce is a prerequisite for creating wealth and achieving the goal of common prosperity.[5]

Education and health can reinforce each other by increasing the efficiency of health production and the quality of education. Higher levels of education can lead to a higher "health production" function.[6] Empirical studies have consistently found that individuals with higher levels of education are less likely to engage in risky behaviors such as smoking, alcohol abuse, excessive weight gain, or unsafe driving.[7] Moreover, the positive effect of education on health production is more significant the higher the education level.[8] At the same time, improved health has the potential to enhance the accessibility, effectiveness, and quality of human capital accumulation. Childhood health and nutritional status have profound impacts for the education process and human capital formation. Malnutrition, in particular, can delay school entry or result in pupils dropping out of school, with girls being more affected. Infectious diseases such as parasitic diseases and dysentery can affect school attendance and attention to learning.[9]

6.1.2 The Improvement of Education and Healthcare Will Promote Social Progress

An increase in the level of education can promote social equity by providing individuals with equal opportunities to acquire knowledge, skills, and abilities, regardless of their socio-economic background. National-level data reveals that countries with higher average years of schooling have a relatively lower Gini coefficients (Fig. 6.2). However, it should be noted that an increase in the average level of education of the population does not necessarily lead to a decrease in income inequality. If the disparity in education levels between individuals widens, it could instead lead to a widening of the income gap. To reduce income inequality, it is necessary to bridge the gap between rich and poor by raising the educational level of the less educated towards the mean. Only in this way can the income disparity be reduced, and social equity promoted.

An improvement in the overall health level of a population can contribute to reducing gaps in human capital and income between individuals, thereby promoting social equity. A cross-country comparison using life expectancy as a proxy for national

[5] Nordhaus [26].

[6] The health production function is the relationship between health and the health inputs, including the number of physicians and quantity of prescribed drugs. The value of the function is the maximum output that can be produced.

[7] Cutler and Lleras-Muney [8].

[8] Cutler and Lleras-Muney [7].

[9] Bleakley [2].

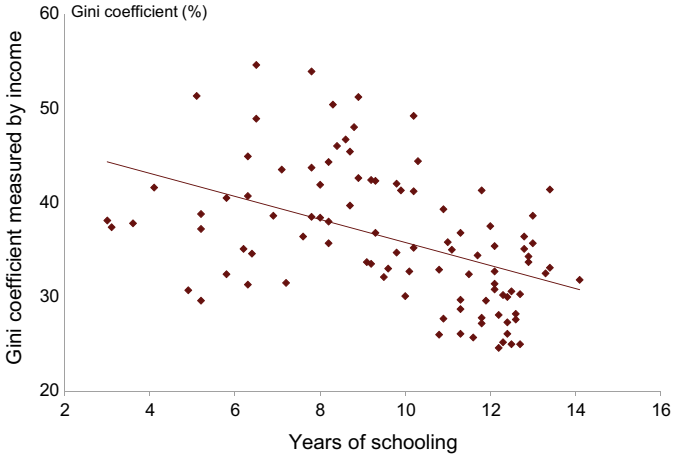

Fig. 6.2 Average years of schooling is negatively correlated with the GINI coefficient. *Note* The sample includes 98 countries and territories for which data is available, including high-income, upper-middle-income, and lower-middle-income countries. *Source* World Bank, Our World in Data, CICC Research, CICC Global Institute

health reveals that countries with higher life expectancies tend to have relatively lower income inequality (Fig. 6.3). A high level of health for all is a fundamental component of social progress, as evidenced by the United Nations' adoption of life expectancy as one of the three major indicators of the Human Development Index. This underscores the international community's recognition of the central role that health plays in sustainable development. Aligned with the role of education in promoting society, the improvement in macro health indicators such as life expectancy may not necessarily lead to a reduction in income inequality. Only a significant improvement in the health of people with poorer health can reduce the gap between different populations and promote social equity.

6.1.3 Establishing Equitable and Efficient Systems for Education and Healthcare Is Essential for Achieving Common Prosperity

In order to achieve the goal of common prosperity, it is necessary to provide high-quality education to all. Building a multi-system and multi-level structure is necessary if high-quality education is to be provided to all. A multi-system and multi-level structure enables individuals to pursue their educational goals to the fullest extent by enhancing the quality of vocational education and increasing enrollment at higher education levels. This diversifies the pool of industrial talent available. Promoting balanced development among regions and schools and ensuring that everyone has

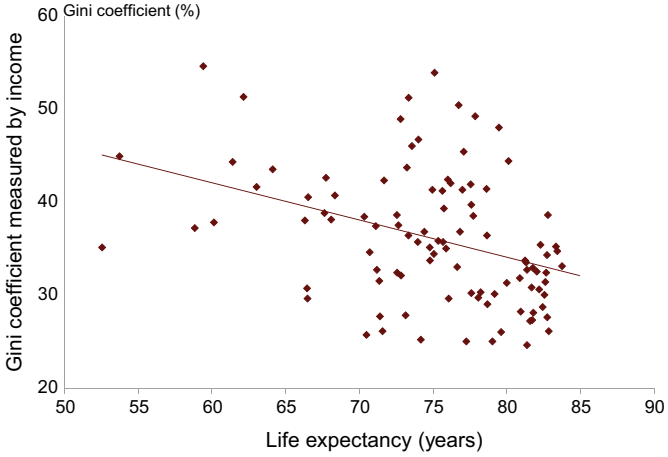

Fig. 6.3 Life expectancy is negatively correlated with the GINI coefficient. *Note* The sample includes 98 countries and regions for which data is available, including high-income, upper-middle-income, and lower-middle-income countries. *Source* World Bank, CICC Research, CICC Global Institute

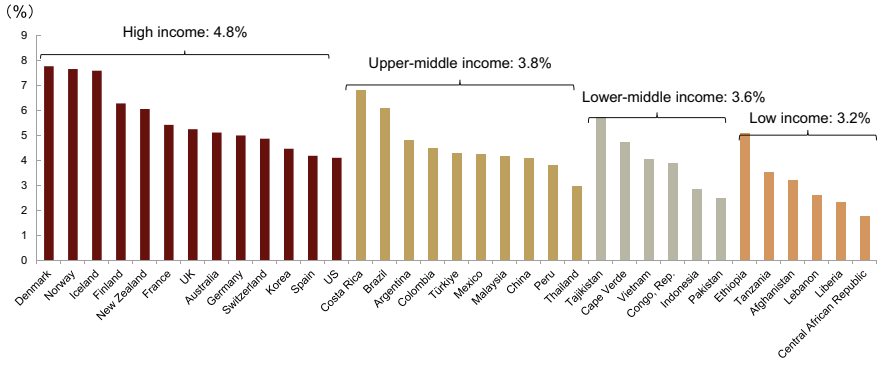

Fig. 6.4 Public spending on education as a share of GDP by countries. *Note* The data is the latest year data for each country disclosed by the World Bank and OECD, mostly for 2019 and 2018, and China's data is for 2019. *Source* World Bank, OECD, Ministry of Education, Wind, CICC Research, CICC Global Institute

access to high-quality education may expand the size of the middle-income group and enable more low-income individuals to move up to the middle-income class.

Creating an equitable and efficient healthcare system is also the foundation for promoting the distribution of the benefits of development. Equitability requires

that medical and healthcare services be accessible to all, regardless of their socio-economic status. Efficiency is achieved by establishing a health-centered and value-based integrated healthcare system. A robust healthcare system can minimize disparities in medical service utilization among income groups, thereby reducing health inequality. Furthermore, a robust healthcare security system can minimize the financial risks associated with medical treatment for patients, reducing the incidence of catastrophic health expenditure and poverty. This, in turn, can improve people's sense of security. Establishing an integrated healthcare system with primary care at its core can facilitate the development of an effective tiered diagnosis and treatment system, leverage the strengths of healthcare providers at all levels, and improve the overall efficiency of the medical system.

6.2 Problems and Underlying Causes of China's Education and Healthcare Systems

6.2.1 Insufficient Funding and Incomplete Institutional Systems Are Two Primary Long-Term Constraints Hindering the High-Quality Development of China's Education System

In recent years, China has witnessed a steady increase in resources allocated to education, leading to significant improvements in education indicators. From 2010 to 2020, China's completion rate of nine-year compulsory education rose from 89.9 to 95.2%,[10] while the gross enrollment rate of higher education increased from 26.5 to 54.4%. Additionally, the average years of schooling for the working-age population increased from 9.5 to 10.8 years.[11] The education gap in impoverished areas has been gradually closing, as evidenced by the completion rate of nine-year compulsory education in poor counties reaching 94.8% in 2020.[12] To promote education equity, colleges and universities in China have been expanding their special enrollment programs for rural areas and poverty alleviation regions. These achievements have laid a solid foundation for preventing intergenerational poverty transmission.

However, there remains a gap between the current state of education and people's aspiration for a better life. The accelerated development of science and technology as well as industrial upgrading raises the requirements for the skills and overall ability of the labor force. In OECD countries, 39% of the working-age population (aged

[10] The completion rate of nine-year compulsory education refers to the percentage of students graduating from junior high school compared with the number of students when these graduating students enrolled in the first grade of primary school. Refer to http://www.moe.gov.cn/jyb_sjzl/sjzl_fztjgb/202108/t20210827_555004.html.

[11] Reference [9].

[12] Reference [37].

25–64) have higher education, with the proportion in the UK and the US reaching nearly 50%.[13] In contrast, the proportion of China's working-age population with higher education was much less.[14] At the same time, development of education is uneven, especially among low-income households.

According to the National 1% Population Sample Survey in 2015, the proportion of the population with high school and higher education levels is lower among the rural population. As education progresses, low-income groups face greater disadvantages in accessing high-quality resources. Students from low-income families are often concentrated in lower-ranked local colleges or vocational schools, and due to lower financial subsidies, these students usually bear higher tuition fees.

Insufficient funding and incomplete institutional systems are two key factors that hinder the development of high-quality education in China. Public funding in education is insufficient and the structure is unbalanced. In 2019, public spending on education accounted for 4.1% of GDP, which was slightly higher than that of upper-middle-income countries (3.8%) during the same period, but still represented a significant gap with high-income countries (4.8%) (Fig. 6.4). Resources allocated to education are unevenly distributed among various education levels and regions. The funding for children aged 0–3, which is the critical period for cognitive development, is relatively insufficient. The funding in vocational education is also inadequate compared with funding for general education.

Additionally, there are regional disparities in funding for elementary education, and there remains a lack of sufficient guidance and supervision for participants at each stage of the education process. The mechanisms for the provision of public childcare services, the connection between vocational and general education, the participation of enterprises in vocational education, and the autonomy of universities all still need to be reinforced. Education resources are unevenly distributed between populations, with resources disproportionately allocated to some areas, weakening the role of education in promoting economic growth and social equity.

Disparities in opportunities for development exist between different people with different abilities. The restricted development and the low status of vocational education in society have yet to be improved. These factors not only cause individual income to have long hovered at low levels, but have also led to a mismatch between the quality of talent and the needs of industrial development, thereby reducing the efficiency of value creation in society.

[13] OECD [27].

[14] Wang and Hu [35].

6.2.2 *Constraints on the Development of Education at Each Stage Due to Insufficient Funding and Incomplete Institutional System*

6.2.2.1 Inadequate Public Services in the Early Childhood Stage (for Ages 0–3)

Early childhood education crucially influences an individual's intellectual and emotional development. In early childhood, deficiencies in nutrition and lack of parenting and interaction can have long-term effects on children's abilities to learn and develop social skills later in life.[15] Early intervention for children from low-income families can be an effective way to improve their educational achievement and future employment performance, and also reduce income disparities. From a cost–benefit perspective, investments aimed at early childhood development generate significant rewards.

Currently, there are insufficient inclusive resources for childcare and education in China. The national enrollment rate for those aged 0–3 years is only about 5.5% as of 2021,[16] while the proportion of those aged 0–2 receiving early education and care services in OECD countries reached 36% in 2019.[17] There is a shortage of public childcare services in China, and private services are more expensive, making it difficult to some extent for families to access affordable and high-quality childcare.

Public resources for childcare are more needed in rural areas, and some family members as caregivers are associated with inappropriate feeding practices and a lack of interaction with children. Studies conducted by the Rural Education Action Program (REAP) have found that children in certain rural and impoverished areas are at risk of falling behind in their cognitive functions, social-emotional development, motor abilities, and language skills.[18]

Inadequate inclusive resources and large urban–rural disparities mainly stem from insufficient public funding and incomplete childcare mechanisms. Regarding public funding, there is a limited budget for preschool education. In China, the financial burden of education and care for children aged 0–3 years mainly falls on families, whereas in OECD countries, the government bears the bulk of the cost. When the family burden is measured by the proportion of kindergarten tuition fees to total

[15] Steen [31].

[16] Mu and Peng [22].

[17] OECD [28].

[18] Ai, Y., & Shi, Y. (2022). Investigation of the Service Mode of Early Childhood and Infant Development in Rural Areas—Early Childhood Development (ECD) from the Perspective of Economics. *Early Childhood Development. Rural Education Action Program* (REAP), sponsored by Stanford University, Center for Experimental Economics in Education at Shaanxi Normal University and Center for Chinese Agricultural Policy at Chinese Academy of Agricultural Sciences.

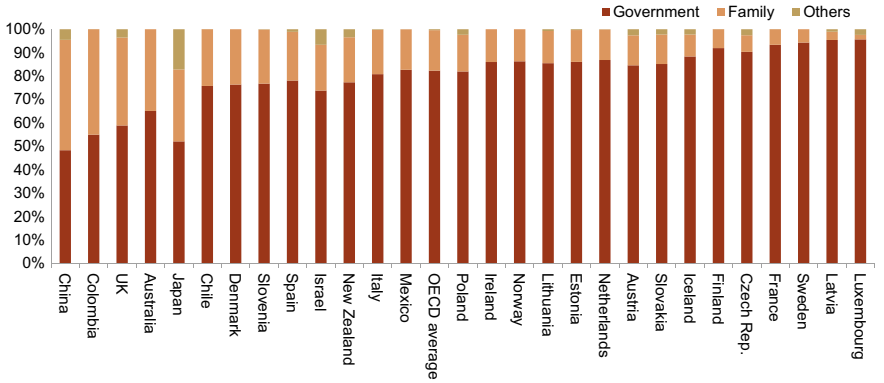

Fig. 6.5 Household burden of preschool education in China is much higher than that in OECD countries (2018). *Source* OECD, China Education Expenditure Statistical Yearbook (2019), Ministry of Education, National Bureau of Statistics, CICC Research, CICC Global Institute

kindergarten education expenditure, the burden on families is much higher in China than in OECD countries (Fig. 6.5).[19]

There is a severe shortage of childcare resources in rural areas, and caregivers may lack the necessary knowledge and skills to provide adequate care. In 2018, 6.97 mn children were left behind in rural areas by parents travelling for work in urban areas in China, with 21.7% of them aged 0–5 years old. Among them, 96% were cared for by their grandparents.[20] While these caregivers usually have a limited level of education and mainly focus on the physical needs of children, they often neglect the developmental needs of children in areas such as social-emotional, intellectual, and linguistic aspects.

Regarding mechanisms, some shortcomings persist in the management, financial investment, and service delivery models for childcare in China. First, both the central and local governments have certain management authority in setting standards, designing curricula, and supervising childcare services. However, the boundaries of authority and responsibility need to be further clarified. Second, the mechanism of financial compensation for childcare services has yet to be launched. The National Development and Reform Commission (NDRC), the National Health Commission, and the Ministry of Civil Affairs have provided construction subsidies for demonstrative institutions of childcare and childcare facilities at the community level.

As an example, the central government allocates a budgetary investment of Rmb10,000 for each new childcare vacancy.[21] However, there are either no consistently clear standards or the subsidies are too low for operational subsidies to childcare institutions and financial subsidies to families. There is a structural imbalance in the

[19] Li and Wang [14].

[20] Reference [18].

[21] Reference [6].

number of public and private, for-profit and non-profit providers. Furthermore, there is a severe shortage of inclusive childcare services.[22]

6.2.2.2 The Development of Public Services for Elementary Education Is Uneven

There are disparities in the quality of elementary education between urban and rural areas, as well as between different schools. The educational level of teachers in rural kindergartens and primary and junior high schools is on the whole still lower than that of their urban counterparts.[23] Students in rural areas also face some disadvantages in various selection exams. According to the PISA conducted in 2018, China had a relatively greater degree of inter-school disparities. Public funding for elementary education can help narrow the gap in education spending among different households, leading to a positive distributional effect.[24]

Both the level and allocation of public funding in elementary education need to be improved. In general, China's total expenditure per pupil on primary education as a share of GDP per capita was lower than the OECD average. In terms of resource allocation, responsibility for public funding in China is currently shared by four levels of government at the central, provincial, municipal, and county levels, with the county-level government being the most significant. Meanwhile, the mechanism for the division of responsibilities still needs to be improved to make it more reasonable.[25] Since 2000, the central government has increased the amount of transfer payments for elementary education, gradually narrowing the gaps in funding between urban and rural areas as well as among regions. However, addressing these funding gaps within provinces remains a challenge as the responsibility of provincial governments for spending on elementary education has not significantly increased compared with that of the central government. Additionally, the fiscal capacity of county level governments is limited, further exacerbating this issue.

The funding of elementary education in general does not prioritize teacher quality, leading to a lack of investment in this crucial aspect of education. Funding of elementary education is underinvested in terms of teacher quality. In 2018, primary and secondary schools in China allocated less than 65% of their education spending to staff expenses,[26] while in OECD countries, staff salaries at non-higher education institutions accounted for 77% of total education spending during the same periods.[27] Insufficient funding has created a gap between China and developed countries in

[22] Hong et al. [12].

[23] Ministry of Education of the People's Republic of China [19].

[24] Wei [36].

[25] Yuan and He [39].

[26] Calculated based on data from the China Education Expenditure Statistical Yearbook (2019).

[27] The non-higher education sector includes primary, secondary and post-secondary non-higher education.

terms of overall teacher quality and distribution. Compared with their counterparts in developed countries, teachers employed at primary and secondary schools in China have lower levels of education and competence, with less than 4% of them holding postgraduate degrees.[28]

The results of the 2018 PISA show that there is still a relatively significant gap in teaching skills between urban and rural teachers. The issues of teachers in rural China being "not good at teaching" and "not happy to teach" are more pronounced in the context of national curriculum reform. Meanwhile, the mechanisms for the utilization, evaluation, and supervision of public education funds by governments are incomplete. This may affect the efficiency of the funds and result in excessive investment in infrastructure such as school buildings and teaching equipment.

The mechanism for sharing high-quality education resources is not well developed yet. Currently, the structural imbalance of teacher resources between urban and rural areas, as well as among regions and schools in China, is relatively pronounced. The mechanism of teacher rotation could help balance the distribution of high-quality educational resource to some extent. However, the mechanisms related to management, selection, and compensation of teacher rotation are still underdeveloped. When implementing the *"xian-guan-xiao-ping"* mechanism (where teachers are administered by the county-level government and employed by schools), there are difficulties in coordinating different governmental departments. Meanwhile, the selection mechanism lacks fairness, and the financial subsidies do not match the costs. The limited fiscal capacity in less-developed areas may hinder the scaling up of the teacher rotation mechanism.

External educational institutions are able to seize high-quality in-school resources, but the supervision mechanism requires improvement. Since the 1980s, the Chinese government has encouraged the establishment of privately-funded educational institutions, which has expanded the channels for financing education spending and increased the availability of educational resources. However, due to incomplete supervision, private institutions may have a negative impact on equity in education.

Private institutions have a high degree of autonomy when it comes to setting fees and selecting students for admission. They often generate significant revenue through high fees, which they use to attract and hire excellent teachers through high salaries, and select exceptional students in advance. This can put local public schools at a disadvantage in terms of both teachers and students, leading to a further outflow of outstanding teachers and students from public schools. As a result, these outflows can create a vicious spiral in equity in education.

The division of administrative and fiscal power between the central and local governments in education could result in insufficient funding and unevenly distribution of resources. While the central government often increases public funding for compulsory education through general transfer payments, it is up to local governments to allocate these funds among various developmental goals. As a result, tracking the

[28] The National People's Congress of the People's Republic of China [33].

proportion of general transfer payments allocated to education and teacher training by the center government is challenging.

However, coordination of these fund allocations by provincial governments tends to be incomplete, as are the evaluation criteria and monitoring mechanisms. Therefore, effectively matching the supply and demand of education resources can be challenging. Moreover, municipal, county-level, and township governments all have the administrative power to organize compulsory education, meaning that each level of government can prioritize investing in schools at their level, neglecting support for schools run by lower levels of government. Additionally, there are barriers to the flow of educational resources among schools of different levels.

6.2.2.3 Insufficient Funding and Incomplete Development Mechanism in Vocational Education

Compared with general education, vocational education is less appealing, and quality needs to be improved. Vocational education and general education are equally important, yet they are two distinct types of education.[29] Currently, vocational education in China holds less appeal to students than general education, and the misconception of "emphasizing general education over vocational education" still persists. Since 2010, the number of students enrolled in secondary vocational education in China has been declining, with a slight increase in 2018 (Fig. 6.6). The graduation rate for secondary vocational students in China is approximately 80%, lower than for general high school students (99%).[30] Moreover, some students who initially enrolled in vocational education drop out of school to work or retake high school.

The quality of vocational education is imbalanced and does not always meet the needs of personal development and industrial diversification. Some secondary schools in China do not meet basic standards for their operating conditions, including average land area per pupil, average floor space of school buildings per pupil, and teacher-student ratio.[31] This problem is more severe in poor areas, particularly in "*san-qu-san-zhou*" areas.[32]

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[29] State Council [30].

[30] These results are based on author's own calculation, assuming that both high school education and secondary vocational education are three-years term, dividing the number of graduates in this year by the number of students enrolled three years ago to obtain the corresponding graduation rate.

[31] Ministry of Education of the People's Republic of China [20].

[32] Zhang and Chen [40].

The Three Regions and Three Prefectures are the deeply impoverished areas at the national level in China. The "Three Regions" refer to the Tibet Autonomous Region and the Tibetan areas in Qinghai, Sichuan, Gansu, and Yunnan provinces, and the Hotan, Aksu, and Kashgar prefectures and Kizilsu Kirgiz Autonomous Prefecture in southern Xinjiang. The "Three Prefectures" refer to Liangshan Yi Autonomous Prefecture in Sichuan, Nujiang Lisu Autonomous Prefecture in Yunnan, and Linxia Hui Autonomous Prefecture in Gansu.

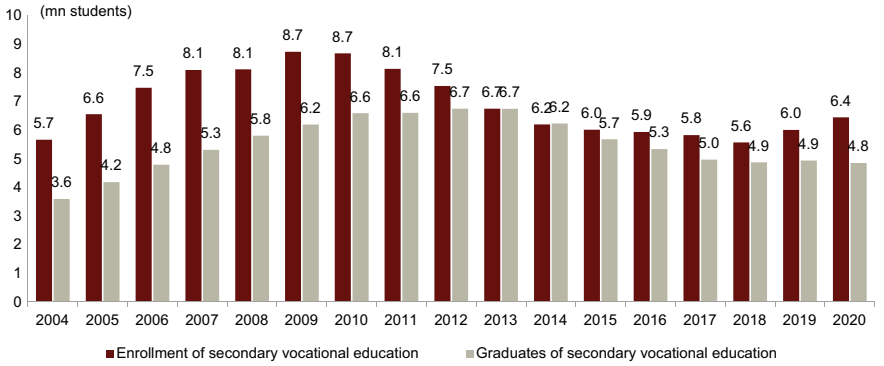

Fig. 6.6 The appeal of secondary vocational education enrollment in China. *Note* The number of graduates and enrollment are the current year's numbers. *Source* Ministry of Education, Wind, CICC Research, CICC Global Institute

The lack of funding and incomplete institutional mechanisms also contribute to the underdevelopment and poor quality of vocational education. In 2018, total funding for secondary education in China only accounted for 0.3% of GDP, lower than the OECD average of 0.5% (Fig. 6.7). Given that vocational education often requires investment in equipment, construction of training sites and facilities, and subsidies to enterprise for encourage participation in school operation, the total funding of secondary education per pupil is usually higher than that of general high schools. In 2018, the total funding of secondary education per pupil in OECD countries was US$1,500 higher than that of general high schools. However, in China, the total funding of secondary education per pupil has consistently been lower than that of general high schools since 2017 (Fig. 6.8). Furthermore, in higher vocational education, China's financial support for students from low-income families is inadequate. According to the 2020 Report on the Development of Student Financial Aid in China, only 15% of junior college students receive interest-free loans.[33] Moreover, the absence of financial assistance will exacerbate inequality since vocational schools enroll a higher proportion of students from low-income families.

The vocational education talent cultivation systems and the enterprise participation mechanisms are incomplete. First, the current mechanism of dividing students into vocational and general schools is still based on exam scores, which does not adequately reflect the unique features of vocational education. The current passive division mechanism based on exam scores fails to enhance the appeal of vocational education, and instead imposes a psychological burden on students, who may feel under pressure as they are more difficult to secure high-skilled or higher-paying jobs. In addition, the proportion of knowledge-based courses in the curriculum of secondary vocational school is lower than in general high school. This puts students

[33] Service Center of the Ministry of Education [29].

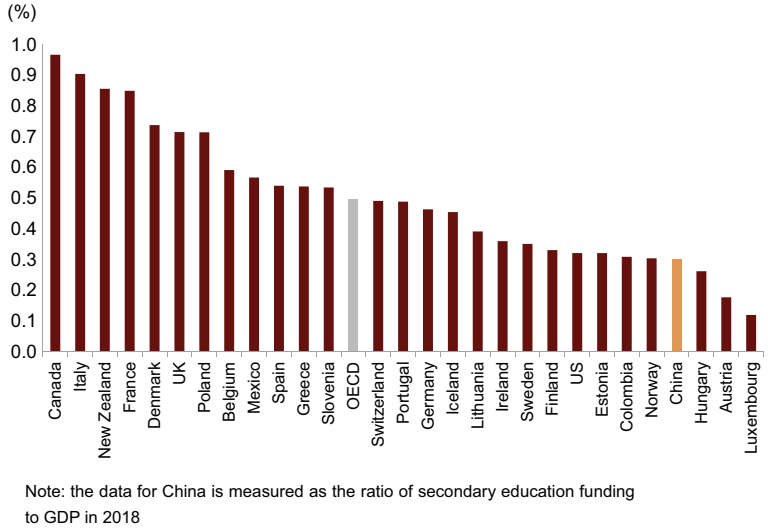

Fig. 6.7 Low proportion of GDP spent on secondary education in China. *Note* the data for China is measured as the ratio of secondary education funding to GDP in 2018. *Source* Education at a Glance 2020, Wind, CICC Research, CICC Global Institute

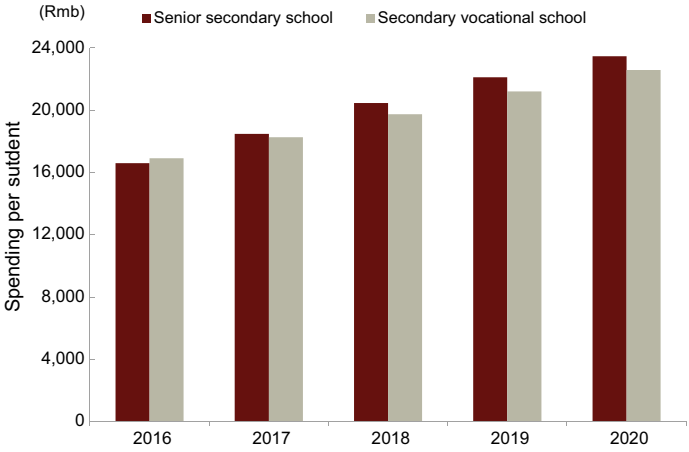

Fig. 6.8 Total funding for secondary education per pupil in China is lower than for general high schools. *Source* Ministry of Education, Wind, CICC Research, CICC Global Institute

from secondary vocational schools at a disadvantage when participating in the general college entrance examination.

Second, the lack of uniformity in the framework of vocational qualification certification has affected both vertical development, which refers to progression from secondary to higher vocational education, and horizontal development, which refers

to the integration between vocational education and general education. The vocational qualification certification system needs to reflect the varying levels of difficulty and complexity of different skills at different education levels. It should also allow for the transferability of qualification certifications between different skills to promote horizontal and vertical mobility within the vocational education system. Although China has a preliminary vocational qualification certification system, the certification is issued by multiple departments and organizations, and the supervision of qualification certification needs to be further enhanced to ensure uniformity. Moreover, the mismatch between skill qualification standards and the actual requirements of the job market may result in a lack of recognition of qualification certification in the job market.

Third, there is inadequate participation by enterprises, which are major employers in the labor market, in vocational education. As a type of education aimed at employment, vocational education should ensure that the skills training matches the needs and requirements of enterprises. The government has introduced policies to encourage vocational education institutions to hire "*shuang-shi-xing*" teachers (teachers who specialize in more than one area of expertise) and offer classes customized for specific enterprises. However, there is still a gap in the degree of implementation of these policies. Although there have been policies encouraging the integration of industry and education in recent years, many enterprises are still not active enough participations, and some may even view investment in vocational education as an unnecessary cost.

Fourth, the direction of development of colleges and universities is vague, and the professional programs offered by vocational colleges and universities do not always meet industry needs. During their development, different types of schools in China have tended to adopt a single model of development and excessively pursue increased enrollment. Moreover, some higher vocational schools have focused too much on upgrading to undergraduate colleges and invested too heavily in developing comprehensive and general disciplines, thereby neglecting their own vocational characteristics. This has resulted in inconsistencies between specialist departments and regional economic development, which do not meet the needs of local pillar industries.[34]

Insufficient funding and incomplete institutional mechanism in vocational education can be attributed to a lag in reforms, inadequate incentives, and poor coordination. Firstly, after the expansion of higher education, there has not been an established mechanism for students to transition from secondary to higher vocational education. Moreover, the adjustment of majors in vocational education has not kept pace with the optimization and upgrading of the country's industrial structure. Thus, job opportunities for vocational education graduates have been constantly shrinking, and the appeal of vocational education has decreased significantly.

Second, the direction of development of colleges and universities is influenced by the evaluation standard used for assessment. At present, the evaluation system for colleges and universities in China lacks a diversified development evaluation

[34] Yan [38].

framework, resulting in vocational universities not having competitive advantages in terms of the number of professional subjects and published papers. The participation of enterprises in running schools requires funding and manpower, and the lack of incentive policies makes it difficult to mobilize enthusiasm of enterprises. Again, the development of vocational education involves many departments such as MOE, MURSS, MIIT, and DRC. As a result, there are numerous challenges in implementing and coordinating policies among these departments.

6.2.3 "Seeking Care Is Difficult" and "Seeking Care Is Expensive" Are Still the Main Problems of China's Healthcare System

Many countries are struggling with issues related to healthcare systems, such as "seeking care is difficult" and "seeking care is expensive". The US has been criticized for its high medical costs and the fact that its total health expenditure as a percentage of GDP far exceeds that of other developed countries. In the UK, many people may opt out of surgical treatment due to the long waiting times involved. Rising medical costs in Japan, driven by an aging population, have made public finance unsustainable. In terms of total health expenditure and waiting time for medical care, China outperforms many developed countries. Nevertheless, accessibility and affordability remain significant areas of concern.

In the past, "seeking care is difficult" and "seeking care is expensive" were primarily due to the lack of medical insurance and insufficient medical resources.[35] As China shifted from a planned to a market-oriented economic model, its medical system also underwent a commensurate transition. This included the dismantling of cooperative medical care in rural areas, which left a significant number of rural residents without insurance coverage. In addition, the former labor insurance system provided inadequate coverage for many urban residents.[36] Consequently, in 1998, as many as 76.4% of China's population lacked any form of medical insurance, and this figure was even higher at 87.4% in rural areas.[37]

During the same period, the proportion of fiscal subsidies in annual hospital revenues has been declining. To make up for this shortfall and maintain their revenue levels, hospitals and doctors have had to prescribe more expensive drugs and tests during the treatment process, leading to a significant increase in costs.[38] At this time, "seeking care is expensive" in China was the result of a lack of medical insurance coverage, as well as of insufficient financial compensation and price distortion. Furthermore, "seeking care is difficult" in China during this period was exacerbated

[35] Ministry of Health [21].

[36] Blumenthal and Hsiao [3].

[37] Ministry of Health [21].

[38] Kou [13].

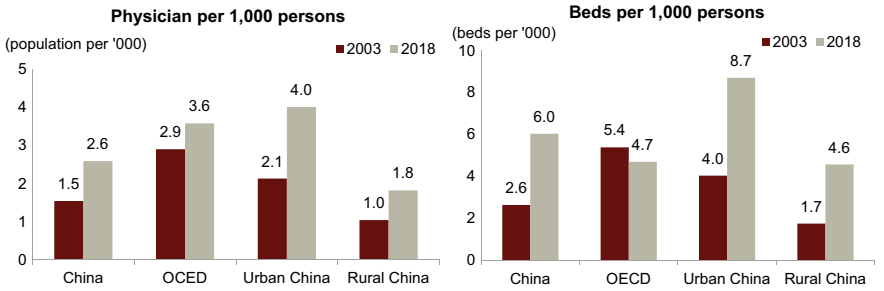

Fig. 6.9 Number of physicians and beds per 1000 persons in China is close to the OECD average. *Source* China Health Statistical Yearbook, OECD Health Statistics, CICC Research, CICC Global Institute

by a lack of government investment, limited capacity of medical and health resources, and a low absolute amount of medical resources per capita.

Thanks to the establishment of three major basic national medical insurance programs and increased fiscal investment in healthcare, the issues of lack of sufficient insurance coverage and limited healthcare resource have improved. The government has established three major basic medical insurance programs that cover urban workers (since 1998), rural residents (since 2003), and urban residents (since 2007). The broadening and deepening of health insurance coverage has significantly improved the accessibility of medical services. In 2003, as many as 70% of patients "who required hospitalization but not" are due to financial difficulties. By 2018, this figure has decreased to 45.5%.[39]

As health insurance coverage has expanded, the government has also increased fiscal subsidies to public healthcare providers, resulting in continued expansion of healthcare resources. Although, the number of physicians and beds per 1000 persons in China was less than half of the OECD average in 2003, these gaps have significantly narrowed by 2018. In fact, the number of beds per 1000 people in China has even surpassed OECD countries. This indicates that the total supply of healthcare resources in China has improved significantly (Fig. 6.9).

However, the issues of "seeking care is difficult" and "seeking care is expensive" still exist. According to the 2018 China Livelihood Survey, medical care ranked second among the most unsatisfactory issues, with expensive medical care (due to low reimbursement of medical insurance) and the difficulty of seeing a doctor at a large hospital being the main reasons.

The primary manifestation for the issue of "seeking care is expensive" is the heavy burden it places on an individual. Reimbursement from basic medical insurance is relatively low, and residents still have to bear a considerable proportion of the medical expense. China's basic medical insurance does not provide sufficient protection for high medical expenses compared with developed countries. Both the Urban

[39] Center for Health Statistics and Information [4, 5].

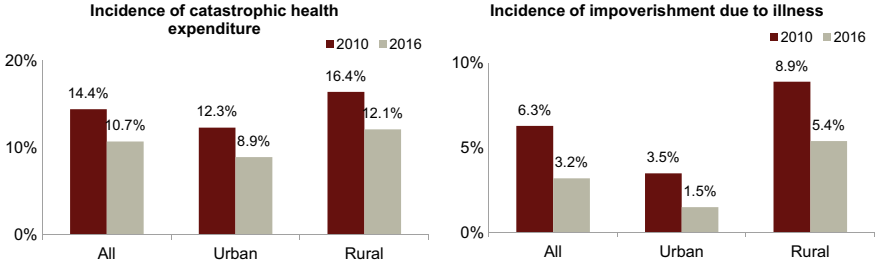

Fig. 6.10 Chinese patients still face the issue of "seeking care is expensive". *Source* Ta, Zhu, & Fu. (2020), CICC Research, CICC Global Institute

Employee Basic Medical Insurance (UEBMI) and the Urban and Rural Resident Basic Medical Insurance (URRBMI) have caps on reimbursement, beyond which households must bear 100% of the expenses incurred. This places a greater financial risk on patients and can even result in catastrophic health expenditure[40] and impoverishment due to illness[41] (Fig. 6.10). While China's basic medical insurance catalog includes nearly 3,000 drugs, many innovative and original drugs are not covered, yet some drugs with poor therapeutic effects and low value remain included. As a result, the medical insurance fund is not used efficiently. Another reason for "seeking care is expensive" is the high prices of drugs that are not covered by the catalog.

The issue of "seeking care is difficult" is primarily due to the uneven distribution of high-quality resources. The issue is not a lack of doctors, but rather a lack of high-quality doctors. While the number of hospital beds and physicians per capita in China is comparable to that of OECD countries, there are significant disparities in the utilization of medical resources across various medical institutions. Specifically, there is underutilization of medical resources among healthcare institutions at the grassroots level and overutilization of specialty and tertiary medical resources. In 2019, the occupancy rate of hospital beds is over 100% at hospitals affiliated with the National Health Commission and provincial governments, and around 90% at county-level hospitals, while the occupancy rate of hospital beds at healthcare institutions at the grassroots level is less than 60%. Moreover, doctors at hospitals affiliated with the commission deal with an average of 10.5 outpatient visits per day, which is 28%, 36.4%, and 43.8% higher than that of provincial, municipal, and county-level hospitals, respectively.[42]

While the rising incomes of Chinese households has led to higher demand for high-quality medical resources, there are significant differences in the quality of

[40] Catastrophic medical expenditures are defined as the proportion of household medical expenditures to total household consumption (after deducting essential consumption such as food) in the year exceeding 40%. The proportion of households incurring catastrophic medical expenditures is usually used internationally as a measure of the ability of a country's healthcare system to protect people from the financial risks of medical care.

[41] Ta et al. [32].

[42] National Health Commission [24].

hospitals, which has resulted in a lack of trust between Chinese families and healthcare institutions at the grassroots level. Additionally, the absence of a tiered diagnosis and treatment system exacerbates the influx of patients to large hospitals, resulting in congestion and difficulty in obtaining medical care at these facilities.

6.2.4 "Seeking Care Is Difficult" and "Seeking Care Is Expensive" Are Primarily Caused by Inadequate Capacity of Insurance and Uneven Allocation of Resources

6.2.4.1 Inadequate Capacity of Medical Insurance and Significant Urban–Rural Disparities

Currently, China's total health expenditure is primarily financed through government spending, which is insufficient, and high out-of-pocket payments by households, which is the result of insufficient depth of basic health insurance coverage and low reimbursement rates. Compared with countries with a similar level of economic development, Chinese households have a higher personal out-of-pocket ratio (Fig. 6.11) for healthcare expenses. In 2019, China's out-of-pocket payments accounted for 35% of its total health expenditure, which is significantly higher than the OECD countries' average for the same period. The high financial burden on households reflects insufficient government spending on health. The average proportion of general government health expenditure to GDP in OECD countries was 7.73% in 2019, while that in China was only 3%.

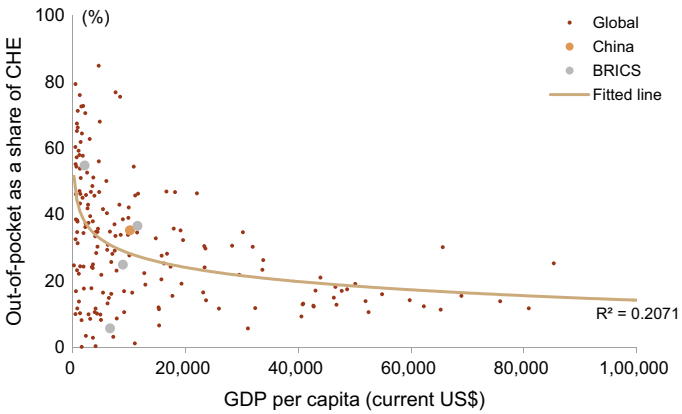

Fig. 6.11 Chinese families still have high out-of-pocket payments (2019). *Source* World Bank, WHO, CICC Research, CICC Global Institute

Higher personal out-of-pocket expenses place a significant financial burden on disadvantaged groups such as low-income households, hindering their access to healthcare and discouraging them from seeking necessary medical treatment. This further exacerbates health inequality.

The low reimbursements provided by URRBMI result in a heavy burden on patients to seek medical treatment. UEBMI provides coverage for urban workers and other formally employed groups, while URRBMI[43] covers rural residents, urban residents, and those informally employed in urban areas. There are significant differences in the depth and breadth of coverage between UEBMI and URRBMI. As of 2021, URRBMI provides coverage to 1.01bn people, which is 2.85 times the number of people covered by UEBMI. However, the total funding for URRBMI is only 51.4% that for UEBMI. Additionally, the funding for UEBMI is 5.55 times that for URRBMI on a per capita base. The funding disparity results in a significant difference in health insurance benefits between those insured under UEBMI and URRBMI. For example, in 2021, the per capita fund expenditure for UEBMI was Rmb4196, 4.6 times that of URRBMI. Furthermore, the average reimbursement ratio of UEBMI is more than 15ppt higher than that of URRBMI.[44]

There are some regional disparities in the coverage and benefits of basic medical insurance in China. The funds of each insurance scheme are primarily pooled at the prefecture or county level, with UEBMI and URRBMI forming independent pools within each region. The demographic structure and levels of industrial and economic development of each region contribute to different levels of financing, resulting in disparities in benefits and payments of health insurance funds. Comparing per capita expenditures of basic medical insurance in each province, Beijing, Tianjin, Jiangsu, Zhejiang, and Shanghai have the highest per capita insurance expenditures, while Guizhou, Henan, Gansu, and other central and western provinces have the lowest.

Disparities in urban–rural and regional benefits result in an uneven distribution of health resources among the population. This leaves disadvantaged groups such as rural residents, urban informal workers, and residents of less developed regions facing a greater degree of severity of "seeking care is expensive". Lower health insurance expenditure can result in patients facing higher out-of-pocket expense, leading to disparities in the use of healthcare services. Disadvantaged groups may face greater financial burdens and reduce their use of healthcare services due to "seeking care is expensive". This can impede the accumulation of the human capital necessary for the progress in development for disadvantaged groups, ultimately hindering their long-term income growth prospects.

Another reason for the issue of "seeking care is expensive" is the rapid growth of healthcare expenditure, which can be attributed to the imbalanced allocation of medical resources. There are several factors contributing to the rapid growth of

[43] URRBMI was formed by the merger of the new rural cooperative medical scheme (NCMS) and the urban resident basic medical insurance (URBMI).

[44] National Healthcare Security Administration [25].

total health costs in China, including the increase in family income, the expansion of health insurance coverage, the aging of the population, and the advancement of medical technology. However, when compared with other countries, the imbalanced allocation of medical resources is an important contribution to the soaring health expenditure in China. A significant portion of medical resources in China is concentrated in hospitals, particularly large tertiary hospitals. This leads to a shortage of resources and weak capacity of healthcare institutions at the grassroots level, making it challenging to provide high-quality primary and preventive care to patients. The imbalanced distribution of medical resources has resulted in patients with common diseases that could be treated at healthcare institutions at the grassroots level flocking to large hospitals for treatment, driving up medical costs.

6.2.4.2 The Unbalanced Allocation Is the Primary Cause of the Issue of "Seeking Care Is Difficult"

The structural imbalance in the allocation of resources in China resembles an inverted triangle. Large tertiary hospitals in China have access to a significant amount of high-quality resources and continue to expand in size, while healthcare institutions at the grassroots level and at primary and secondary hospitals lack corresponding high-quality resources. At the same time, due to the lack of a corresponding tiered diagnosis and treatment system and inadequate constraints of health insurance, patients are inclined to seek medical treatment at tertiary hospitals, and large hospitals also have incentive to absorb them. In 2020, the number of tertiary hospitals in China accounted for 24% of all healthcare institutions, yet they received 42.5% of all inpatients. Moreover, the revenue generated by tertiary hospitals accounts for 59% of the total revenue at hospitals and healthcare institutions at the grassroots level (Fig. 6.12). The influx of patients to tertiary hospitals has resulted in these hospitals operating at high workload, making it more difficult for patients to access care.

There are significant disparities between urban and rural areas in the distribution of medical resources. In 2020, the number of licensed physicians and physician assistants per 1000 people in urban areas was twice that in rural areas, and the number

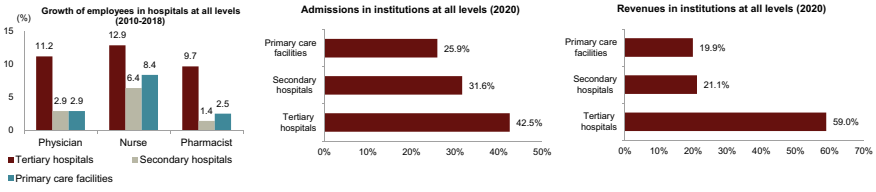

Fig. 6.12 The imbalanced allocation of medical resources in China. *Note* (1) The number of physicians in the above chart is the number of licensed physicians & physician assistants; (2) hospital revenue only covers public hospitals. *Source* China Health Statistical Yearbook, CICC Research, CICC Global Institute

of beds in medical institutions per 1000 people in urban areas was 1.8 times that in rural areas, indicating a significant disparity. At the same time, unequal economic development between urban and rural areas has led to many young and middle-aged individuals from rural areas migrating to cities, resulting in a higher proportion of elderly individuals in rural areas. As the population in rural areas continues to age, there may be increased demand for medical services, which could exacerbate the existing shortage of medical resources in these areas. This can create a difficult situation in which it becomes challenging to fully meet the medical needs of rural residents.

There are also some disparities in the distribution of medical resources among regions. Medical resources in China are distributed unequally across regions, with the more developed eastern areas holding a relatively significant advantage over the central and western regions. Factors such as economic development, generosity of medical insurance, and population mobility preferences all contribute to this disparity. In 2020, the number of licensed physicians and physician assistants per 1000 persons in Beijing, Zhejiang, and Jiangsu were 4.9, 3.4, and 3.2, respectively, which is significantly higher than the figures in central and western provinces such as Guangxi (2.5), Yunnan (2.6), and Jiangxi (2.3).[45]

Regarding advanced medical equipment, the number of high-end CT scanners per capita is lower in the central and western regions. There are significant regional disparities in the distribution of high-quality medical resources as well. Of the top 100 general hospitals ranked by Fudan University in 2020, 51 hospitals were located in Beijing, Shanghai, and Guangzhou, while 12 provinces did not have any hospital ranked in the top 100. The northern and eastern regions of China have the highest density of top 100 hospitals per capita.

There are significant disparities in the quality of care provided across different regions and healthcare facilities in China. First, there is a pronounced gap in the clinical quality of hospitals across the different administrative levels in China. The China Acute Myocardial Infarction (CAMI) Registry study has analyzed the in-hospital mortality rate of ST-segment elevation myocardial infarction (STEMI) at the provincial, municipal, and county hospitals from 2013 to 2014. The study found that the in-hospital mortality rates were 3.1%, 5.3%, and 10.2% at provincial, municipal, and county hospitals, respectively (Fig. 6.13).[46] The quality of care also varied relatively significantly among hospitals at the same administrative level. A study comparing clinical process quality indicators for patients with acute myocardial infarction at 14 tertiary hospitals in Beijing found that although all hospitals had high quality at the overall level, there was still significant variance in clinical quality among the 14 hospitals.[47] In rural areas, significant disparities in clinical quality exist across different healthcare institutions, with relatively low quality of care at healthcare institutions at the grassroots level.

[45] National Health Commission [24].

[46] The writing committee of the Report on Cardiovascular Health and Diseases in China [34].

[47] Zhou et al. [41].

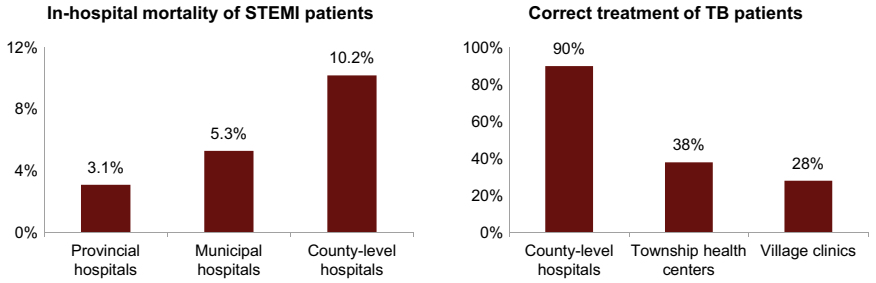

Fig. 6.13 Quality of care varies widely among medical institutions. *Source* Annual Report on Cardiovascular Health and Diseases in China (2020),[48] CICC Research, CICC Global Institute

Using standardized patients with tuberculosis (TB) symptoms as an instrument, a study found that the rates of correct diagnosis and treatment of patients at a county hospital, a township health center, and village clinics were 90%, 38%, and 28%, respectively (Fig. 6.13).[49] Furthermore, there is considerable potential for enhancing the prevention, management, and control of chronic diseases. Preventing, managing, and controlling chronic diseases such as hypertension and diabetes can have a strong preventative effect on the occurrence of cardiovascular and cerebrovascular diseases. Although the awareness and treatment rates of hypertension among Chinese patients have greatly improved from 2002 to 2015, the control rate of hypertension[50] remains only about one-sixth of all patients, leaving significant room for improvement. The situation is even more severe in rural areas.

The disparities in economic development have further widened the gap in the distribution of high-quality resources. Compared with economically developed regions, the central and western regions of China have limited financial capacity due to the smaller tax base of local governments. The current fiscal transfer system from the central to local governments does not include subsidies for public hospitals and healthcare institutions at the grassroots level in its transfer items. The fiscal subsidies provided to healthcare institutions in each province, particularly at the grassroots level, are constrained by the local level of economic development. As a result, developed regions have a comparative advantage in raising funding for their healthcare institutions. At the same time, high-quality medical resources are concentrated in the economically developed eastern regions, which also have relatively abundant educational resources.

There is a strong link between local tertiary hospitals and medical schools in these areas. This connection continuously attracts excellent medical graduates and talent to work in these areas. This positive feedback mechanism reinforces the concentration of high-quality medical resources in economically developed regions. As a result,

[48] National Center for Cardiovascular Disease [23].

[49] Li et al. [15].

[50] Hypertension control rate is defined as the proportion of people previously diagnosed with hypertension who maintain their blood pressure below 140/90 mmHg.

the uneven distribution of medical resources and medical quality between urban and rural areas and regions becomes even more pronounced.

6.3 Establishing the High-Quality Education for All

Establishing high-quality education can, on one hand, reduce the uneven distribution of educational resources so that disadvantaged groups could have more opportunities to accumulate human capital, narrow the income gap with other groups, and promote social equity. The development of high-quality education can also make educational training and the needs of industrial development match each other, and improve the efficiency of the utilization of social resources.

6.3.1 Increasing Fiscal Investment in Education

It is crucial to increase the ratio of government spending on education to GDP. Given China's new pattern of economic growth, which puts greater emphasis on human capital and technological progress, and considering the educational inequity in the country, it is indeed advisable to further increase government spending on education as a share of GDP.

It is crucial to enhance the construction of big data platforms and accelerate the process of education informatization. Through the discovery and predictive capabilities of big data, it has become possible to break down and analyze every stage of the education process as well as various aspects of teaching. This analysis can provide invaluable support for education policy-making and tracking the effectiveness of implemented measures. Furthermore, education informatization can improve the learning environment and stimulate interest in learning among disadvantaged groups. Instead of solely focusing on construction of campus infrastructure, efforts should be directed towards optimizing the effectiveness of teaching. Furthermore, it is essential to transform the education system into one that is student-centered.

It is crucial to enhance the overall environment for the development of teachers. The government could implement policies aimed at enhancing the benefits and salaries of teachers, thereby improving the overall appeal of the teaching profession. Particular attention should be given to providing salary incentives and living allowances for teachers in economically underdeveloped areas. Strengthening teacher training mechanisms is also crucial for ensuring that educators are equipped with the necessary knowledge and skills for effective instruction. By creating a favorable environment for development for teachers, we can promote their professional growth and job satisfaction, ultimately benefiting the education system as a whole.

6.3.2 Clarifying the Policy Focus for Different Stages of Education

Given the limitations of fiscal capacity, it may not be feasible for public finance to meet the needs of all educational products and services. Achieving a balanced relationship between the government and the market is crucial, particularly in guiding enterprises to participate in the development of high-quality education in alignment with the characteristics of each stage of education.

6.3.2.1 Early Childhood Education: Expanding Inclusive Childcare Resources and Strengthening Guidance on Childcare Services for Rural Families

Enlarging fiscal investment in preschool education and increasing the supply of inclusive childcare services is of the utmost importance. Public finance plays a vital role in expanding the supply of childcare services and ensuring that they reach disadvantaged groups. By allocating funds to support the establishment and operation of childcare facilities, governments can increase the availability and affordability of childcare for families in need. In addition to expanding public childcare services, the government can support and regulate the development of nonprofit childcare services through subsidies and other measures. Nonprofit organizations are also often strongly committed to serving the community, and can provide high-quality care.

Completing the mechanisms for guiding and monitoring childcare norms in rural areas is also crucial. The government can play a crucial role in promoting family education services in remote rural areas by utilizing in-home interventions or leveraging the internet. These approaches can help bridge the gap in access to educational resources and support for families in isolated or underserved regions. Via online and television guidance, complemented by the provision of learning kits, parents and caregivers are encouraged to actively engage in children's home learning activities.

6.3.2.2 Basic Education: Expanding the Supply of In-School Resources, Enhancing Balance, and Continuously Regulating Out-of-School Resources

Focusing on equity and promoting the sharing of high-quality educational resources should have high priorities. It is crucial to promote the sharing of high quality educational resources among schools and regions; gradually establish a comprehensive regulation system on teacher rotation and the relevant policy support; improve the mechanism of selection, compensation, and supervision; and improve the coordination between among various county-level departments to support the implementation of the system.

Consolidating the policy of "gong-min-tong-zhao" (fairness in enrollment for public and private school) and "shuang-jian" (easing the burden of excess homework and off-campus tutoring) is crucial for promoting equity in education. Additionally, expanding the supply of services within schools can further support students' holistic development. Regulations on resources outside of the public-school system play a crucial role in promoting educational equity and should be consistently implemented and consolidated. Attention should also be directed towards assessing whether public education is providing sufficient educational capacity and towards improving the balance of educational resources across different schools. This ensures that all students have equal access to educational resources and opportunities, regardless of their socioeconomic background.

6.3.2.3 Vocational or Higher Education: Increasing Overall Funding and Establishing a Modern Vocational Education System

Strengthening the fiscal support for vocational education is of utmost importance. When it comes to overall funding, there is a need to raise the proportion of spending on vocational education in relation to GDP, particularly with regard to public funding allocated to secondary vocational education. In terms of funding allocation, China should consider two aspects. First, it is crucial to enhance targeted investment in vocational education in remote and rural areas. Second it is equally important to allocate funding towards enhancing the quality of teaching. This can be achieved by establishing public practical training sites, conducting vocational teacher training programs, and offering employment counseling services. The fund allocation mechanism can be effectively combined with performance-based indicators such as student graduation rates, training completion rates, and teacher qualifications. By doing so, the aim is to enhance the efficiency of fund utilization and ensure that resources are allocated in a manner that reflects measurable outcomes and achievements.

To promote the seamless integration between vocational and general education, it is crucial to establish a platform of mutual recognition that facilitates interoperability. A credit conversion mechanism should be developed to facilitate the transferability of credits earned by students across different skill qualifications. Simultaneously, it is necessary to establish a coordinated management platform to enhance synergy and communication among different departments.

6.4 Promoting the Equal and Fair Provision of Basic Medical Services for All

By promoting the equal and fair provision of basic medical services, patients, particularly in low-income disadvantaged groups, can experience a reduction in the burden of medical expenses. This approach also helps to narrow the gap in accessibility of

medical services caused by income disparities. Furthermore, promoting equal and fair provision of basic medical services will not only enhance the service capacity and clinical quality of healthcare institutions at the grassroots level, but also improve their ability to prevent and manage chronic disease. This approach can help address the unbalanced allocation of medical resources and ultimately enhance the overall efficiency of the healthcare system. These efforts will significantly contribute to the overarching goal of common prosperity by ensuring that education and healthcare are accessible to all individuals in a fair and efficient manner.

6.4.1 Improving the Depth of Health Insurance Coverage

6.4.1.1 Increasing Government Spending on Health to Narrow the Gaps Between Urban and Rural Areas

Compared with OECD countries, there is still relatively significant room for increasing government spending on healthcare. In 2019, the weighted average share of general government spending on healthcare to general government expenditure in OECD countries was 18.1%, whereas the corresponding figure for China was only 8.8%. As China's aging population grows rapidly, the escalation of health expenditure will put a greater burden on the government's spending on health.

The focus of government spending on health should be on addressing structural contradictions within the healthcare system. Ensuring uniform benefits of basic medical insurance is a crucial prerequisite for achieving equalization of basic medical services. The government should gradually increase fiscal subsidies for URRBMI and encourage people to increase their individual contributions by raising per capita financial subsidies. Simultaneously, the government can increase the level of funding while enhancing the level of fund pooling and reducing regional disparities, and gradually transition to a national pooling health insurance for residents (URRBMI). Furthermore, we believe the government should also design an effective referral system and a tiered diagnosis and treatment system to guide residents seeking medical treatment in an efficient manner. It should also channel medical resources to flow to rural areas through the gradient reimbursement of insurance, enhancing the capacity and capabilities of healthcare institutions at the grassroots level.

6.4.1.2 Strengthening the Efficiency and Quality of Health Insurance Fund Management

The establishment of a single payer system would enable the strategic purchasing power of health insurance funds to be leveraged, thereby enhancing the value for money of health insurance payments. Implementing a single payer system can effectively enhance the market power of health insurance funds, leading to improvements

in the quality of care and a reduction in the cost of medical treatment. Leveraging the strategic purchasing power of a single payer system requires a balance between price and quality, and should follow the principles of value-based care, taking into consideration both cost and quality.

Payment reform could focus on the overall nature of healthcare. Reforming payment methods is a crucial tool for regulating the behavior of medical institutions, but it could be approached comprehensively in order to achieve the intended goals and avoid unintended effects. Moreover, the payment reform should not only select the appropriate payment scheme based on the nature of different medical procedures, but also focus on incentivizing medical providers.

6.4.1.3 Enriching Product Supply and Encouraging Product Innovation of Commercial Insurance

Commercial health insurance plays a vital role as a supplement to basic medical insurance, and there is significant potential for further development. In 2020, the depth of China's health insurance, measured as the ratio of health insurance premium to GDP, was only 0.8%. Similarly, the health insurance density, measured as the ratio of health insurance premium to the total population, was only Rmb579 per person. These figures are significantly lower than those of the mature health insurance markets in Europe and the US. In terms of product structure, critical illness insurance still dominates China's commercial health insurance market, with medical insurance, nursing insurance, and disability allowance insurance accounting for a relatively low percentage. While traditional commercial insurance plays a role in cost supplementation, it can also focus on supplementing the catalogs and networks to meet the diverse healthcare needs of patients. Additionally, in comparison to basic health insurance, commercial health insurance companies have a greater incentive to innovate health insurance models and control medical costs. Encouraging innovation and applying the resulting experiences to basic health insurance can improve the efficiency of basic health insurance management.

6.4.2 Improving the Quality and Efficiency of Medical Services

6.4.2.1 Establishing an Integrated Primary-Care-Centered Healthcare System

Integrated healthcare system needs to shift from being "disease-centered" to being "health-centered". Currently, China's healthcare system is still largely focused on treating diseases and ailments, with relatively less emphasis on prevention, control, and treatment of chronic diseases. Moreover, the current fragmented medical service

system may not be adequate for responding to the needs of a large number of chronic patients in the future. Integrated healthcare is a system that designs the functions of institutions at all levels according to the frequency and cost of medical services, as well as promoting the division of labor and cooperation among institutions, with the ultimate goal of providing comprehensive, continuous, and coordinated care for patients.

An efficient integrated healthcare system often centers on primary care, with resources allocated to healthcare institutions at the grassroots level to address the needs of common and chronic diseases. Secondary hospitals are designed to address the needs of more serious diseases, and tertiary hospitals are reserved for the treatment of the most severe cases. Institutions at all levels within the integrated healthcare system can refer patients in both directions based on the patient's condition, without encountering barriers. The flow of information is shared seamlessly, enabling the efficient utilization of medical resources in a comprehensive and effective manner. This collaborative approach ensures that patients receive appropriate care at the right level of the healthcare system. China has accumulated extensive local experience in the construction and operation of "*yi-lian-ti*" (healthcare consortiums), which can provide valuable insights on and lessons for the establishment of an integrated healthcare system.

6.4.2.2 Strengthening the Capacity and Ability of Healthcare Institutions at the Grassroots Level

Integrating healthcare services is crucial for improving the overall health of the population. Preventative care, rehabilitation care, health behavior, and elderly care all significantly influence overall health outcomes. For a long time, healthcare institutions at the grassroots level have primarily served as medical service providers without adequately addressing other determinants of health. The challenges associated with China's aging population are compounded by the ongoing process of urbanization, leading to a significantly higher level and rate of aging in rural areas compared with urban areas. Healthcare institutions at the grassroots level play a crucial role as integrated providers of health services, encompassing not only medical services, but also preventative care, rehabilitation care, health interventions, and elderly care. Simultaneously, the performance evaluation of local governments should include the health outcomes of the local population, ensuring a fully coordinated approach at the policy-making level to align goals consistently.

6.4.3 Stimulating the Innovative Vitality of the Pharmaceutical Industry

The government plays a crucial role in fostering an institutional environment that stimulates pharmaceutical innovation. The US has implemented effective incentives for innovation in the pharmaceutical sector, providing valuable lessons for China to enhance its own pharmaceutical innovation efforts. First, the public sector and university research funding, represented by the National Institutes of Health (NIH), continues to provide financial support for basic research in frontier areas. Second, the establishment of a multiple payer system in the healthcare market has better mobilized the financing capacity of the healthcare system. Third, regulatory authorities continuously reform the drug review system and the patent system to improve the entry standards for new drugs and to prevent duplication of low-end market players.

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Chapter 7
Joining the Hands of Government and Society to Leverage the Role of Public Finance and Charity

Abstract This chapter examines how China can collectively leverage the role of public finance and charity to promote common prosperity. China's fiscal redistributive effect is not salient because of poor progressivity in taxation and the low level of spending on public services and transfers. In terms of the tax system, taxation is dominated by indirect taxes such as value-added tax (VAT), which is mainly levied on consumers. The corporate tax burden is also partly perceived as a burden on employees, so the effective tax rate for corporate owners is lower. Structural tax cuts both raise economic efficiency and help improve the redistribution of the tax system. To this end, China can reduce VAT, reform individual income tax rates on capital and labor income, and introduce a real estate tax while cutting taxes on property transactions. In terms of public expenditure, fiscal spending is biased towards economic development, with room for improvement in the input of public services and transfers targeting specific groups of people to promote both efficiency and fairness. China has a broad fiscal sector that includes state-owned enterprises (SOEs), land finance, and social insurance funds. SOEs should increase their dividends and allocations to the social security fund to provide for redistribution. As the aging population increases and GDP per capita grows, China's social security levels should and can rise. The basic pension insurance system has two major challenges: Large urban–rural disparities and poor financial sustainability. More fiscal support should therefore be enacted, while parameters should be adjusted. To address the urban–rural disparity, financial resources can be used to revamp the basic pension scheme for rural and non-working residents and to establish a non-contributory minimum pension to provide basic protection for the poor elderly population. To address the issue of financial sustainability, the policy has improved the financial position of the basic pension scheme for urban employees through financial subsidies and transfer of state-owned assets, and fiscal policy can do more in the future. An important variable for parameter adjustment is the setting of the retirement age. At present, the retirement age

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in China is low, so delaying retirement would significantly improve the financial position of the pension system and reduce the intergenerational gap. This would also increase the total labor supply. The intensity of social giving to charity in China is low. The public's perception of charity is limited, and charitable organizations operate inefficiently. The root causes of the problem include the unique origins of charity development in China, the current low level of economic development, the imperfect legal and regulatory systems for charity, and the lack of incentives such as taxation. Therefore, China may focus on long-term institutional development, guide social awareness, and encourage corporate social responsibility.

The hand of the market determines the primary distribution of wealth according to the value of factors of production such as labor, capital, and land, but the outcome is often accompanied by a series of inequalities because of all the reasons described in previous chapters. In order to reduce inequality, two other "hands" are needed to correct for market outcomes. The first is the hand of the government, which is responsible for secondary distribution through the power of public finance, regulating disparities with public revenue such as taxes, and providing the public goods through government expenditure and social security. The other is the hand of society, which supplements the quasi-public goods not fully provided by government through the philanthropic actions of private organizations, individuals, and enterprises.[1] Market exchange is the use of private means to address private ends, taxation is the use of public means to address public ends, and philanthropy is the use of private means to achieve public ends, and it effectively add to both markets and government.[2]

This chapter examines how China can collectively leverage the role of public finance and charity to promote common prosperity. In China, the scope of fiscal instruments goes beyond the ordinary taxes and expenditures and covers SOEs, government-managed funds, and social insurance funds. Of these, government-managed funds are dominated by proceeds from the sale of state-owned land-use rights, which is discussed in Chap. 3. In addition to government revenues and expenditures, this chapter will focus on the pension system, an important component of the social security system which is of fundamental importance in safeguarding the well-being of the people.

[1] Deng [2].

[2] Sulek [21].

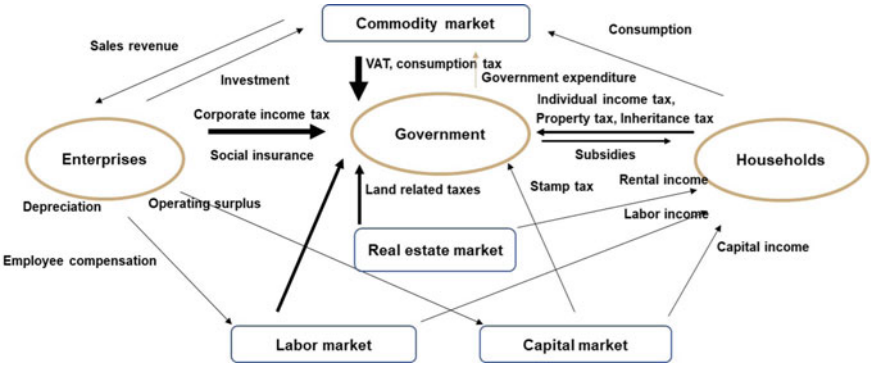

Fig. 7.1 Overview of China's tax system within the macroeconomic context. *Note* Land related taxes include: increment tax on land value; stamp tax; land utilization taxes, and deed tax. *Source* CICC Global Institute

7.1 Enhancing the Progressivity of China's Tax Burden

7.1.1 Types and Incidence of Taxation in China

Taxation is not only a tool for drawing revenue, but also plays a role in institutional reform, social security, and equitable distribution. The position of China's main taxes is shown in Fig. 7.1. The largest of these taxes is the VAT, which accounted for 36.8% of total tax revenue in 2020. If import VAT and consumption taxes are added, VAT and consumption taxes in China's goods and services markets accounted for 54.0% of total tax revenue.[3] The second largest tax in China is corporate income tax, which accounted for 23.6% of tax revenue in 2020, followed by individual income tax at 7.5% and taxes related to real estate transaction such as land value-added tax and deed tax, which together accounted for 12.8% (Fig. 7.2). These four tax categories accounted for over 90% of China's total tax revenue in 2020.

To understand the tax burden borne by different social groups, both the nominal taxpayer of the tax and where the tax incidence actually falls must be analyzed. Taxes can be shifted, so the actual bearer of the tax burden is not necessarily the nominal taxpayer**.** In China, VAT and consumption taxes account for more than half of the country's total tax revenue, and a large proportion of this tax burden is borne by consumers, particularly low-income groups with high and inelastic demand for consumer staples. The effective tax burden of enterprises is affected by both VAT and corporate income tax, but the impact of changes in the tax rates of both varies depending on the industry. From the perspective of labor and capital, the two main factors of production, the former bears more of the tax burden. Employees bear the tax burden of VAT as the main consumers as well as part of the tax burden of corporate income tax as the provider of labor. In addition, the portion of China's individual

[3] Data source: Ministry of Finance. If export tax rebates are deducted, the share is 45.2%.

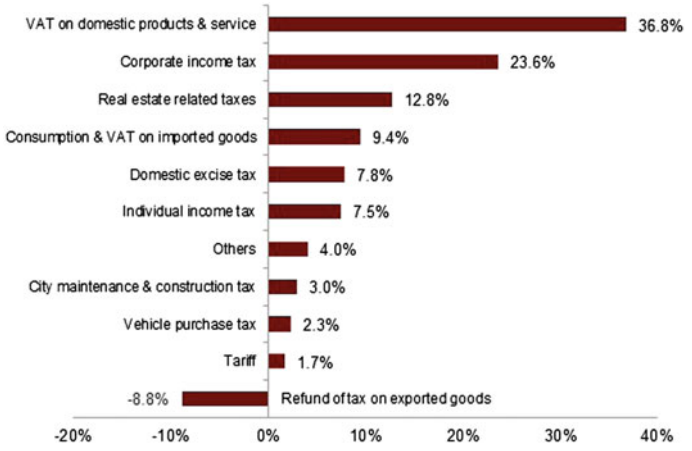

Fig. 7.2 Composition of domestic tax revenue (2020). *Source* National Bureau of Statistics, CICC Global Institute

income tax from labor income far exceeds the portion from capital income. In 2019, 64% of individual income tax came from labor income (i.e., wages), which is borne by employees, and 28% of individual income tax came from property income, which is borne by capital owners. The remaining 7% of individual income tax came from business income, which is mainly paid by the self-employed (Fig. 7.3).

In general, enterprises are the main nominal taxpayers in China, but employees bear a larger share of the actual tax burden. Although the majority of employees do not pay individual income tax directly and do not have the title of "taxpayer" because of their low monthly income, they actually bear a significant tax burden. At the same time, high-net-worth individuals in China have a relatively low tax burden (see Chap. 1). Apart from the VAT and consumption taxes borne by their consumption behavior, this group mainly pays for the property-related income component of individual income tax, the part of the corporate tax burden borne by capital (VAT

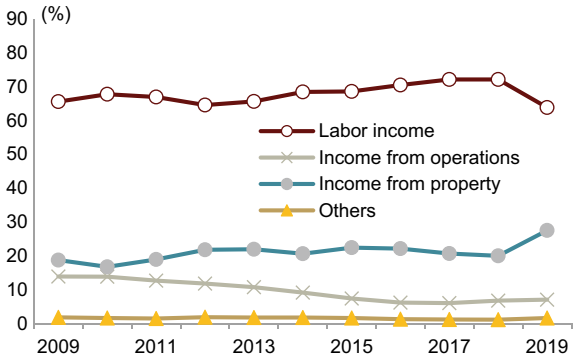

Fig. 7.3 Sources of individual income tax in China. *Source* China Taxation Yearbook 2020, CICC Global Institute

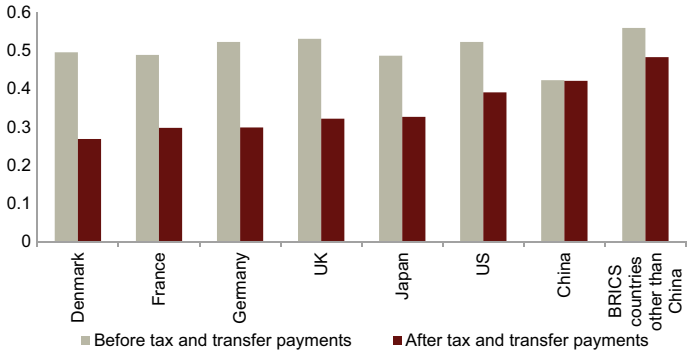

Fig. 7.4 Gini coefficients before and after tax and transfer payments in select countries (2019). *Note* The value of BRICS is the average of Brazil, Russia, India, and South Africa; data of Japan, South Africa, and Brazil are all from the latest available years. *Source* SWIID, CICC Global Institute

and corporate income tax), and a portion of real estate-related taxes. The tax rate on property income individual income tax is a proportional one at 20%; in contrast, employees rely on salary income but have a marginal tax rate of up to 45%.

7.1.2 The Current Tax System Is Not Very Effective in Redistribution

The redistributive effect of public finance in China is low, and the difference between the Gini coefficient before and after tax and transfer payments is relatively small (Fig. 7.4). Two main factors determine the redistributive effect—namely, tax size (average tax rate) and progressivity. The tax size in China is not high. The ratio of tax revenue to GDP in China was 16% in 2019, compared with an average of 25% in OECD countries.[4] China's government's budget covers government-managed funds, state-owned capital management, and social insurance funds, with the combined total government revenue to GDP ratio reaching 35%, compared with the OECD countries' average of 33.4%.[5] As a result, the main reason for China's low tax redistributive effect is not the small tax size, but the low progressivity of the overall tax system (Table 7.1).

The main reason for the low progressivity of taxation in China is that indirect taxes such as VAT account for a relatively high proportion of total revenue, while more progressive taxes such as individual income tax account for too low a share. VAT is mainly levied on consumption, and the higher propensity to consume among low-income groups makes the burden of VAT more heavily borne by low-income

[4] Data source: OECD, China Statistical Yearbook.

[5] Data for 2019 includes social security contributions. Data source: "OECD Revenue Statistics 2021".

Table 7.1 Redistributive effect of the overall tax system and individual income tax

Country	Year	Overall tax system			Individual income tax		
		Redistribution	Progressivity	Average rate (%)	Redistribution	Progressivity	Average rate (%)
Denmark	2008	0.04	0.08	35	0.02	0.09	22
Finland	2008	0.05	0.13	28	0.03	0.13	20
Germany	2008	0.07	0.17	30	0.06	0.30	16
Ireland	2008	0.07	0.32	17	0.05	0.36	13
Italy	2008	0.05	0.14	26	0.04	0.19	16
Sweden	2008	0.03	0.07	36	0.02	0.06	28
UK	2008	0.05	0.18	24	0.05	0.28	14
US	2004	0.03	0.11	23	0.03	0.21	15
China	2007	− 0.01	− 0.03	20	–	–	–
	2008	− 0.002	− 0.02	–	0.00	0.41	1
	2012	− 0.001	− 0.01	–	0.00	0.43	1
	2013	–	–	–	0.01	0.48	2
	2018	–	–	–	0.02	0.37	4

Source Verbist and Figari [23],[6] Kim and Lambert [8],[7] Yue et al. [26],[8] Tong et al. [22],[9] Liu and Wang [13],[10] Yue and Zhang [24, 25],[11] CICC Global Institute

groups, resulting in VAT being regressive. Conversely, the scale of individual income tax is small (i.e., the low average tax rate shown in Table 7.1), making it difficult to play a redistributive role to offset the regressive nature of VAT. Apart from individual income tax, China also has fewer property taxes levied directly on individuals, which also affects the strength of the tax system in regulating income and wealth inequality.

Based on the above analysis, both cuts to and increases in the tax structure should be implemented to enhance the progressivity of taxation in China. In terms of tax cuts, VAT should be further reduced, especially on goods and services that are consumed more by low-income groups. In terms of tax increases, the government could raise individual income tax, especially those based on property income. At the same time, real estate tax, inheritance tax, and gift tax should be introduced to regulate the distribution of wealth.

[6] Verbist and Figari [23].

[7] Kim and Lambert [8].

[8] Yue et al. [26].

[9] Tong et al. [22].

[10] Liu and Wang [13].

[11] Yue and Zhang [24, 25].

7.1.3 Direction of Tax System Reform

7.1.3.1 Reducing VAT Rates Is a Prerequisite for Improving the Tax Structure

By reducing VAT, macroeconomic flows are automatically reflected in more corporate and personal income; in the absence of larger tax loopholes, the associated tax revenues will automatically increase. VAT occurs in the most basic of commodity transactions, and is collected at the same time that GDP is produced. Following the imposition of VAT, the income stream into a business becomes smaller, and thereafter, both business income and various personal incomes are correspondingly smaller. A reduction in the VAT rate would increase the flow of income into enterprises and households during the primary distribution. Conversely, without a reduction in the VAT rate, efforts to raise direct taxes would only lead to a larger tax burden.

When reforming the VAT, there is a need to accommodate low-income consumers by reducing the rates on some consumer staples more significantly, which would help alleviate the regressive nature of the VAT itself. Although China also applies low rates to consumer staples (9% for food, vegetable oil, edible salt, tap water, and heating, and 6% for education and healthcare in 2022), there is still room to reduce the rates when comparing the VAT rates of countries around the world such as Australia and France.[12]

7.1.3.2 Individual Income Tax Reform: Lower Marginal Tax Rates on Labor, Higher Tax Rates on Capital

Since individual income tax is the most progressive of all taxes, most of the efforts to improve fiscal redistribution have been geared towards increasing the proportion of individual income taxes, especially the individual income tax based on property proceeds (income from the transfer of property such as personal equity and property, and dividends, etc.). It is true that China's individual income tax has a small tax base, with taxpayers accounting for only 15.3% of the working age population, far below the 50% or more of developed countries.[13] This is mainly due to the fact that most individuals earn less than the threshold of exemption (see Chap. 1).

We suggest lowering the marginal tax rate on labor income and raising the rate on capital income. The highest marginal tax rate in China is 45% for wage income, compared with 37% in the US (in 2021) and on par with Germany, Japan, South

[12] OECD [15].

[13] OECD, EU-Japan Centre, World Bank, US Inland Revenue, HM Revenue and Customs, Statistics Germany, Japan National Tax Agency, China Household Finance Survey and Research Centre. (2018); The number of people paying individual income tax in China is a 2017 estimate from the China Household Finance Survey and Research Centre. Working-age population is defined as people aged 15–64.

Korea, and South Africa, but higher than most countries in the world.[14] It is also much higher than the 20% proportional rate for property proceeds. The highest marginal tax rate of 45% on wages corresponds to a monthly taxable income of Rmb80,000 (or an annual taxable income of Rmb960,000), but income from property transactions, equity cash out, and dividends to major shareholders (which can amount to millions of dollars) are only taxed at 20%. Most of the property proceeds belong to high-net-worth individuals, but their tax rates are much lower. Therefore, the marginal tax rate on labor should be set lower than that on capital income in order to reduce income inequality.

7.1.3.3 Introduction of Real Estate Tax, Inheritance Tax, and Gift Tax

As Chap. 3 of this book argues, a real estate tax may help to make the overall tax system more progressive. In addition, inheritance and gift taxes reduce the solidification of intergenerational wealth and have been proven to promote equity of opportunity, while also promoting charitable giving and regulating the distribution of wealth.[15] Leading economists such as Oliver Blanchard, Jean Tirole, and Joseph Stiglitz have argued that inheritance taxes are an important tool for promoting equity of opportunity and reducing the negative effects of capital accumulation. Inheritance and gift taxes are generally characterized by high exemptions, small size, and a relatively small share of total tax revenue, making up an average share of only 0.36% in OECD countries in 2019 and less than 0.8% in the most countries, with the highest being only 1.6% in South Korea.[16] China could follow the example of OECD countries by setting a high exemption threshold at the onset. When the personal property registration system is established, we believe that inheritance tax will play a greater role.

7.2 Rationalizing the Structure of Government Expenditure: More Equality in Public Service and Transfer Payments

7.2.1 High Expenditure on Economic Affairs, but Low Expenditure on Public Services and Welfare

According to the IMF's classification of government spending, China's spending on economic affairs (including direct operations and indirect subsidies in agriculture, forestry, transport, communications, construction, minerals, energy, etc.) accounted

[14] PwC [16].

[15] Zhu [29] and Liu and Hou [14].

[16] OECD Revenue Statistics.

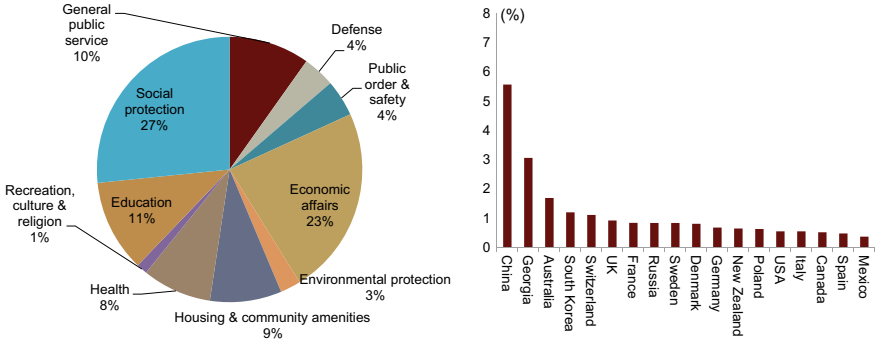

Fig. 7.5 Structure of government expenditure in China (left panel), and transportation infrastructure investment as a percentage of GDP (right panel) in 2019. *Source* IMF, CICC Global Institute; OECD, CICC Global Institute

for 23% of total expenditure in 2019 (Fig. 7.5), about twice as much as in the US. In the same year, the share of expenditure on economic affairs was about 7% in Germany and about 9% in Japan and the UK.

Specifically, China spent 7% of GDP on infrastructure development in 2019, much higher than OECD countries' government investment at about 3.1% of GDP (including infrastructure and other fixed asset investments).[17] In China, transportation accounts for the bulk of the government's infrastructure investment, which according to OECD data, was 5.6% of GDP in 2018,[18] also well above the general level in OECD countries (Fig. 7.5). China has already achieved a large degree of catch-up with developed countries in terms of infrastructure. The World Economic Forum's Global Competitiveness Report 2019 shows that China ranks No. 36 in the world for overall quality of infrastructure, already ahead of developed countries such as Norway and New Zealand, and ranks as high as No. 2 and No. 10 regarding airport connectivity and road connectivity.

In contrast to infrastructure investment, China's public service and welfare spending diverges widely from that of developed countries. On an IMF comparable basis, China's education and healthcare spending account for 11% and 8% of total government expenditure respectively in 2019, compared with 15% and 19% in the US. In terms of social protection spending, China and the US spend almost the same proportion, but there is a considerable gap compared with European high welfare countries. For example, the share of social protection spending is 36% in the UK, 43% in France, and 44% in Denmark in 2019.

[17] OECD. (2019). Government investment spending: Government at a Glance 2019. Chinese government infrastructure investment includes the general public budget, infrastructure-related breakdown in government-managed funds, and net financing of urban investment bonds.

[18] Transport infrastructure investment here includes all sources of funding and is more reflective of the total level of public sector investment in infrastructure in China as infrastructure investment by SOEs and PPPs (public–private partnerships) is not counted as government infrastructure investment, but is directly related to public investment.

Overall, China's fiscal spending is large on economic affairs but relatively inadequate on public services and targeted transfers to specific groups. To improve the structure of China's fiscal spending, it is necessary to moderate government spending on economic affairs, which should be delegated more to the private sector. Fiscal spending should be directed more toward public services such as education and health care.

7.2.2 Transfer Payments Targeting Specific Groups of People

In addition to social insurance, the government's transfer payments are mainly for social assistance, which is the provision of financial benefits to members of society who are in hardship so as to meet their most basic needs to survival and development. People receiving social assistance are usually selected by the government on the basis of low income and vulnerability criteria. Social assistance can be divided into cash transfers and in-kind assistance.[19] The core of China's social assistance system is the minimum living standard guarantee system (MLSGS), which is a no-strings-attached cash transfer program that provides cash subsidies to households whose per capita incomes fall below the low-income guarantee threshold.

China may expand coverage of MLSGS. A study shows that it has a good effect on poverty reduction in both urban and rural China [3].[20] The main problem with China's MLSGS is the high rate of underinsurance, especially in rural areas.[21] If the total budget for MLSGS in China is tripled, the poverty reduction effect as measured from different perspectives (i.e., breadth and depth of poverty, and inequality among the poor), would be substantially improved.[22] Does the increase in the scope of the low-benefit scheme lead to laziness, or so-called "welfare dependency"? Scholars have argued that China's MLSGS does not reduce the working hours of urban and rural beneficiaries, with no significant negative incentive.[23] Both real and potential welfare dependency can be addressed by improving institutional design and working methods, and should not be an obstacle to expanding coverage of the system.

Therefore, we believe the forms of social assistance can be expanded. In addition to the unconditional cash transfer of the MLSGS, there are many other forms of social assistance such as conditional cash transfers, fee waivers, non-monetary transfers, free school meals, and social pensions, among others. Compared with other developing countries, China's means of transfer spending is still relatively homogeneous

[19] Cash transfers are further divided into unconditional cash transfers and conditional cash transfers. Unconditional cash transfers have no restrictions on when the cash can be received and what it can be used for. Conditional cash transfers require the beneficiary to meet certain conditions such as guaranteed access to a hospital or guaranteed schooling for a child, and the conditions attached are generally related to the promotion of human capital.

[20] Golan and Umapathi [3].

[21] Zhu and Li [28] and Han and Gao [6].

[22] Han and Gao [5].

[23] Han and Guo [7] and Ravallion and Chen [17].

with more room for expansion.[24] In terms of increasing education spending, the government can also use conditional cash transfers (e.g., requiring beneficiaries to make commitments guaranteeing children's enrollment and completion of schooling) that are conducive to human resource development.

7.3 Bringing in SOEs for Common Prosperity

After years of reform, China's SOEs have gradually become dynamic market participants with significantly increased profitability. At the same time, a great deal of the social responsibilities previously borne by SOEs have been effectively divested. For the government, SOEs have been transformed from former burdens into beneficial assets and are pivotal to the Chinese economy. By the end of 2020, SOEs' total assets were around Rmb592 trn, equivalent to nearly six times GDP, and net assets equaled about Rmb99 trn, close to GDP. The total assets and net assets of non-financial SOEs reached Rmb269 trn and Rmb76 trn[25]). According to calculations by the Chinese Academy of Social Sciences, SOEs account for 35.8% and 14.6% of total assets and net assets of society as a whole.[26]

Income from SOEs has become an important source of funding for public finance. In 2020, SOEs contributed Rmb4.6 trn in taxes, accounting for 34% of all tax revenue, making them an important source of public finance.[27] In addition to tax revenue, the proportion of state-owned capital operation paid to the treasury has continued to increase. Total state-owned capital operation accounts for between 2 and 4.5% of total government revenue,[28] with the proportion of state-owned capital operation going to the general public budget revenue rising from around 5% to 40 over the past decade.

Further increasing the distributional contribution of state-owned capital operation to total government revenue can be fulfilled in two ways. First, compared with local SOEs, there may be some room for central SOEs to allocate profits to state-owned capital operation. The proportion of profits allocated to local SOEs has been increasing year over year, reaching 20% by 2020, compared with 10% for central SOEs. Second, the proportion of cash dividends paid by SOEs needs to be significantly increased. The cash dividend distribution ratio of Chinese SOEs hovered

[24] According to World Bank ASPIRE project data, nearly 80% of social assistance in China in 2016 was in the form of unconditional cash transfers and fee waivers. In comparison, conditional cash transfers accounted for 32% of social assistance in Peru, and social pensions and free school meals accounted for 33% of social assistance in Chile.

[25] State Council [20].

[26] Li et al. [12].

[27] State Administration of Taxation, SASAC [19].

[28] Total government revenue = general public budget revenue + state-owned capital operation revenue + government-managed fund revenue, excluding SSF revenue.

around 16% between 2017 and 2020,[29] while the average dividend distribution ratio of A-share listed companies was above 35% for the same period.[30] In comparison, the proportion of dividends paid by SOEs is low. According to a World Bank report, the majority of SOEs in OECD countries pay dividends of more than 30%, with many countries paying more than 50%.[31] According to China's current regulations, most non-financial central enterprises are only required to contribute 15–20%, with the highest being China National Tobacco Corporation (CNTC) at 25%; all non-financial central enterprises have room for increases.[32]

In addition, we believe considerable potential scope exists for state-owned capital to be added to the Social Security Fund (SSF). In 2017, China stipulated that the proportion of state-owned equity transferred to the SSF was a uniform 10%. Based on the disclosed Rmb99 trn of state-owned capital, if the 10% transfer is implemented, the SSF could hold up to Rmb10 trn of state-owned equity. The average ROE of state-owned enterprises was about 5.4% in 2020[33]; if the cash dividend ratio of state-owned enterprises is raised to an average of 36% of A-shares, the SSF could receive an estimated annual cash inflow of Rmb180 bn, according to our analysis.

However, at the actual implementation level, the transfer of state-owned assets has been slow despite further room to increase the transfer ratio. The State-owned Assets Supervision and Administration Commission of the State Council released data in February 2021 showing that central SOEs completed the transfer of Rmb1.21 trn of state-owned capital as of end-2020. According to the state-owned equity of central SOEs that equaled up to Rmb40 trn in 2020 and given the 10% transfer ratio, the scale of the transfer should be approximately Rmb4 trn. Thus, the progress in transfer is slower than expected.

[29] The numerator for calculating the overall dividend share here is the profit income and dividend income from the operating budgets of SOEs, excluding liquidation and transfer income, plus state-owned capital gains from the general budget. The net attributable profit of financial SOEs is missing, but is approximately equal to net profit.

[30] According to Wind data, the A-share market cash dividend rate (total market-wide cash dividends/total net profit) for the three consecutive years from 2018 to 2020 is above 35%.

[31] Kuijs et al. [9].

[32] The Ministry of Finance's 2014 Circular on Further Increasing the Proportion of State-owned Capital Gains Collected by Central Enterprises.

[33] Data source: CICC Global Institute based on Wind data.

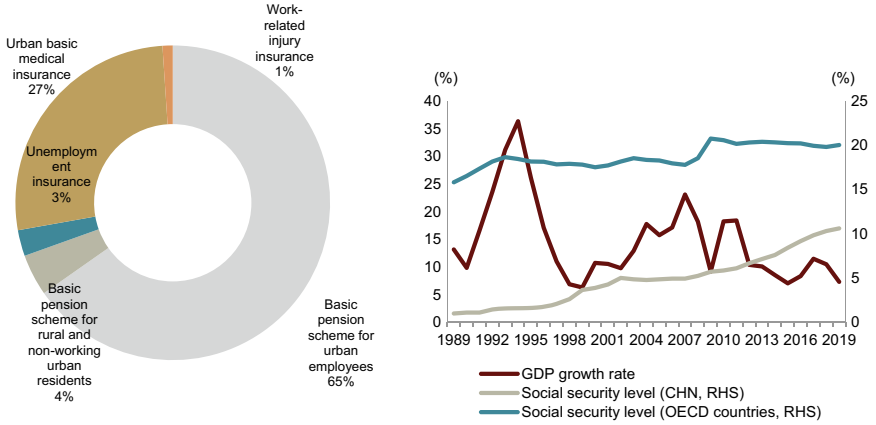

Fig. 7.6 Expenditure structure of China's social security system and spending as a percentage of GDP in 2020. [11] *Source* Li and Zheng[34]: "China Statistic Yearbook, China Labor Yearbook", CICC Global Institute. Wind, CICC Global Institute. *Note* Social security level is spending as a percentage of GDP

7.4 Social Security: Returning to Pay-As-You-Go, Improving Sustainability, and Enhancing the Redistributive Effect

7.4.1 Fundamentals of China's Social Security System

China's social insurance system currently consists of four subsystems—pension scheme, medical insurance, unemployment insurance, and work-related injury insurance. The basic pension scheme for urban employees and the basic pension scheme for rural and non-working urban residents are the most important subsystems; they constitute the first pillar of China's pension system, accounting for 69.5% of total social security fund expenditures in 2020. Basic medical insurance ranks second in terms of SSF expenditures, accounting for approximately 26.8%. Unemployment insurance and work injury insurance account for a very small proportion of total social security expenditures (Fig. 7.6).

Social security receipts and payments constitute a mechanism for redistribution. In European countries, 80% of the reduction in income inequality results from the role of the social security system.[35] Since pensions and healthcare account for the majority of social security receipts and payments, social security mainly acts as an intergenerational transfer. Of course, social security systems also affect the distribution of income between different income groups and act as redistributive agents within the same generation.

[34] Li and Zheng [11].

[35] Li et al. [10].

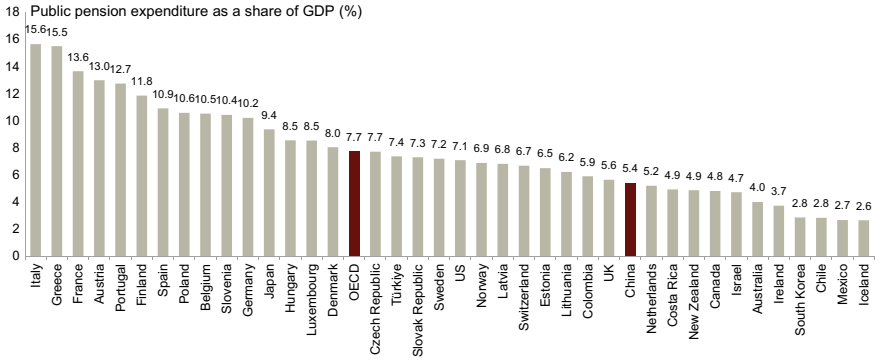

Fig. 7.7 Public pension expenditure as a share of GDP in China is lower than the OECD average level. *Note* China's data is from 2020, and data for others is from the latest available years or 2017. *Source* OECD, "Society at a Glance (2019)", Ministry of Human Resources and Social Security, CICC Research

The ratio of China's social security expenditure to GDP (known as the "social security level") has been increasing in line with economic development, from 1% in 1989 to around 11% in 2019 (Fig. 7.6). However, compared with the average social security level of around 20% in 2019 in OECD countries, China still has a gap. Nearly half of this gap is due to differences in the degree of aging. According to World Bank demographic data, the proportion of China's population over 65 years old was 11.97% in 2020, compared with 17.46% in OECD countries (equivalent to 1.5 times that of China). At present, China's private sector, fund-based pensions are still in their infancy, and the country mainly depends on the basic pension insurance system which makes up 5.4% of fiscal expenditures—a significant gap with the OECD average (Fig. 7.7). As the population ages and GDP per capita continues to grow, there is still demand and scope for improving China's social security levels, in our opinion.

7.4.2 Core Issues of the Basic Pension Insurance System

China's basic pension insurance system faces two primary challenges: The intra-generational gap and the inter-generational gap. The former is reflected in the high individual differences in pension benefits as well as urban–rural and regional disparities. The latter is reflected in the financial unsustainability of the system. As the population ages, there is a risk that the pension balance will be depleted and might not meet the retirement needs of the future population.

7.4.2.1 The Problem of Intra-generational Disparities: Large Urban–Rural and Regional Differences

The basic pension insurance system differs between urban and rural areas, widening the income gap between them. Urban residents generally participate in the basic pension scheme for urban employees (BPSUE), while rural residents mainly participate in the basic pension scheme for rural and non-working urban residents (BPSRNUR). The replacement rate of the BPSRNUR is only 12%, much lower than that of the BPSUE at 56%; thus, there is a risk of further magnifying the difference in pensions between urban and rural residents (Fig. 7.8). Against the backdrop of the current exodus of young people to cities, the aging of the rural population, and the intensification of "empty nest" among traditional rural families, it is increasingly difficult for pension income to cover the basic needs of rural residents, in our opinion.

In addition, the number of people who used to be migrant workers in China reached as high as 286 mn in 2020, including 170 mn who work outside their hometowns. Although migrant workers live in cities, there is a large gap in the level of their pension protection compared with urban residents. Migrant workers generally lack protection of stable jobs, resulting in a relatively low willingness to make individual contributions to the pension systems. According to the Ministry of Human Resources and Social Security, only about 21.6% of migrant workers participated in the BPSUE in 2017. Furthermore, the differences in contribution bases, contribution rates, and participation benefits for basic pension insurance between regions, as well as the problem of transferring pension accounts across regions, have severely affected the pension benefits of migrant workers.

There are large differences across provinces and regions in China in terms of economic development level and population age structure. With the gradual increase

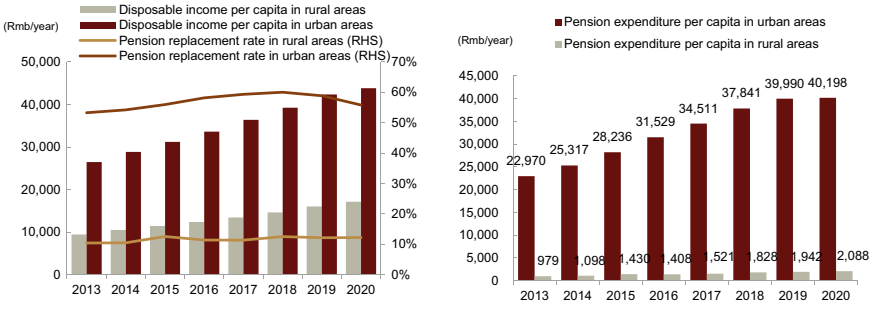

Fig. 7.8 Rural income levels and pension replacement rates are much lower than those in urban areas, resulting in significant differences between urban and rural pensions. *Note* Since the rural population has no wage income, the rural replacement rate is calculated using the rural per capita pension divided by the rural per capita disposable income. Urban employees' pension expenditure and rural residents' pension expenditure are calculated by dividing the total expenditure of BPSUE and BPSRNUR by the covered retired population. *Source* Ministry of Human Resources and Social Security, Wind, CICC Research

in the level of pension coordination (especially after the introduction of the central adjustment system in 2018), the social pooling account has played an obvious role in regulating the differences in pensions between regions; however, the pension gap between different regions remains wide. The per capita pension level in the eastern region, represented by Beijing and Shanghai, is much higher than that in the central and western regions. The replacement rate in the central and western regions, which are relatively economically underdeveloped, has fallen more sharply in recent years. This may mean that the redistributive ability of pensions to regulate the primary distribution between regions is decreasing.

China's basic old-age insurance covered 92% of people aged 20 and above as of the end of 2020,[36] with BPSUE mainly covering those employed in urban areas and BPSRNUR mainly covering non-working urban and rural residents who do not meet the conditions for urban employment insurance coverage. For the remaining 8% of the population not covered by basic pension insurance, the old-age allowance system and the MLSGS can play a role in covering the bottom line. The former covers about 3.6% of the population and the latter about 4.5%, but there is some overlap with the population covered by the basic pension security system. Thus, a few groups continue to lack basic insurance (Table 7.2).

7.4.2.2 The Problem of Intergenerational Differences: Future Pension Reserves May Be Depleted

According to the 7th National Census, the percentage of China's population aged 65 and over rose by 4.63% between 2010 and 2020, reaching 13.50%. The aging of the population has led to a year-over-year increase in the old-age dependency ratio.[37] The current old-age dependency ratio of 18.5% is lower than the OECD average (30.4%), but it is likely to rise to nearly 50% in 2050 and rise further to 60% in 2080 (Fig. 7.9), gradually approaching the OECD average. Thus, we believe the burden of old-age support will increase significantly in the future.

China's basic pension insurance system is nominally organized in the form of "combination of accounts", consisting of social pooling accounts and individual accounts. However, because of the intergenerational pressure on pension payments during the policy change process of pension institution and the historically low level of pooling, it is difficult to realize the potential of individual accounts, and the actual operation of pensions is similar to a pay-as-you-go system. Within the current parameters of the system, as the population ages and the proportion of the working population declines in the future, China's basic pension system may face financial unsustainability. In fact, the problem of financial sustainability has already manifested itself in recent years, evidenced by revenues from BPSUE beginning to fall

[36] The actual coverage rate is higher than 92%, considering that the population aged 20 and over includes some groups of school students.

[37] The old age dependency ratio is defined in this chapter as the ratio of the population aged 65 and over to the population aged 20–64.

Table 7.2 The pension and social security system of China

Types	Social security programs	Number of people covered (mn)	Proportion of population covered	Yearly expenditure per capita (Rmb)
Basic pension scheme	Basic pension scheme for urban employees (BPSUE)	456.21	42.03	40,198.24
	Basic pension scheme for rural and non-working urban residents (BPSRNUR)	542.44	49.97	2088.00
Supplementary pension insurance	Occupational pension	29.7	2.74	
	Enterprise annuity	27.18	2.50	8658.00
Old-age subsidies	Elderly subsidies	31.04	2.86	1342.00
	Nursing subsidies	0.81	0.07	
	Pension service subsidies	5.35	0.49	
	Comprehensive subsidy	1.33	0.12	
Minimum living standard guarantee system	Rural subsistence allowances	36.2	3.33	5962.30
	Urban subsistence allowances	8.05	0.74	8131.20
	Extreme poverty in rural areas	4.46	0.41	9500.34
	Extreme poverty in urban areas	0.31	0.03	14,294.87

Notes (1) The proportion of population covered refers to the percentage of the population over 20 years old; (2) the official number of people covered by the occupation pension is not revealed, thus we use data as of May 2019 from the Asset Management Association of China
Source Ministry of Human Resources and Social Security, Ministry of Civil Affairs, Asset Management Association of China, CICC Research

short of fund expenditures in 2014 (Fig. 7.10). In order to maintain the fund's normal operations, government subsidies at all levels have been increasing year over year. Nevertheless, a shortfall of nearly Rmb700 bn was recorded in 2020 even with government subsidies, and the cumulative fund balance fell for the first time. Regarding the BPSRNUR, only individual accounts are funded by contributions, while pooling accounts are funded by the government, so the income from contributions has been always lower than expenditure since its inception (Fig. 7.10).

The total size of China's basic pension reserves in 2020 reached about Rmb8.5 trn, of which the cumulative balance of BPSUE equaled Rmb4.8 trn. According to

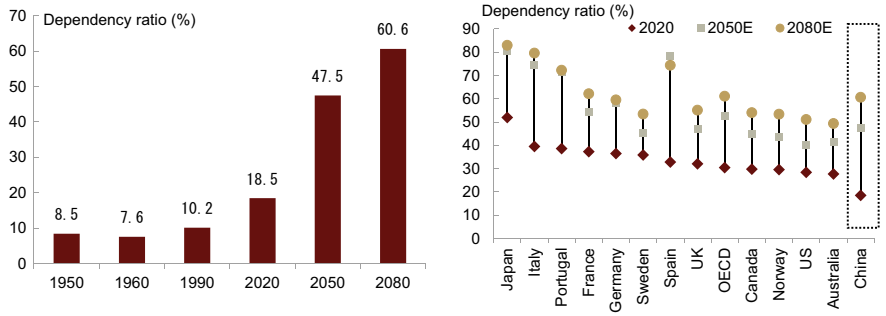

Fig. 7.9 China's aging population continues to grow; the old-age dependency ratio likely will approach the OECD average level. *Source* UN World Population Prospects (2019), CICC Research

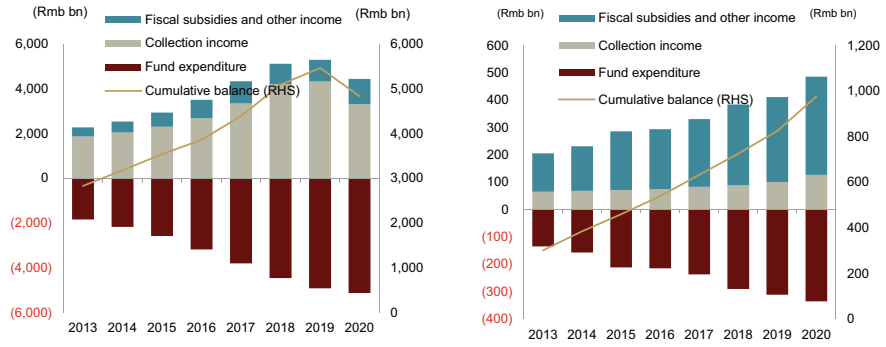

Fig. 7.10 The cumulative balance of BPSUE (left panel) fell for the first time in 2020, and the collection income of BPSRNUR (right panel) is always lower than the fund expenditure. *Source* Ministry of Human Resources and Social Security, CICC Research

Zheng (2019),[38] the deficit of BPSUE will continue to expand and the cumulative balance may be depleted in the future. At the provincial level, differences in the level of economic development, the financial capacity of local governments, and the age structure of the population have led to an uneven regional distribution of pension burdens and fund balance levels. China's eastern regions generally have more abundant pension reserves, while the northeastern, central, and western regions are under greater pressure. To ensure timely and full payment of pensions, national pooling of BPSUE was introduced from 2022 onwards, which we expect will alleviate regional financial pressure. However, we believe the national financial pressure will require further institutional reform. If the current institutional arrangements remain unchanged, there is a risk that future pension balances will be depleted and may not be able to fully cover future pensions, in our opinion.

[38] Zheng [27].

7.4.3 *External Adjustment: Fiscal Support Is Key*

We believe fiscal support and parameter adjustments are key to solving the current problems of China's basic pension system. In this section, we discuss financial support, referred to as "external adjustment" because it involves the mobilization of resources from outside to support pensions. In the next section, we address "internal adjustment", which involves changing the structure of China's pension system and its parameters.

7.4.3.1 Establishing an *Ex Gratia* Non-contributory Minimum Pension Through Public Finance

The problem of intra-generational disparity in China's pension system and the disproportionately low incomes of the elderly population in rural and remote areas is a top priority in the current reform of the pension system, which requires clear institutional arrangements to meet the basic needs of the low-income retired population. Considering this group generally lacks the ability to contribute and, thus, is difficult to be covered by contributory pensions, public financial support is a more feasible way forward. Overseas experience shows that the financial cost of non-contributory pensions is relatively low.[39]

Although China has not formally established a non-contributory pension system, the BPSRNUR already exhibits some functions of a non-contributory pension. BPSRNUR covers mainly the rural population, and also some of the urban population who are not covered by BPSUE. The pooling account of BPSRNUR is funded by government subsidies instead of participants' contributions (Fig. 7.11). One possible idea for reform is to structure the BPSRNUR pooling account as the minimum non-contributory pension, while integrating the individual account with the individual account of BPSUE or even the fund-based pension account of the private sector to supplement the basic pension.

At present, the BPSRNUR cannot yet afford the target positioning of a non-contributory minimum pension because the benefit is low and the coverage is not yet comprehensive. The average benefit level of BPSRNUR is only 52.2% of the rural poverty line (Fig. 7.11), which is equivalent to 5.2% of the average level of BPSUE, and the rate of pension growth is also slow. Considering that around 8% of China's population was not covered by the basic pension system in 2020, BPSRNUR is far from meeting the social minimum pension standard in terms of coverage. We propose to significantly increase its benefit level and accelerate the coverage rate. According to our calculations, if BPSRNUR were to be extended to cover all urban and rural residents without contributory pensions and if the pension replacement rate were to be increased to 45%, assuming all costs are borne by the government, this would have corresponded to a per capita pension guarantee of Rmb7709 per year in 2020, and the ratio of expenditure to GDP would have been approximately 1.22%.

[39] Barr and Diamond [1].

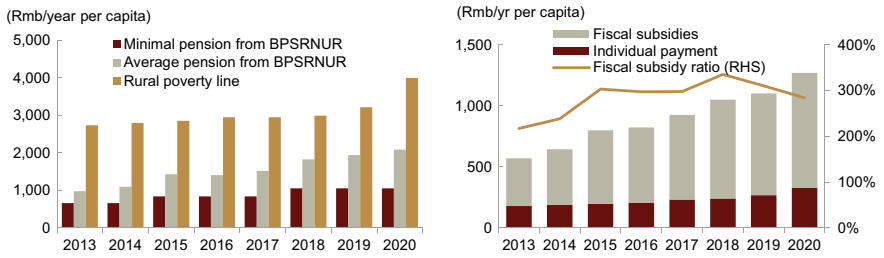

Fig. 7.11 The BPSRNUR pension is lower than the rural poverty line; the fiscal subsidy makes up a large proportion of its total revenue. *Note* The rural poverty line in 2020 is estimated from the data disclosed by the State Council Leading Group Office of Poverty Alleviation and Development. *Source* Wind, Ministry of Human Resources and Social Security, CICC Research

China's fiscal expenditure on the pension system is currently only 5.4% of GDP, compared with the OECD average of 7.7%; thus, China can afford the fiscal cost of a non-contributory minimum pension.

7.4.3.2 Enlarging State Support to Improve the Financial Sustainability of BPSUE

We suggest that the government improve the financial situation of BPSUE by mobilizing resources from outside the pension system. Currently, as fiscal subsidies for the pension system account for less than 4% of China's total fiscal expenditure and the average annual growth rate of the subsidies is slowing, there is ample room for fiscal support for pensions. There are two main options for implementation of financial support for the pension system—namely, direct financial subsidies and the transfer of state-owned assets, of which the latter has already been discussed in the previous section.

Among the OECD countries that have adopted direct financial subsidies for their pension systems, six countries provide financial underwriting for social insurance, while the rest clearly define the scope and criteria for financial subsidies. In contrast, China has not yet institutionalized financial subsidies for BPSUE, and the division of the share between the central and local governments is not clear. From 2009 to 2015, the proportion of central government subsidies to its total expenditure rose to 5.19% from 3.40%, while the proportion of local subsidies to local expenditure fell to 0.28% from 0.97%. Due to the large inter-provincial disparity in the operation of BPSUE, the unclear division of powers and responsibilities could easily lead to a heavier financial burden for some economically underdeveloped provinces, and even impact local finances. Therefore, while increasing the overall financial subsidies, a clear and institutionalized set of criteria and planning for calculating financial subsidies needs to be formulated according to the financial condition of each province and the operating situation of pensions so as to improve the transparency and stability of the financial subsidy system.

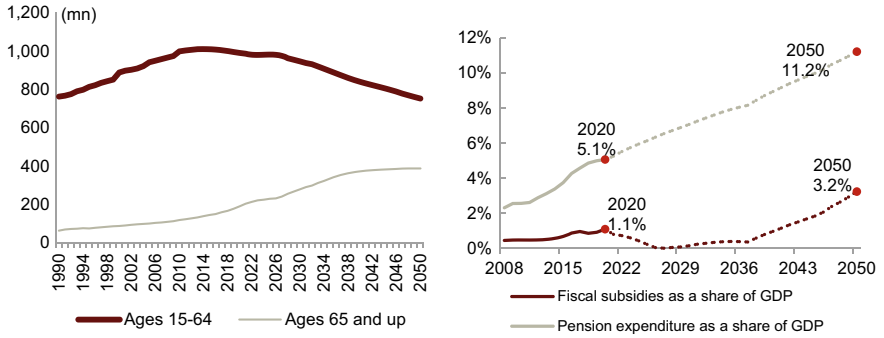

Fig. 7.12 Demographic models predict an accelerated rise in China's old-age population over the next 30 years, along with a decline in the working-age population and a rising share of GDP of financial subsidies to BPSUE. [18] *Source* Song et al., Ministry of Human Resources and Social Security, Wind, CICC Research

To estimate the fiscal cost, we use the population model constructed by Song et al. (2015)[40] to calculate the demographic changes between urban and rural areas from 2020 to 2050 (Fig. 7.12). Assuming that the contribution and replacement rates for BPSUE remain unchanged and the adjustment of the statutory retirement age is introduced in 2023, the size of the financial subsidy and the financial cost of BPSUE are calculated. The model shows that between 2020 and 2050, the fiscal subsidy will increase from 1.1 to 3.2% of GDP, and the fiscal cost (fiscal subsidy + total pension contributions) will increase from 5.1 to 11.2% of GDP (Fig. 7.12). In addition to BPSUE, if BPSRNUR were to be extended to cover all retirees not covered by contributory pensions and the replacement rate of BPSRNUR were increased to 45% (completely funded by the government), the state's fiscal subsidy would rise to 4.5% of GDP in 2050 and the share of pension expenditure would rise to 12.5% of GDP.

7.4.3.3 Fiscal Support Promotes Both Equity and Efficiency

Given that fiscal funding comes from government taxation, increased fiscal expenditure on the pension system will require the state to issue bonds for fundraising, which may be accompanied by an increase in future tax rates. Taxation generally distorts economic incentives and reduces future generations' welfare, leading to a reduction in total social welfare and economic efficiency. However, in China's current context, we believe that fiscal expansion to support the pension system may not reduce efficiency but rather increase it because it may reduce macro imbalances and avoid the inefficient savings trap.

Theoretically, increased savings provide capital to support economic construction and are conducive to economic growth. However, excessive expansion of savings

[40] Song et al. [18].

and capital may reduce the efficiency of capital use, resulting in inefficient savings and even asset bubbles, which in turn undermine economic growth. China's average personal savings rate is close to 50%, higher than overseas levels, and has a long-term upward trend. The figure is already above the optimal savings rate level mentioned in most academic articles, and the return on investment has declined. As a result, fiscal subsidies to the pension system will increase social consumption and reduce aggregate savings, which would improve macro imbalances and increase long-term aggregate economic output.

7.4.4 Internal Adjustment: Revision to Retirement Age Is the Focus

The parameters of the BPSUE need to be adjusted as soon as possible, in our view, with the establishment of the statutory retirement age an important variable**.** An important reference for setting the statutory retirement age is life expectancy, which is significantly correlated with the level of income (GDP per capita) of the population. As China's per capita income rises in the future, life expectancy is expected to increase, creating the conditions for an adjustment to the statutory retirement age. At present, the statutory retirement age in China is 60 years for men, 55 years for female government employees, and 50 years for female employees, which is lower than the overseas average. In addition, the minimum contribution period is 15 years, which is also short compared with overseas standards.

Delaying the statutory retirement age would have a significant effect on the financial sustainability of the pension system by reducing the number of retirees and, hence, pension costs, while enlarging the working population and expanding pension income. We have modelled the impact of adjusting the retirement age on the financial position of BPSUE, assuming a policy adjustment interval of 2023–2037. Compared with the current institution as is forecasted, delaying the retirement age could significantly postpone the emergence of the financial gap of BPSUE by about 20 years, cumulatively reducing it by 70% before 2050 (Fig. 7.13). Our calculation is consistent with that of Zheng (2019).[41] At the same time, it would allow the post-60s and post-70s generations who have enjoyed the dividend of economic reforms since 1978 and more social resources to take on more responsibility, which would also have a positive effect on promoting inter-generational equity. We note that while adjusting the retirement age can significantly ease the pressure on pension revenues and expenditures, it cannot completely solve the problem of financial sustainability, so fiscal support is equally important for future reforms.

There may be greater resistance to the implementation of other internal adjustment options for the pension system. First, on the income side, increasing the contribution rate puts greater pressure on workers and enterprises and significantly reduces social efficiency. Second, on the expenditure side, lowering the replacement rate and

[41] Zheng [27].

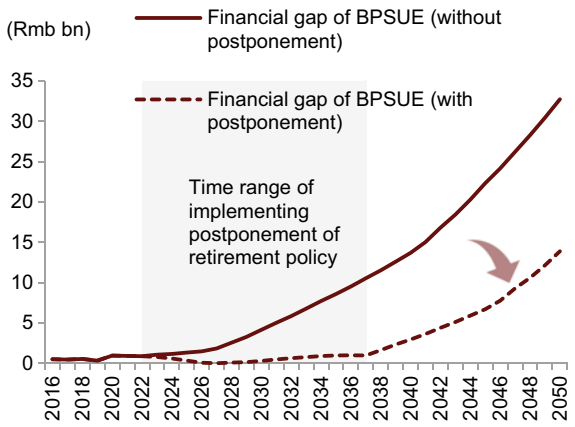

Fig. 7.13 Postponement of retirement age could postpone the emergence of a financial gap of BPSUE by about 20 years, and reduce the gap cumulatively by about 70% by 2050. *Source* Ministry of Human Resources and Social Security, Wind, CICC Research

reducing the benefit to the elderly could easily give rise to social problems. Third, China's pay-as-you-go pension system is already too large and the cost of switching is too high to make privatization of the fund system a viable reform. Moreover, after privatization, the government would shift the responsibility and risk to individuals, which could lead to a decline in pension coverage and a widening of the income gap, deviating from the goal of common prosperity. Moreover, the current rate of return on investment of private sector fund-based pensions in China is low.

7.5 Exploring the Path of Public Charity with Chinese Characteristics

7.5.1 Three Major Challenges for Public Charity in China

7.5.1.1 Challenge 1: Low Intensity and Willingness for Social Giving

Compared with most countries around the world, the intensity of social giving in China is still relatively low. In terms of flow, the scale of social giving in China equaled approximately Rmb152 bn in 2020, with a giving intensity of only 0.15%, far lower than the US at 2.1%, the UK at 1.7%, and Japan at 0.3%.[42] In terms of stock, the net asset size of China's charity organizations in 2018 was Rmb159.2 bn, accounting for only 0.17% of GDP, again significantly lower than that of the US, UK, and Japan. Corporate contributions are most prominent in China's total social giving, accounting for 61.7% of the total. In contrast, Europe and the US rely more

[42] Data for China is based on China Charity Development Report, data for the US is based on Giving USA, data for the UK is based on UK Charity Commission, data for Japan is based on Japan Cabinet Office.

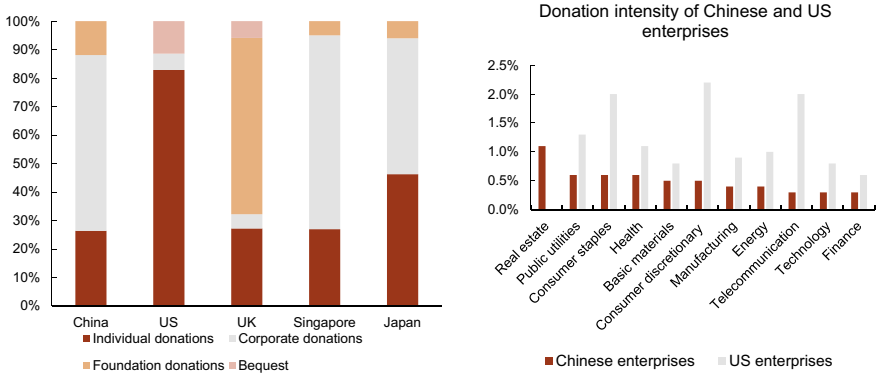

Fig. 7.14 Structure of social giving in China—corporations account for a higher proportion, but there is still room to improve the intensity of their giving. *Note* The data for US real estate in the right panel is missing. *Source* Annual Report of China's Philanthropy Development, Giving USA, Philanthropy Services AG, Coutts, CSMAR, China Securities Regulatory Commission, Giving in numbers, CICC Global Institute

on contributions from individuals and charities, and Japan has relatively balanced contribution from individuals and corporations (Fig. 7.14).

The lack of willingness of both corporates and individuals is the essential reason for the low intensity of giving in China, in our opinion. On the one hand, when evaluating corporate giving, although Chinese companies make a large contribution to total social giving, the average share of social expenditure (in pre-tax profits) by industry is significantly lower than that in the US. Even for the industries such as real estate and public utilities with high giving intensity, their share of giving expenditure (pre-tax profits) is only 1.1 and 0.6%, far lower than the level of around 2% for US utility firms (Fig. 7.14). The willingness to give by individuals is also generally low. According to the Charity Aid Foundation (CAF), the proportion of the general public participating in charity in China was only 11% in 2018, lower than the levels of 71%, 61%, and 23% in the UK, the US, and Japan, respectively. The China Household Tracking Survey (CFPS) also reveals that the proportion of household income spent on giving by Chinese households was 0.17%, on average, much lower than the US level of around 3.56%.[43]

7.5.1.2 Challenge 2: Limitations in Public Perception of Charity

The general public's perception of public charity largely determines the scale and use of social giving, further influencing the function and role of public charity. One indication of the focus of China's social giving is the extent to which charitable action is equated with poverty alleviation and relief. Overall, in terms of direction of flow, compared with the UK, the US, and Japan, China's donation mainly flows

[43] Data for China is based on CFPS (2018), data for the US is sourced from Giving USA, 2019 data.

Table 7.3 China's philanthropy funding flows more to education and poverty alleviation; comparison with select countries

Public welfare indicators		China 2019 (%)	UK 2020 (%)	US 2018 (%)	Japan 2015 (%)
Flow of funding	Education	29.2	12.0	13.9	23.2
	Religion	N.A	19.0	29.6	9.7
	Health	18.0	18.0	9.7	35.3
	Culture and sport	6.5	8.0	8.0	2.1
	Poverty alleviation	26.5	14.0	14.2	10.5
	Community	N.A	N.A	7.6	0.1
	Others	19.8	29.0	17.0	19.0

Source Giving USA, Giving Japan, CAF, Johns Hopkins University Comparative Non-Profit Sector Project, China Philanthropy Development Report, UK Giving Report, CICC Global Institute

into education, poverty alleviation, and relief (Table 7.3). For example, in 2020, 70.4% of the expenditure of the China Education Development Foundation was used to directly support students in need, while 24.3% was allocated for hardware improvements. The general public subconsciously sees relief as an important anchor point for philanthropy. For example, on China's highly visible "99 Charity Day" in 2020, 41% of donations were directed to social services, 29% to sickness, and 18% to education, totaling nearly 90% of charitable contributions.[44] Compared with a similar "Giving Tuesday" in the US, donations go more towards social services, education, health, arts and culture, the environment, and animal protection, areas that are relatively more fragmented and diverse. Consequently, the positive side of philanthropy in China is that the results are relatively equitable. For example, the economically disadvantaged western regions are clearly receiving more support from social giving.[45] But we note that too much focus is upon providing basic public services, and we should also pay more attention to the actual changes that donations make.

7.5.1.3 Challenge 3: Inefficient Operation of Charitable Organizations

Charities act as the main body deploying charitable resources, and their operational efficiency directly determines the function and effectiveness of public charity. Charities that are more open, transparent, and efficiently run can further stimulate the public's willingness to be charitable. However, due to the lack of liquidation and exit mechanisms, charitable organizations are not active enough, and the level of information disclosure is very low, in our opinion. Moreover, the financial operations

[44] Source: 99 Charity Day, Giving Tuesday.

[45] Source: *China Foundation Development Report*.

of Chinese charitable foundations are also less efficient. According to the Hauser Institute for Civil Society, Chinese charitable foundations spend a sizable 32.9% of their total asset size on charity in 2020,[46] which is among the highest in the world. Higher liquidity needs also further constrain the investment choices of foundations, which are mostly based on low-risk, low-return investments whose yields generally concentrate at the level of demand deposit rates (0.35%), a low rate of return that constrains their long-term sustainability.

7.5.2 Factors Affecting the Development of Public Charity in China and Possible Solutions

First, China has a unique background of charity development. In the early days of philanthropy in China, government-run charities largely played an important role. To this day, systemic foundations (such as the Red Cross Foundation) are still the core force in China's philanthropic sector, which may to some extent diminish the willingness of the social sector to participate. In addition, some instances of malfeasance in the past may also undermine public confidence in charitable giving and constrain the overall development of philanthropy. Moreover, compared with Europe and the US, Chinese charity employees are not paid enough, making it difficult to attract top talent for better development of the sector.

Second, China is still transitioning toward a middle-class society. Global experience shows that the intensity of giving rises along with income levels, and a solid economic base provides a guarantee for the development of public charity. China's GDP per capita has just passed the US$10,000 threshold, indicating a gap between China and developed countries with high donation intensity. At the same time, Chinese society still faces the contradiction of unbalanced and inadequate development, and the proportion of low-income people who do not have the ability to give remains high. A survey completed by Peking University and other universities also shows that "not having enough money to donate" is the number one reason why the public believes they do not give.[47] The affluent have higher expectations on their assets in terms of security, appreciation, and value creation, and place lower priority on legacy and philanthropy.

Third, China's charity infrastructure (legal system and regulation) is developing. The regulatory ideology of the Charity Law is still dominated by traditional regulation, focusing on the verification of the identity of organizations and the management of the normative nature of their operations. The law lacks regulation of their behavior and functions, and does not provide effective guidance for their development. In addition, the rating and assessment system for charitable organizations is superficial and lacking in transparency, standardization, and scientific rigor.

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[46] Ibid.

[47] Han et al. [4].

Fourth, incentives for social giving such as well-designed taxation is lacking. China's taxation system is based on indirect tax, supplemented by income tax, which differs from the tax structure of other countries. Even in light of income tax, China's tax incentives for philanthropy are inadequate. Not only is the tax deduction limit for individuals low (30%), but donations in excess of the tax deduction limit are not allowed to be deducted in subsequent years. Apart from this, China has not yet introduced inheritance tax or property tax, so the wealthy lack sufficient incentives to make large-scale charitable donations. China has not yet established a clear system for volunteer leave, making it difficult for working employees to fully participate in philanthropic activities.

Looking to the future, how can common prosperity be promoted through public charity with Chinese characteristics? First, the development of public charity is a long-term process and requires institutional development to fundamentally create an ecology conducive to the development of public charity and improve multi-level incentive mechanisms, rather than focusing on short-term mass production or setting donation targets. Second, it is important to guide social awareness, expand the connotation of public charity, learn from European and US experiences, and encourage public charity to play an active role in areas such as technological innovation and social development. Third, based on China's predominantly corporate donation structure at this stage, China can encourage companies to establish more efficient and diverse CSR institutional arrangements, considering their own business characteristics. Finally, against the backdrop of the rapid development of the digital economy, we believe that the orderly development of new charitable models such as internet giving is conducive to increasing the ease of making charitable contributions and will encourage the public's willingness to participate in public charity.

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Chapter 8
The Macro Trend of Asset Prices in the Age of Common Prosperity

Abstract How does a widening or narrowing income gap across society affect asset pricing and asset allocation? The focus on the wealth gap in recent years has led to an increasing number of academic studies introducing "heterogeneous individuals" (individuals who differ in certain respects, such as income or wealth levels) to the traditional "homogeneous individuals" analytical framework (in which only identical representative individuals are considered) to explore the impact of changes in income distribution on asset pricing. Most analyses agree that widening of income distribution and the wealth gap tends to make the risk-free rate fall and the risk premium rise. Also, under the assumption of institutional endogeneity, a widening wealth gap leads to a reduction in systemic stability, which also pushes up the level of the risk premium. The analysis of the historical experience of income distribution and asset prices in the US and Japan also provides insights into investment in the context of China's move towards inclusive growth. The long-cycle history of changes in income distribution in the US shows that corporate profitability (e.g., return on net assets) does not appear to be affected by income distribution policies. Compared to past periods with relatively large income disparities, the average stock market valuation and volatility are relatively low, and sector valuation divergence is relatively small, during periods of relatively small income disparities. China's current internal and external environment is somewhat similar to Japan's in the 1970s. Japan's historical experience of successfully upgrading its industries through technological innovation led to relatively balanced income growth and thus consumption upgrading. This also provides more insights into China's current policy initiatives and investment trends, which could help the country achieve the goal of common prosperity. The drive toward more inclusive growth by China as well as the rest of the world could have far-reaching implications for global asset prices and asset allocation. From an investment perspective, there are a number of points to consider: (1) The "new paradigm" of investment: Around the world, the increased focus on equity over efficiency has objectively led to a more "inward-looking" policy orientation and a greater focus on versions of "ESG" that are unique to each country. Although regional frictions have increased, a number of countries have also used antitrust laws

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to target tech firms in their own markets, while also pursuing financial inclusion and concessions in other sectors. All of them have direct investment implications. (2) The global low interest rate environment is likely to change gradually. (3) A more balanced income distribution is expected to mitigate barriers to China's development and further unleash China's growth potential. (4) China's mass consumption market could expand further and improve against the backdrop of more balanced income growth. (5) China's domestic demand potential could be further unleashed. The country's sizable domestic demand could help bring about the most substantial benefit as a result of economies of scale since the Industrial Revolution, and the trend in China towards industrial upgrading could be further strengthened. In addition, the trend towards inclusive growth, which may impose medium- to long-term constraints on finance, real estate, and related sectors, is also a cause for concern.

The central theme of this chapter is how income distribution and inclusive growth could affect asset pricing and asset allocation. This chapter, starting from a literature review, explores the link between income distribution and asset pricing. We attempt to analyze how changes in income distribution affect asset pricing, as well as the income distribution under different policy regimes and historical patterns of asset prices. We also explore asset prices and allocation in the context of the trend towards more inclusive growth in China and around the world.

8.1 The Stylized Relationship Between Asset Price Movements and Changes in the Wealth Inequality

Does the widening or narrowing of the income and wealth distribution gap affect asset pricing? We have observed a clear phenomenon: Around the world, the gap between the rich and the poor has gradually widened over the last four decades, while global risk-free yields have fallen and the risk premium has risen.

More studies have shown a trend of a widening of income distribution and the wealth gap in most major countries around the world in the last four decades or so.[1] In the US, for example, the gap between the rich and the poor has gradually widened since the late 1970s, with the richest 1% of the US population holding a steadily increasing share of the total wealth of the country (Fig. 8.1). The level of excess wages in particular industries has gradually increased. At the same time, the middle-income group's share of wealth in the US has continued to shrink, and the time it takes for the average household to accumulate the same wealth has gradually increased. Furman notes that from 1943 to 1973, the average household income doubled approximately every 23 years. However, projections based on data from the

[1] Piketty and Saez [42], Li and Luo [33], Piketty [41], Karabarbounis and Neiman [27], Alvaredo et al. [6], Li and Zhu [34], and Kuhn et al. [29].

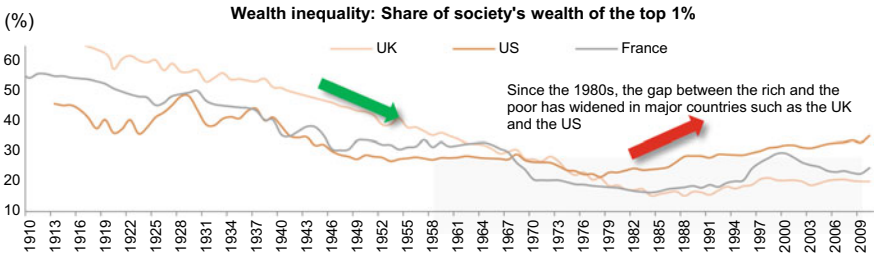

Fig. 8.1 The share of society's wealth held by the richest 1% of the population in the US, the UK, and France continues to increase. *Source* Datastream, CICC Research

past nearly 50 years suggest that the time it will take to double the income may extend to 100 years.[2] The impact of the COVID-19 pandemic and policy responses since 2020 may have further exacerbated the disparity in wealth distribution in the US among different classes and sectors. The US distribution of wealth published on the Federal Reserve's website[3] shows that the total wealth of the top 1% of Americans with incomes as of the second quarter of 2021 was US$36.4 trn. This number accounts for 60% of the total, thereby exceeding the total wealth of middle-income households (US$35.9 trn) for the first time since data became available in 1989.

The widening gap between the rich and the poor can be seen not only in the US, but also in most other major countries. Data from the World Inequality Database (WID) shows that around the 1980s, the proportion of total social wealth owned by the higher income groups in major countries such as the US, China, France, and the UK all showed an upward trend. The data in the WID has also been further examined and revised by scholars, and this trend has been confirmed by comparing the trends in inequality dynamics in major economies such as the US, China, France, and the UK.[4]

In line with the widening global income and wealth gap over the last four decades, the performance of major global asset prices has shown a more consistent pattern in terms of risk-free yields and the equity risk premium in the US, namely a gradual decline in risk-free yields and a gradual increase in the risk premium (Fig. 8.2). Still using the US market as an example, the US 10-year Treasury rate has gradually declined from a peak of around 15.6% in the late 1970s to early 1980s all the way to a record low of 0.5% in 2020, at the height of the global pandemic shock. In terms of the equity risk premium implied by the S&P 500, the equity risk premium has shown a gradual upward trend from the late 1970s to the present (Fig. 8.2). In addition to the US, asset prices in major countries such as Japan, Germany, and France have also exhibited these characteristics.

These observations have prompted us to consider the following: Has the widening global income and wealth gap over the last four decades been accompanied by a

[2] Zhang [47].

[3] Federal Reserve System [18].

[4] Alvaredo et al. [6].

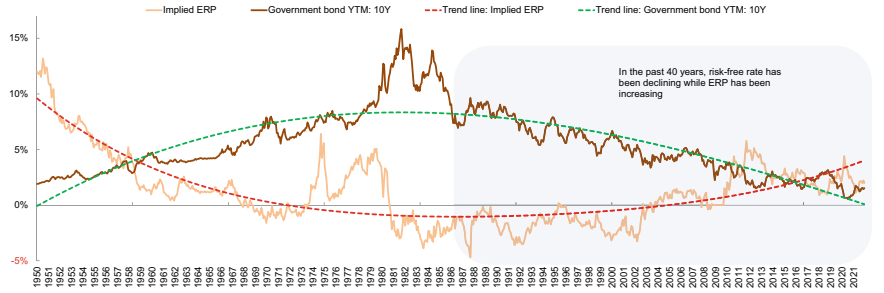

Fig. 8.2 The risk-free interest rate and equity risk premium in the US over the last four decades. *Source* Datastream, CICC Research

decline in risk-free yields and a rise in the risk premium, or have they been linked to each other? How do they influence each other? What are the mechanisms of influence in between? How do changes in income distribution and the wealth gap affect asset pricing?

8.2 How Changes in Income and Wealth Distribution Affect Asset Pricing

To explore the impact of changes in income distribution on asset pricing, it is necessary to introduce heterogeneous individuals into the traditional theoretical model of asset pricing, which is the focus of current academic research. It is useful to combine this with a discounted cash flow model. Income and wealth distribution affect asset pricing through risk-free rate, risk premium, corporate earnings, and economic growth. A simplified version of the schematic formula is expressed as follows:

$$P(asset\ price) = \frac{D(corporate\ earnings\ \&\ ROE)}{r(R_f\ \&\ R_p) - g(corporate\ earnings\ \&\ equilibrium\ economic\ growth)}$$

where R_f denotes the risk-free rate, and R_p denotes the equity risk premium.

We can discuss how changes in income distribution affect asset pricing by examining the role of income distribution or wealth inequality in each channel. The remainder of this section focuses on the relationship between income distribution and asset pricing, whereby we analyze the impact of income distribution on: (1) The risk-free rate and risk premium; (2) corporate earnings and return on capital; (3) economic growth; and (4) the industrial structure.

8.2.1 Impacts of Income Distribution on the Risk-Free Interest Rate and Risk Premium

8.2.1.1 Impacts of Income and Wealth Distribution on the Risk-Free Interest Rate

How does income distribution affect the risk-free rate? Intuitively, the more wealth or income a person has, the higher their savings. That is, the savings rate rises with the level of wealth.[5] As such, in an economy with a given amount of wealth, the more uneven the distribution of income or wealth, the higher the savings will be, which will correspond to a lower level of interest rates. In this way, a widening gap in income and wealth distribution tends to lower the risk-free interest rate.

The analysis of theoretical studies mostly supports this intuitive conclusion. One of the more commonly cited theoretical papers examining the relationship between income distribution and the risk-free interest rate is Gollier's 2001 study.[6] He concluded that wealth inequality would reduce the equilibrium risk-free interest rate if an increase in wealth leads to a decrease in individual risk preference. Additional research studies that looked into this further (much of the literature discusses this issue in the context of heterogeneity models) reached a similar conclusion. Aladangady et al. [2][7] note that as inequality in household labor and savings income rises, the risk-free real interest rate falls while risky returns to assets increase; the gap between the risk-free real interest rate and the return on capital widens. The magnitude of the decline in the risk-free rate depends on the source of income polarization: When income inequality arises from returns to risky assets, the magnitude of the decline in the risk-free rate is greater than if it were from income inequality due to labor income. Overall, the impact of income inequality on the risk-free rate depends not only on the degree of income and wealth heterogeneity, but also on the ability of households to manage risk through their portfolio decisions.

In economic terms, when income heterogeneity between households increases and the gap between the rich and the poor widens, households tend to purchase risk-free assets for precautionary motives in response to further changes in future income. The rise in demand for risk-free assets leads to a fall in the risk-free interest rate and an increase in the risk premium required to compensate households for taking on risk. Looking at the empirical data,[8] as mentioned earlier, the last four decades in the US have also been characterized by a rising wealth gap but a lower risk-free interest rate, which may also justify the conclusions reached by the theoretical studies mentioned. The rise in inequality may have contributed to the widening of the observed difference between risky asset returns and the risk-free interest rate.

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[5] Dynan et al. [17].

[6] Gollier [19].

[7] Aladangady et al. [2].

[8] Ibid.

8.2.1.2 Impacts of Income and Wealth Distribution on the Risk Premium

How do income and wealth distribution affect the risk premium? Intuitively, if the rise in individual risk preferences is marginally decreasing with the growth of wealth, i.e., the wealthier an individual is given a higher amount of initial wealth, the less additional risk he is willing to take: The rise in wealth inequality will push up the risk premium. Most academic research also supports these findings. To investigate the relationship between income distribution and the risk premium, researchers often introduce heterogeneous individuals into traditional asset pricing models. These individuals differ in their qualities, level of patience, and investment skills, among others.[9]

Gollier [19][10] argues that the impact of wealth inequality on the equity risk premium depends on the nature of the individual's absolute risk aversion coefficient. Intuitively, if an increase in wealth brings about a decrease in individual risk preference, increased wealth inequality will raise the equity risk premium. This is consistent with the risk preferences of people observed in reality, with low-income individuals being more willing to take risks while wealthy individuals being more risk-averse. If an increase in wealth brings about a decrease in one's risk preference, i.e., the wealthier an individual is given a higher amount of initial wealth, the less additional risk he is willing to take. This is the point at which rising wealth inequality will push up the risk premium.

The finding that rising wealth inequality will push up the risk premium is consistent with the rise in wealth inequality in the US since the late 1970s, when the share of wealth owned by the top 1% of wealth rose from 21 to 35% of the country's wealth, and with the upward trend in equity risk premium. Descriptive statistics on income inequality in empirical studies show that the rise in income inequality has been accompanied by an increase in the share of capital income. Research by Karabarbounis and Neiman (2014)[11] shows a significant decline in the labor share of income in the vast majority of countries, including the US, since the early 1980s. Markiewicz and Raciborski (2022)[12] find that changes in the equity risk premium may depend on the source of income inequality.

On the one hand, an increase in the labor share of income of capital owners reduces the equity risk premium. This is because labor income is risk-free for shareholders, and an increase in the share of labor income constitutes a hedge against stock market volatility in terms of consumption risk. On the other hand, an increase in the share of income generated from capital usually coincides with a higher equity premium. That is, the higher the share of income from capital, the more exposed shareholders are to additional consumption risk. Thus, the impact of rising income inequality on the equity risk premium depends on the relative change in the share of shareholders' labor income versus the share of capital income. When labor income grows faster than

[9] Krusell and Smith [28], Guvenen [20], Quadrini [43], and Cagetti and De Nardi [10].

[10] *Supra* Note 8.

[11] Karabarbounis and Neiman [27].

[12] Markiewicz and Raciborski [35].

capital income, the risk premium falls. However, when capital income grows faster than labor income, the risk premium rises. Some studies[13] also argue that income distribution affects the stability of the system: Higher levels of income inequality are associated with higher risks of social instability, and thus higher risk premium compensation, assuming that the system is endogenous.

8.2.2 Impacts of Income Distribution on Corporate Earnings and Return on Capital

Initial conditions and underlying policies are important when discussing the impact of changes in income distribution on corporate earnings and return on capital. Different conditions may require different policies for promoting inclusive growth. Furthermore, the different policies could have varying impacts on firms' earnings and return on capital. It is therefore necessary to discuss the impact from changes in income distribution on firms' earnings and return on capital, in relation to both the initial conditions (stage of production and the group targeted by the policy) and the potential policy mix.

8.2.2.1 Policy Matrix for Inclusive Growth

We use a 3×3 policy matrix for inclusive growth, proposed by Rodrik and Stantcheva (2021),[14] as a starting point for our analysis. From the perspective of both the stage of economic development in which the policy intervention occurred and the income distribution of the population involved, a matrix of 3 (pre-production, production, and post-production) $\times$ 3 (low-income group, middle-income group, and top-income group) is constructed to classify policies for inclusive growth (Fig. 8.3). To achieve inclusive growth, different policies are used for different income groups and at different stages of production. The impact of these policies on corporate earnings and returns on capital may vary slightly.

Rows of Inclusive Growth Policy Matrix—policies that cover the income distribution of the population. The population can be categorized into three groups: The bottom-income, middle-income, and top-income groups, and the focus of the policy on regulating income distribution differs among the three groups. The overall idea is to raise the low-income group and to strengthen the middle-income group.

Columns of Inclusive Growth Policy Matrix—stages of economic intervention. Hacker (2011)[15] divides the stages of economic intervention into "pre-distribution" and "post-distribution." Post-distribution is an ex-post policy, i.e., transfers of income and wealth after they are realized (e.g., redistributive transfers, progressive taxation,

[13] Persson and Tabellini [39] and Alesina and Perotti [4].

[14] Rodrik and Stantcheva [44].

[15] Hacker [21].

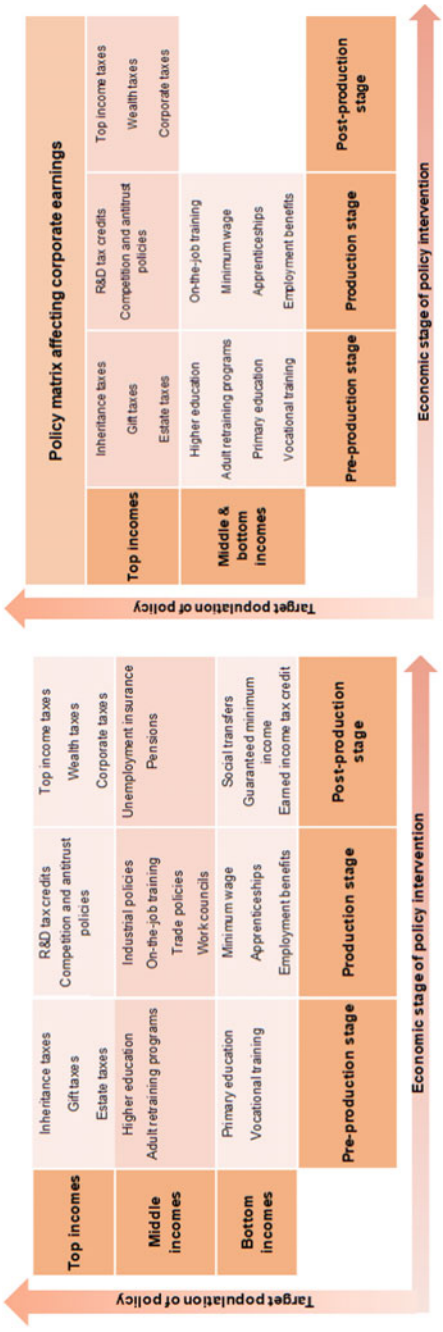

Fig. 8.3 Inclusive growth and the policy matrix affecting corporate profitability. *Source* Rodrik, D., & Stantcheva, S, A Policy Matrix for Inclusive Prosperity, 2021, CICC Research

and social insurance). Pre-distribution refers to policies that directly affect market operations and produce outcomes. Rodrik and Stantcheva (2021) further classify the pre-distribution into two phases: The "pre-production" and "production" phases. Pre-production policies determine the qualities that people bring to the market, such as education and skills, financial capital, social networks, and social capital. Production stage policies are those that directly influence firms' employment, investment, and innovation decisions.

8.2.2.2 How Do Inclusive Growth Policies Affect Corporate Earnings?

Based on the policy matrix in Fig. 8.3, we analyze the impact of inclusive growth on corporate profitability under different policy combinations.

Pre-production phase: Education and training, inheritance tax, and real estate tax

Pre-production stage policies determine the qualities that people bring to the market, such as education and skills, financial capital, social networks, and social capital. Policies for the accumulation of human capital, such as education and training, help to increase the profitability of firms. The development of basic education and vocational education can raise the average educational attainment among the workforce and in turn increase the productivity and profitability of firms.[16] Regions with well-developed higher education have higher rates of entrepreneurship than the average level; for entrepreneurs, their level of education is strongly correlated with positive business outcomes. A good higher education background for professional managers and executives can improve the profitability of firms via the pursuit of among others.[17] Inheritance tax policies reduce the profitability of family businesses, but may be beneficial in promoting innovation in the sector. Inheritance tax policies affect the strength and longevity of family businesses. The French Civil Code restricts testamentary freedom, enforcing the principle of equal inheritance shares and a progressive inheritance tax regime. In this inheritance environment, it is difficult for family business to remain strong.[18] Empirical studies show that family firms are less likely to engage in R&D innovation, especially breakthrough innovation.[19] Dieleman (2019)[20] suggests an "ability-and-willingness paradox" of innovation in family firms, whereby family firms are relatively more able to invest in innovation but less willing to innovate for change.

Production phase: Market competition, physical investment, and R&D and innovation policies

[16] Doms et al. [15].

[17] Harymawan et al. [22], Davydov [13], and Zhou et al. [48].

[18] Carney et al. [11].

[19] Hu and Hughes [23].

[20] Dieleman [14].

Decisions that firms make regarding employment, investment, and innovation under the influence of production-phase policies will directly affect the profitability of firms. In the short term, minimum wage policies may reduce the profitability of firms. However, in the long run, minimum wage policies enhance it. Specifically, in the short term, minimum wage policies may hinder business profitability,[21] but minimum wage policies are essential to facilitating job creation and increase business productivity in the long run. Setting the minimum wage at a moderate level can induce firms to invest in workers and new technologies, and create well-paying jobs.[22] Higher wages may also lead to more innovation aimed at partially replacing labor, thereby increasing productivity across the economy.[23] The impact of antitrust policies on business profitability is unclear. Antitrust policies increase the profits of new entrants at the expense of incumbents. For industries characterized by continuous innovation, antitrust policies that protect new entrants increase the overall efficiency of innovation.[24] R&D innovation policies improve the profitability of firms. Policies that encourage R&D innovation increase the expected return on investment in R&D innovation, thereby increasing the productivity and profitability of firms through increased R&D investment.[25]

Post-production phase: Progressive income tax and property tax

A progressive income tax system indirectly affects the level of corporate profitability by affecting entrepreneurial incentives. In the equilibrium of the firm-CEO matching model, more talented CEOs are matched with larger firms, and they devote greater effort in running them. Taxing CEO income affects the equilibrium pricing of their effective labor and spills over to firm profits.[26] When innovation is the driver of economic growth, it limits the top tax rate for revenue maximization and welfare maximization. Using innovation as the driver of economic growth would significantly reduce the optimal marginal tax rate on the top-income group.[27]

In summary, initial conditions and potential policy mixes are important when discussing the impact of changes in income distribution on firms' earnings and return on capital. For inclusive growth, the optimal policies could potentially be different for the various income groups and different stages of production, and these policies have different impacts on the profitability of firms and return on capital. In the pre-production stage, policies for human capital accumulation such as education and training help to increase the profitability of firms. Furthermore, while inheritance tax policies reduce the profitability of family firms, they may be beneficial for promoting overall innovation in the industry. In the production phase, the impact of minimum wage policies on the profitability of firms changes over time, the impact

[21] Draca et al. [16].

[22] Kalleberg [26].

[23] Acemoglu and Restrepo [1].

[24] Besley et al. [8].

[25] Petti and Zhang [40].

[26] Ales and Sleet [3].

[27] Jones [24].

of antitrust policies on the profitability of firms is uncertain, and R&D innovation policies boost the profitability of firms. In the post-production phase, a progressive income tax system indirectly affects the level of corporate profitability by affecting entrepreneurial incentives.

8.2.3 Impacts of Income Distribution on Economic Growth

8.2.3.1 Theoretical Implications

Income distribution and economic growth are important topics of research in economics. Broadly speaking, the channels through which income distribution affects asset prices include both macroeconomic growth and corporate growth. This section focuses on the analysis of the relationship between income distribution and macroeconomic growth to supplement the relevant discussion in the previous chapters. Judging from mainstream research, the impact of inequality on economic growth is inconclusive. Based on Kuznets' (1955)[28] inverted U-shaped relationship hypothesis (i.e., the Kuznets curve), a similar relationship exists between income distribution and economic growth—at low levels of income, economic growth is accompanied by a widening gap in income distribution; once income levels reach a certain level, economic growth moves inversely with income inequality.[29] Alesina and Rodrik [5] link inequality and economic growth through political-economic mechanisms (with the introduction of elections), illustrating the second half of the Kuznets curve in an endogenous growth model. Li and Zou [32] incorporated government public spending into the utility function in Barro's endogenous growth model where the first half of the Kuznets curve is made.[30]

There are three main channels of influence. (1) Savings-investment channel: As the savings rate of the wealthy is higher than that of other classes, savings and investment mainly come from the wealthy class, and as such, inequality in income distribution helps to increase the savings and investment rate, thus promoting economic growth.[31] (2) New economic growth theories: In the late 1980s, the rise of new economic growth theories has broadened the channels through which income distribution affects economic growth. There are two main theories that are more far-reaching (i.e., the "big push" theory and the theory of political and economic instability), both of which suggest that reducing income inequality promotes economic growth. The first theory proposed by Murphy et al. [36][32] suggests that income distribution affects economic growth through market size. They argue that industrialization requires sufficiently large domestic markets so that technologies that can

[28] Kuznets [30].

[29] Li and Zou [32].

[30] Alesina and Rodrik [5].

[31] Lewis [31], Kaldor [25], and Pasinetti [37].

[32] Murphy et al. [36].

generate increasing returns to scale are able to be profitable, and that unequal income distribution and excessive wealth concentration may limit the market size and thus impede economic growth. The second theory suggests that unequal income distribution may lead to social conflict and weak property rights protection, thus impeding economic growth.[33] (3) Government fiscal spending and taxation channels: Among the contemporary income distribution literature, the theory of endogenous fiscal policy[34] is relatively comprehensive in discussing the channels of influence. The theory examines the impact of income distribution on economic growth through fiscal expenditure and taxation channels.

8.2.3.2 Economic Growth Should Balance Efficiency and Equity

In the context of China's actual situation, we speculate that China has reached a stage at which it needs to balance income distribution and economic growth, as well as efficiency and equity. In the early years of the founding of the country, China's economic output and growth rate were both low. Since the reform and opening-up policy in 1978, China has achieved remarkable economic development under the idea of "encouraging part of the people to become rich first." By the 40th anniversary of the reform and opening-up in 2017, China's real domestic GDP had grown 33.5 × compared to the level in 1978. The annual growth rate of 9.5% is much higher than the average global annual growth rate of around 2.9% in the same period.[35] It can be argued that the model of "encouraging part of the people to become rich first" has indeed created opportunities for some people.

All things considered, is the relationship between economic growth and income distribution in China a linear one? Is it true that greater income inequality leads to faster economic growth? The answer is not necessarily. Cheng and Zhang [12][36] constructed a theoretical model of product innovation by companies in an environment of innovation uncertainty, setting up economic growth models under two types of higher and lower inequality (polarized growth between the rich and poor, and inclusive growth). They found through model derivation and numerical simulation that when the level of economic development is low, the widening income gap does not inhibit autonomous innovation and economic growth. However, when at higher levels of economic development, if the income gap does not narrow as income levels rise, autonomous innovation will be inhibited, and economic growth will stagnate. This micro-mechanism explains the "middle-income trap" of many latecomer countries that have reached middle-income levels and have not been able to successfully transition to an innovation-driven economic growth model. In this way, the relationship between income distribution and economic growth in China is likely to be at least partially similar to the inverted U-shape of the Kuznets curve described earlier.

[33] Alesina and Perotti [4].

[34] Perotti [38].

[35] Xinhua News Agency [46].

[36] Cheng and Zhang [12].

Whether China's current stage of development is "partially" close to or past the inflection point of Kuznets' inverted U-curve is subject to empirical analysis. But intuitively, the inequality brought about by imperfect mechanisms (such as differences in household registration, ownership, rent-seeking behavior, etc.), high real estate prices, imperfect social security systems, certain monopoly issues, and inequality in education, among others, are perhaps the key issues that constrain China's sustainable and stable development. China's goal of common prosperity creates an opportunity to address these issues and achieve sustainable, stable, and high-quality development.

8.2.4 Impacts of Income Distribution on Industrial Structure

8.2.4.1 The Theory of Structural Change in the Economy with a Balanced Growth Path

Empirical data suggests that when moving towards inclusive growth, even if the economic growth rate remains positive, the impact of inclusive growth on different industries may vary. The various components of the economy may not grow at the same rate, resulting in structural changes within the economy, i.e., changes or transformations in the industrial structure.[37] The study of structural change in the economy is also one of the central concerns of modern economic growth theory, but early economic growth theories did not include changes in industrial structural in their discussions. After 2000, a new wave of research on structural change in the economy emerged, which better explains the Kuznets facts and Kaldor facts, and gradually dominated the study of structural change in the economy. Theories on changes in economic structure on a balanced growth path mainly explains the mechanism by which changes in income distribution affect the industrial structure through the demand side and the supply side.

The demand-side explanation is a preference-driven mechanism of income effects. This theoretical mechanism explains the underlying mechanism of structural change in the economy, mainly in terms of demand-side factors. This theory suggests that consumers have different levels of income elasticity in demand for different products. As income rises, demand for superior products increases more rapidly (assuming the income elasticity of demand is greater than one), leading to a flow of factor inputs and consumption expenditures to sectors that produce such products. That is, when the income structure changes, a change in the industrial structure can be deduced given a particular preference (or utility function) setting.

The supply-side explanation is a technology-driven price utility mechanism. This type of mechanism is known in the literature as the "technology-driven" theory of structural change. As long as the elasticity of substitution of demand across products is not equal to one, changes in relative prices will lead to changes in the structure of consumer spending, and consequently, in the industrial structure. There

[37] Wang et al. [45].

are three types of technological differences among sectors that can lead to price changes: Differences in productivity growth rates (technological progress), differences in factor intensity (capital-labor ratio), and differences in factor elasticities of substitution.

8.2.4.2 Channels of Income Distribution Influencing the Change in China's Industrial Structure

Modern economic structural change theories and empirical studies demonstrate that China's industrial structure is changing. Overall, in the last two decades, along with rising incomes, the service sector—in response to changes on the demand side, coupled with support at the policy level—has gradually become a new engine of development. China's service sector, represented by the internet and other sectors, has developed and expanded rapidly in recent years; the tertiary sector's contribution to GDP exceeds that of the primary and secondary sectors combined. The changes in market capitalization of listed companies also reflect China's industrial transformation and upgrading. By the end of 2021, the total market capitalization of "new-economy" sectors such as information technology, healthcare, consumer staples, consumer discretionary, and telecoms reached approximately Rmb54.5trn, accounting for over 50% of the market capitalization of all Chinese stocks, including A-shares, H-shares, and Chinese concept stocks (based on the Wind database).

From the perspective of changes in income distribution, the demand structure of the Chinese population changes in line with changes in income structure, which in turn drives consumption upgrading and industrial upgrading. Therefore, a reasonable and natural path of influence is change in income disparity → change in demand structure → change in market size → change in industrial structure. That is to say, due to the different preferences of different income groups, the narrowing of income disparity will bring about changes in the country's demand structure, which will lead to changes in industry size and gradually lead to changes in the industrial structure. Under these assumptions, we simply use two models to present the process of industrial structure change influenced by income distribution.

One is a partial equilibrium model that assumes exogenous changes in income structure. We find that on the demand side, when the income distribution gap narrows, the low-income group receives more income relative to the top-income group. In this case, the demand characteristics of the low-income group are dominated by high-end products, and the demand for high-end products in society rises rapidly. When the income distribution gap widens, the top-income group receives more wealth relative to the society. Thus, the overall demand characteristics of the top-income group—that is, the demand for high-end products—will slow down or flatten out. On the supply side, as we assume that other variables exogenous to the factor model will not change, the overall production capacity is fixed. At this time, manufacturers will allocate according to the demand. When the income distribution gap is narrowed, the overall demand for high-end products in society rises. In this case, manufacturers allocate more production capacity to high-end products. Therefore, the output of high-end

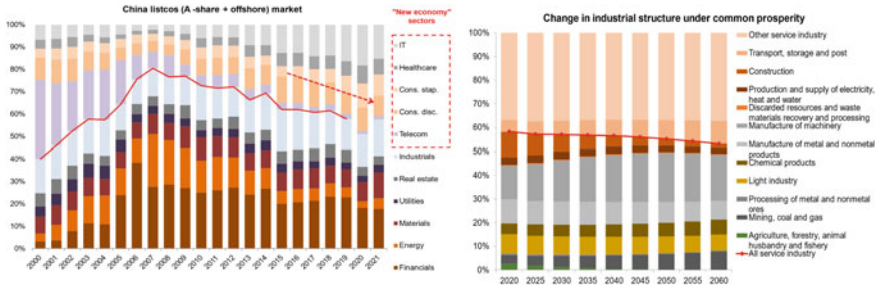

Fig. 8.4 China's industrial structure is changing. *Source* Wind, CICC Research

industries is increased and eventually realizes the upgrading of consumption and the change in industrial structure.

The other model is a general equilibrium model that simulates the value of the industrial structure. To visualize the potential changes in the industrial structure amid the goal of inclusive growth, we use standard New Keynesian and CGE models to simulate industry fluctuations or future changes in industrial structure undergoing shocks. We find that following a shock of increasing income disparity, the total capital stock in the economy rises, and the return on capital falls while real estate prices rise. Conversely, when the income disparity decreases, the return on capital and non-housing consumption both rise. We can also simulate future changes in the industrial structure (Fig. 8.4). As the income distribution becomes more balanced, the trend towards a higher share of services and equipment manufacturing suggests that the economy evolves from an upgrade in demand led by rising incomes among low-income group to consumption upgrading and high-end manufacturing upgrading.

8.3 Empirical Analysis of the Income Distribution and Asset Price Performance

In this section, building on the theoretical analysis we have previously discussed, we further analyze the link between changes in income distribution and asset price performance at different stages of development of representative economies such as the US and Japan. Empirical analyses will provide insights into the implications of future investments under the broader context of the shift towards more inclusive growth both in China and around the world.

8.3.1 *The US Experience: Low Interest-Rate Environment, Lower Volatility of Financial Asset Valuations, and Convergence of Valuations Between Industries*

In the long-cycle history of the US, the cut-off point for a significant shift in income disparity, with the income gap first narrowing and then widening, was around 1980. The economic growth and asset price performance exhibited different behaviors in periods before and after this point (Fig. 8.5). Changes in income distribution do not appear to have systematically affected the profitability of US firms (as measured by ROE). In addition, we observe the following salient features

First, the impact of changes in income distribution disparity on the overall valuation level and volatility is quite significant. During the period before 1980, when the US income disparity narrowed, economic growth was significantly more volatile. Each economic cycle, from recovery to recession, occurred within relatively short intervals, leading to frequent peaks and troughs in economic growth. Interestingly, during this period, volatility in asset price valuations was relatively low. Despite the oscillating and upward trend of the risk-free interest rate, the standard deviation of the risk-free interest rate from 1950 to 1980 was only around 2.1%. Also, the average P/E valuation of the S&P 500 was low, and fluctuations were within a relatively small range. After 1980, when the income gap in the US widened, the economic growth rate in the country slowed and was less volatile. Each recovery lasted longer, with longer intervals between recessions. However, at the same time, US asset prices became much more volatile. The risk-free interest rate oscillated downwards, with its standard deviation rising to 3.3%. The average market valuation became higher than before 1980, and the volatility in the market increased. The economic and financial reasoning behind this contrast may require further consideration.

Secondly, the impact of changes in income distribution disparity on industry valuation levels and on the discrepancy in valuation levels between industries has become more noticeable. When the income gap narrowed in the US before 1980,

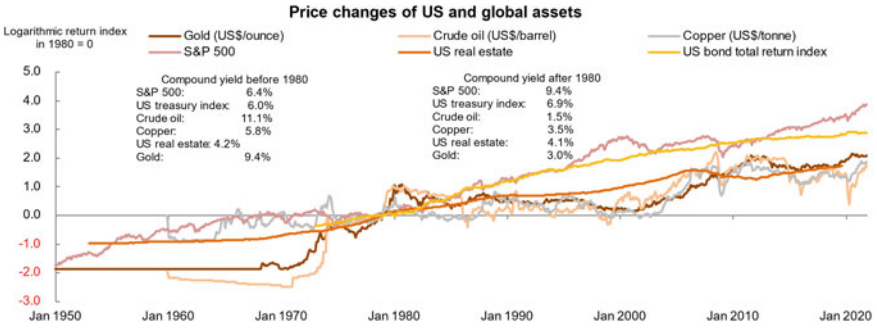

Fig. 8.5 The performance characteristics of global asset classes differed markedly around 1980. *Source* Wind, Bloomberg, CICC Research

the volatility of industry valuations and the valuation difference between industries increased. Since 1980, the major industries of the US stock market—similar to the overall US stock market—have been characterized by an increase in average valuation levels and greater volatility. There was also greater divergence in valuations between different industries, especially in the downstream consumer, technology, and cyclical upstream and midstream industries. In addition, the fundamentals and performance of a number of industries have also further diverged since 1980. The average medium- to long-term US equity ROE has remained relatively stable. However, the ROE of the downstream industries has been higher than that of the upstream and midstream cyclical-industries since 1980. Share-price performance has also shifted from equilibrium to divergence, with the downstream industries clearly outperforming the midstream and upstream cyclical industries.

Third, the performance of global asset classes also differed markedly around 1980. Before 1980 when the wealth gap was narrowing in the US, the performance of US and global asset classes were ranked as follows: Commodities, gold > stocks, bonds > real estate. In the period following the 1980s, however, financial assets as a whole outperformed physical assets, with stocks > bonds > real estate > commodities, gold. Stocks became the best-performing assets during this period.

Asset prices in the US at around 1980 may have been correlated with changes in the income gap. Widening income and wealth disparity in the US after 1980 may have led to a greater divergence between different structural parts of the economy. It also, to some extent, had the effect of lowering the interest rate as the savings rate in the US has generally risen since 1980. In lower interest rate environments, investors may hold assets for longer periods, leading to greater volatility in asset prices. Moreover, the market is more willing to pay a premium for growth amid lower interest rates, and as a result, downstream sectors with better growth tend to enjoy higher valuation premiums. Thus, it is in this long-term, low interest rate environment that the growth style has outperformed the value style in global equity markets since 2010 (Fig. 8.6). Moreover, when prices of financial assets rise and outperform that of real assets, the wealth gap widens as wealthy people generally have a higher allocation for financial assets. However, the opposite was generally true prior to 1980. Going forward, with the goal of moving towards inclusive growth and drawing from the experience of the US, we may need to start thinking about the possible implications of a change in the low interest rate environment and a decline in the volatility of financial asset valuations, as well as the convergence of valuation levels between industries.

8.3.2 Japan's Experience: Inclusive Growth Through Economic Transformation and Structural Upgrading Under Internal and External Challenges

In the face of internal and external challenges, Japan gradually embarked on a long period of inclusive growth during the 1970s through economic transformation and

Fig. 8.6 Global market growth outperformed value overall in a low interest rate environment. *Source* Bloomberg, FactSet, CICC Research

structural upgrading. Although Japan was affected by a combination of factors such as the energy crisis, demographic changes, trade frictions between Japan and the US, and economic restructuring in the 1970s, GDP still grew at an average rate of around 4% between the early 1970s and 1990. The income disparity in Japan remained relatively low for a long time, and the capital market responded relatively positively. Despite the stock market bubbles that occurred periodically, and the real estate bubble later on, there was no significant expansion of income disparity, and relatively healthy, inclusive growth was achieved.

One of the core factors of Japan's inclusive growth may have been the technological innovation that drove industrial upgrading, which led to consumption upgrading and promoted internationalization. Amid the growing trade frictions with the US, rising domestic labor costs, and the oil crisis, Japan began to seek technological innovation and industrial upgrading in the 1970s. The growth rate of the old economy and its share of the whole economy declined. The increase in trade specialization coefficients and the higher share of exports of high-value-added products manufactured in Japan during the 1970s to 1990s are evidence of industrial upgrading and globalization in Japan (Fig. 8.7). At the same time, industrial upgrading led to an overall increase in income levels, with workers' earnings as a percentage of GDP starting to trend up around 1970. Thus, higher-quality products and services were consumed by the population. Consumption's share of economic value added rose substantially, accompanied by a noticeable shift in the consumption patterns towards more high-end, branded products (Fig. 8.8).

In the context of inclusive growth in Japan, industrial upgrading and consumption upgrading were the main themes of investment. During the period of structural transformation of the economy, Japan introduced supportive industrial policies and leveraged its own factor endowments to achieve industrial upgrading and raise the income levels of the overall population. To some extent, Japan is a role model for balancing the wealth gap and economic development in developed economies. While the performance of the Japanese stock market index from 1973 to 1983 was relatively flat as it was dragged by traditional sectors, the structural opportunities related to industrial upgrading and consumption upgrading were outstanding. Five sectors,

Change in international competitiveness of Japanese manufacturing industry

US-Japan trade friction

	1955	1960	1965	1970	1975	1980	1985	1990
Steel	0.89	0.04	0.61	0.63	0.89	0.83	0.74	0.99
Electronics and communication	-0.24	0.45	0.02	-0.15	0.26	0.51	0.74	0.97
Automobile	-0.23	0.81	0.77	0.89	0.91	0.95	0.95	0.97
General purpose machinery	0.12	-0.02	0.24	0.25	0.57	0.69	0.75	0.75
Precision machinery	0.49	0.49	0.59	0.38	0.46	0.58	0.58	0.74
Other electrical machinery and equipment	0.53	0.41	0.47	0.40	0.45	0.44	0.52	0.67
Machinery for electricity consumption by households	0.76	0.95	0.94	0.94	0.90	0.92	0.93	0.59
Machinery for office work	-0.92	-0.91	-0.45	0.52	0.57	0.90	0.96	0.52
Other transportation machinery	0.88	0.71	0.77	0.63	0.80	0.51	0.53	0.36
Metal products	0.85	0.90	0.83	0.79	0.84	0.78	0.75	0.36
Plastic products	0.44	0.80	0.80	0.76	0.55	0.46	0.53	0.32
Rubber products	0.92	0.94	0.94	0.90	0.68	0.56	0.50	0.27
Ceramics and stone products	0.87	0.79	0.83	0.72	0.72	0.52	0.47	0.17
Chemical products	0.27	-0.34	0.14	0.13	0.36	0.12	0.09	0.06
Heavy machinery	0.05	0.22	0.51	0.49	0.59	0.74	0.74	-0.01
Publishing	0.15	-0.23	-0.01	0.25	-0.41	-0.08	0.19	-0.18
Paper products	0.04	0.18	-0.19	-0.16	-0.08	-0.31	-0.23	-0.27
Textiles	0.97	0.90	0.86	0.58	0.21	0.07	-0.02	-0.48
Other manufacturing industries	0.95	0.90	0.59	0.30	0.12	-0.10	0.02	-0.51
Non-ferrous metal	0.51	-0.64	-0.33	-0.52	-0.37	-0.38	-0.57	-0.65
Petroleum	-0.74	-0.73	-0.53	-0.70	-0.46	-0.72	-0.73	-0.66
Food	0.45	-0.50	-0.60	-0.59	-0.77	-0.75	-0.78	-0.89
Wooden products	0.88	0.83	0.45	-0.33	-0.74	-0.74	-0.77	-0.90

Fig. 8.7 During the 1970s–1990s in Japan, industrial upgrading created more added value, drove income growth, and led to consumption upgrading. *Note* Trade specialization coefficient (TSC) = (exports − imports)/(exports + imports); JPY-denominated and production indices are from 1958. *Source* Yukio Noguchi, Economic History of Postwar Japan (translated by Ling Zhang), April 2018, CICC Research

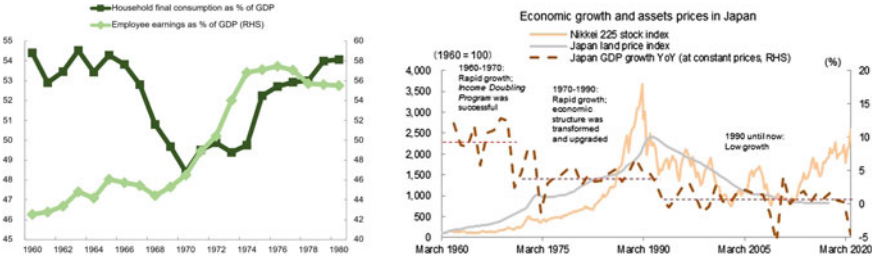

Fig. 8.8 In Japan, rising income as a percentage of GDP accelerated consumption growth, and consumption upgraded during the transition period of national economy. *Source* Datastream, CICC Research

namely support services, pharmaceuticals and biotechnology, technology hardware and equipment, media, and electronics and electrical equipment, posted gains of over 150% in the stock market. The 100 best-performing stocks in the Japanese market during this period also came from sectors related to industrial upgrading and consumption upgrading. Japan's development during the transition period can shed light on how China can achieve high-quality development and sustainable growth. Meanwhile, China's own industrial upgrading and consumption upgrading have been the main areas of investment over the past decade. We believe that they are likely to remain the drivers of economic growth and contribute rich investment opportunities in the context of inclusive growth in the future.

8.4 Investment Trends Amid the Pursuit of Inclusive Growth

China and other major global economies are gradually becoming more focused on efficiency and equity, as well as inclusive growth and more balanced income distribution. In this context, what are the likely medium- to long-term trends in the investment environment, and what are the main investment trends to focus on? This is the topic of discussion in this section. We believe the following points are worthy of attention from an investment perspective.

First, the "new paradigm" of investment: Under the context of widening internal income disparities, policy orientations around the world are favoring equity over efficiency. This may have a number of macro and sector implications. (1) There is a more inward-looking policy orientation across regions, with a higher probability of regional conflict and greater volatility in economic growth, perhaps somewhat similar to the US experience and around the world from the post-World War II period to the late 1970s. (2) There is a greater focus on social responsibility and sustainability across the globe, with each country advancing its own version of "ESG." In a certain sense, the goal of "common prosperity" in China also aligns with the concept of "ESG" in the Chinese context. (3) There is a greater focus on anti-monopoly policies, which, to a certain extent, promote financial inclusion and encourages financial institutions to support the real economy more. (4) The regulation of technology and internet platform companies will also receive increasing attention globally. All of these changes have direct investment implications.

Second, the global environment of low interest rates is likely to change gradually. In the previous section of the theoretical analysis, we explored the impact of changes in the income distribution gap on the risk-free interest rate. The gradual decline in global nominal interest rates over the last four decades has raised concerns and has had a large impact on asset allocation. There have been various explanations for the decline in global risk-free rates, including the "global savings glut" (as observed by former Federal Reserve Chairs Alan Greenspan and Ben Bernanke) and capital inflows attracted by the US's efficient and competitive financial system,[38] among others. Our previous analysis suggests that the widening gap in global income and wealth distribution may also have been one of the drivers of the nearly four-decade decline in global risk-free interest rates. If this holds true, as more equitable income distribution advances across the globe, it may gradually change the persistent downward trend in risk-free rates in the medium to long term. In addition, the increase in consumption expenditure as a percentage of GDP and rising costs due to "inward" regional policies may also raise global inflation to some extent in the medium or long term. These factors may lead to an end to the long-term downward trend in nominal interest rates globally over the last four decades. This could be one of the most important trends in the future global asset allocation space. Higher nominal interest rates will generally be accompanied by lower asset valuations, shorter investment

[38] Caballero and Krishnamurthy [9] and Bernanke et al. [7].

durations, a lower growth premium, and potentially a smaller difference in valuations between sectors, among others.

Third, more balanced income distribution will mitigate the barriers to China's development and further unlock its growth potential. China's rapid economic development over the last 30 years is one of the most important events in the global economy. Its share of the global economy has risen from around 2% to around 15–20%. China is currently facing issues of unbalanced development and insufficient development. A better balance between efficiency and equity, and the promotion of more balanced income distribution, may help to correct some of the imbalances in China's development. It could also mitigate the barriers to development, thus further unleashing China's growth potential. In particular, initiatives to reform and improve basic systems and mechanisms (including establishing a long-term mechanism for the smooth functioning of the real estate market, improving the social security system, and encouraging financial institutions to pass on benefits in order to provide greater support to the real economy) will have the effect of correcting developmental imbalances in the medium to long term.

Fourth, China's mass consumer market is expanding and its quality is improving (Table 8.1). Although China's GDP per capita has reached around US$11,000, the consumption expenditure as a percentage of GDP is not high. Promoting a more balanced income distribution and improving social security may have the effect of expanding the scale of domestic demand and raising consumption expenditure as a percentage of GDP in the medium to long term. The mass consumer market, which includes clothing, food, housing, transportation, recreation, and entertainment, may enter a stage of expansion and quality improvement. The trend of branding, increasing industry concentration, and internationalization in China's consumer sectors is likely to be further strengthened. This is likely to be similar to the trend achieved in Japan between the mid-to-late 1970s and the 1990s in terms of the steady income growth and the structural transformation of the economy.

Fifth, China's sizable market for domestic demand will continue to unleash the largest benefit from economies of scale since the Industrial Revolution, and the trend of industrial upgrading in China will be further strengthened. This will contribute to the trend of technological innovation and industrial upgrading in China (Fig. 8.9). China will move from low-end to high-end, from small to large, and from large to strong in many manufacturing sectors with comparative advantages.

It is also worth noting that the trend towards inclusive growth may create constraints in the financial, real estate, and related sectors in the medium to long term.

Fig. 8.9 China's industrial upgrading and consumption upgrading—from the previous bull market in commodities to a structural bull market during industrial upgrading and consumption upgrading. *Source* Wind, CICC Research

Table 8.1 Potential trends in the consumer sub-sector amid the pursuit of common prosperity

Sector	Potential benefits to certain sectors under the policy of common prosperity
Food and beverage	(1) Per capita milk consumption of low-income groups could increase, while consumption of high-end dairy products could lead to product upgrading
	(2) Income growth for low-income groups could lead to marginal increase in beverage consumption
	(3) Branded snacks and snacks with higher unit prices may achieve wider distribution in rural markets with the increase in per capita consumption of snacks in rural markets; snack stores may successfully expand into lower-tier markets
Alcoholic beverages	Potential consumption upgrading in rural and county markets, which could lead to a rise in prices for mass-market, mid-range, and high-end products
Edible oil	(1) Industry structure could be further upgraded, with products sold in small and medium-sized packaging replacing products sold in bulk
	(2) Edible oil to see potential consumption upgrading, which could lead to a rise in product quality and a greater emphasis on brands
Catering	Potential increase in imported food products, and a possible increase in market share for chain restaurants. Potential rise in frequency of consumption at branded catering businesses, and leading businesses may be able to successfully expand into lower-tier markets
Textile	(1) Potential market-share gains for sports brands and sports equipment could become increasingly specialized
	(2) Possible consumption upgrading for menswear, womenswear and childrenswear, leading to improvement in product quality; brand channels may be able to expand their sales channels into lower-tier markets
Cosmetics	(1) Potential growth in functional skincare, professional makeup, and other categories, resulting from possible growth in consumption of specialized skincare and beauty products

(continued)

Table 8.1 (continued)

Sector	Potential benefits to certain sectors under the policy of common prosperity
	(2) Possible greater room for growth in consumption upgrading for cosmetics
	(3) The expansion into lower-tier markets of new retail channels of cosmetics leads to brand expansion of lower-tier markets
Household appliances	(1) Under market competition, home appliance companies seek growth in emerging home appliance segments, leading the growth in the new markets. There is likely to be more products to target different price segments, product quality is likely to continue to improve, and the targeted customers may continue to expand
	(2) Channel cost is a key factor that affects promotional activities. We believe market competition in the home appliance industry should be protected, which would make full use of the industry's advantages. Efforts should be made to avoid large increases in channel costs resulting from the monopolization of channels by some platforms since it would lead to excessively high channel costs when promoting new home appliances, which would in turn slow down the adoption of new products
Home furnishing	(1) Market share of leading companies could continue to expand and brand channels could move down to lower-tier markets
	(2) There could be a gradual upgrading of household consumption as products in the industry are cost-effective
Automobile	(1) The number of passenger cars per 1000 people could increase, and the penetration rate of new-energy vehicles in low-tier cities could rise
	(2) More and more automobile manufacturing bases emerge, which could spur regional economic development

Source CICC Research

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