

Public Goods Provision and Chinese Economic Development

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Abstract

- ◆ The provision of more and better public goods is part of the Chinese efforts to emphasise the quality rather than the quantity of economic growth.
- ◆ Provision of public goods such as education, public health, elderly care, environmental preservation, protection and restoration, basic research, infrastructure, social safety net, and alleviation of poverty has been vastly expanded in China over the past seventy years, with significant positive results.
- ◆ The provision of public goods has also raised the potential GDP of the Chinese economy through its effects on increasing the aggregate demand for investment and consumption, the productivity of the labour force, and the rate of return on other fixed-assets investment. For example, the productivity of the Chinese labour force has been greatly enhanced because of the improvements in its quality.

Abstract

- ◆ Public goods are by their very nature mostly “local”, and their provision is consistent with the Chinese “dual circulation development strategy” with primary focus on domestic circulation.
- ◆ The provision of public goods also constitutes a form of redistribution in kind, for example, clean air and water, which can be enjoyed by everyone, and hence also directly advances the goal of “common prosperity”.
- ◆ Despite the significant rise in the value of the Gini coefficient in China, the welfare of all Chinese people has improved significantly since 1980.

Abstract

- ◆ However, the provision of public goods frequently results in negative value-added at market prices, and will therefore reduce rather than enhance the rate of growth of measured GDP. This is one reason why the targeted rate of growth of the Chinese economy in 2022 has been set at a relatively low level of 5.5 percent, the lowest in more than four decades.
- ◆ Finally, increasing the provision of public goods can be a significant source of growth of the domestic aggregate demand for both consumption and investment, over and above what increases in household consumption alone is able to provide. Maintaining an adequate growth of aggregate demand is essential for continued Chinese economic prosperity.

Acknowledgement

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Outline

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Environmental Preservation, Protection and Restoration, and
Poverty Alleviation
- ◆ Public Goods Provision through Infrastructural Investment
- ◆ Public Goods Provision as Aggregate Demand for
Consumption and Gross Fixed-Assets Investment
- ◆ The Financing of Public Goods Provision
- ◆ Concluding Remarks

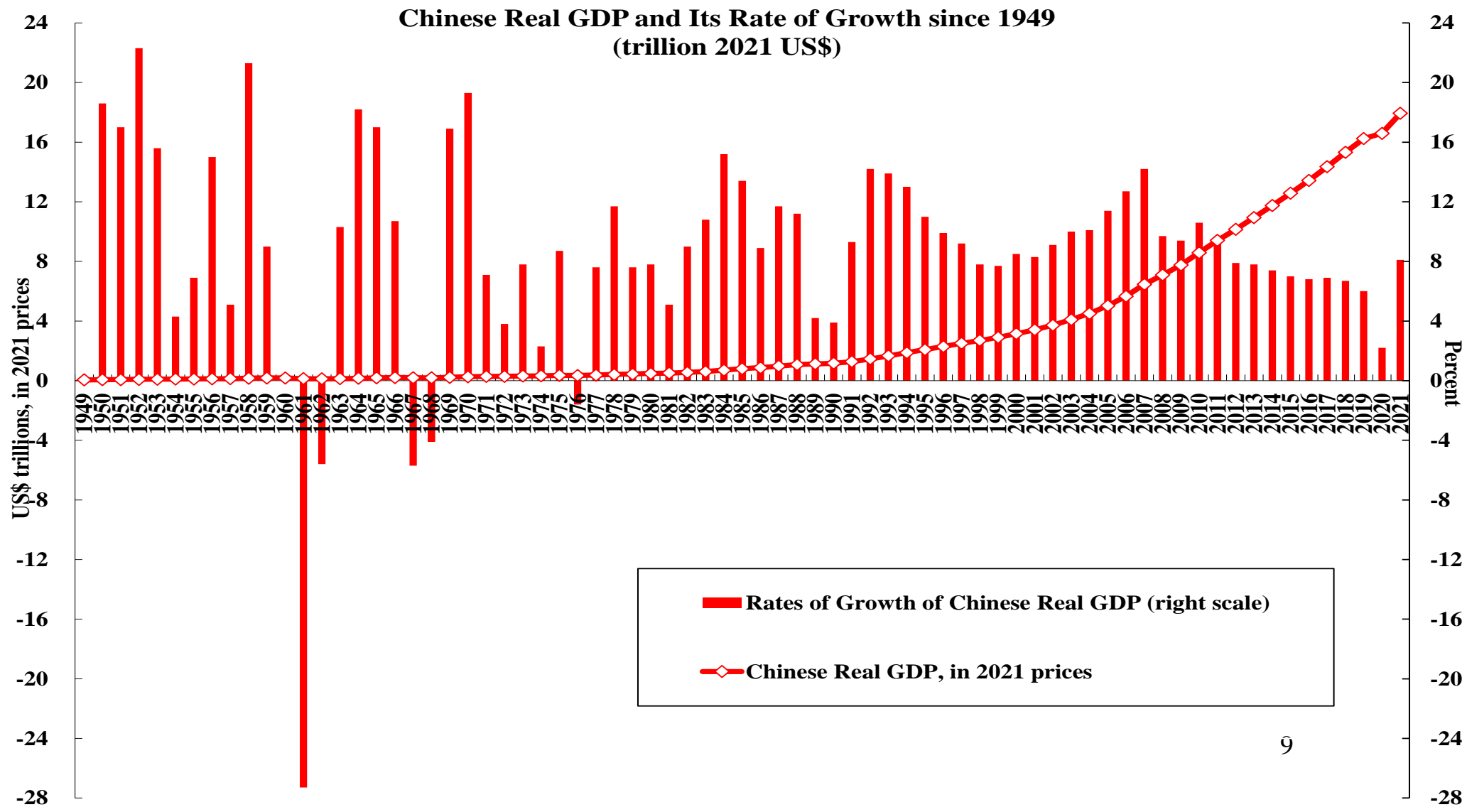
Introduction

- ◆ A Review of the Chinese Economic Record since 1949
- ◆ The Chinese Economic Fundamentals

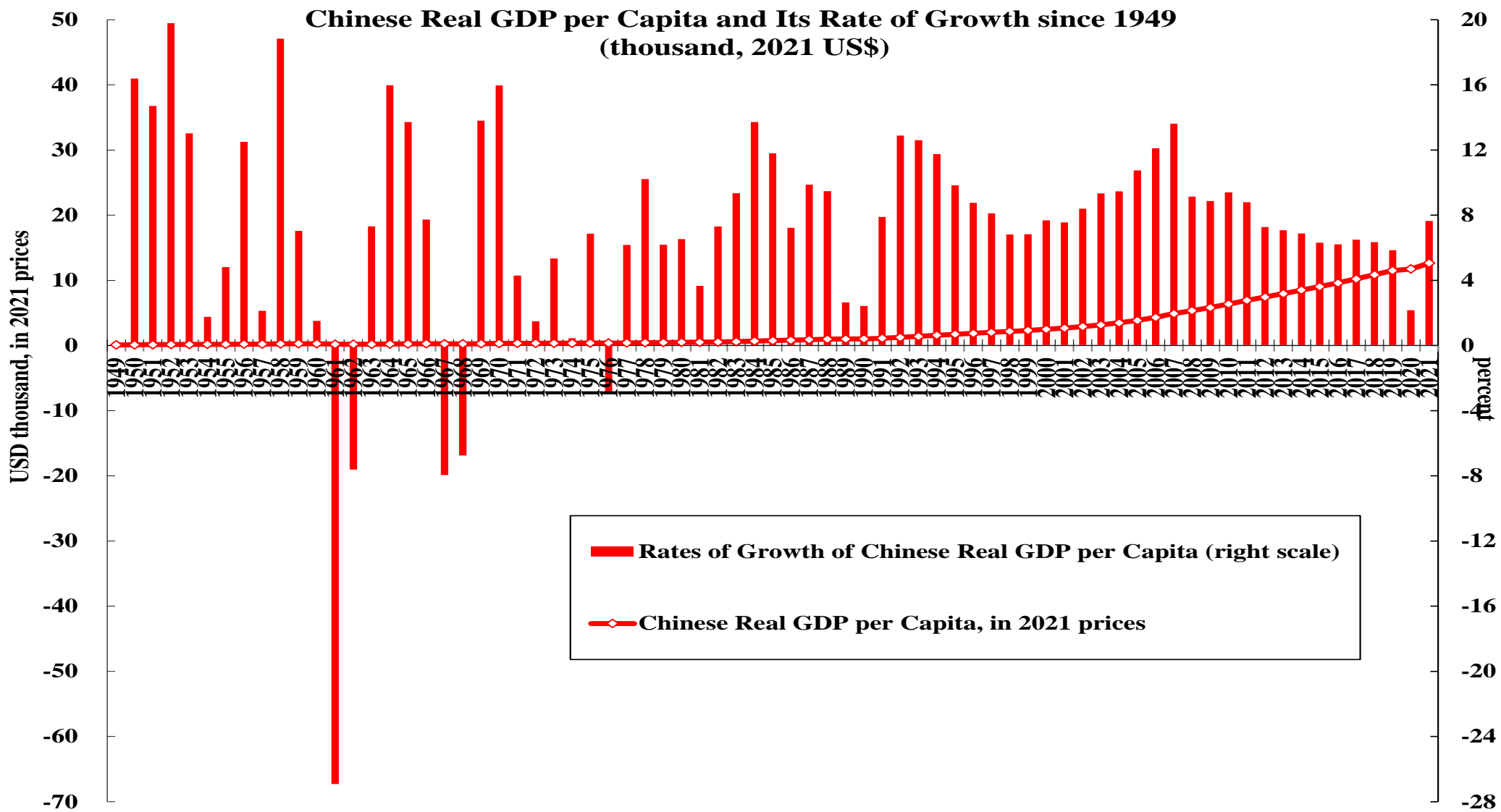
The Growth of Chinese Real GDP and Real GDP per Capita, 1949-2021

- ◆ Between 1949 and 2021, Chinese real GDP has grown from 329 billion Yuan to 114.4 trillion Yuan (in 2021 prices) (and from **US\$51.55 billion** to **US\$17.94 trillion**), an almost 350-fold increase.
- ◆ During the same period, Chinese real GDP per capita has grown more than 130-fold, from 607 Yuan to 80,962 Yuan (and from **US\$95.2** to **US\$12,699**).
- ◆ Despite the significant fluctuations and volatility of the rates of growth during the 20 years from the late 1950s to the late 1970s, the average annual rates of growth of real GDP and real GDP per capita for the entire period from 1949 to 2021 are respectively **8.47%** and **7.03%**, a truly remarkable achievement over such a long period of time. It is historically unprecedented.

Chinese Real GDP and Its Annual Rate of Growth: 1949-2021



Chinese Real GDP per Capita and Its Rate of Growth: 1949-2021



The Growth of Chinese Real GDP and Real GDP per Capita, 1949-2021

- ◆ We can attribute this success largely to the economic reform and opening undertaken in 1978, as well as to the long time horizon of the Chinese economic policy makers and their single-minded focus on economic growth. With a long enough planning horizon, one can afford to undertake investment in development-leading infrastructure, that is, infrastructure the demand for which has not yet materialised but can be created by the supply itself, infrastructure that may take a long time to pay off. But “Supply creates its own demand”!
- ◆ Chinese GDP in 2021 was **78** percent of the U.S. GDP of **US\$23.0 trillion**, but Chinese GDP per capita remained far behind, at only **18.4** percent of the U.S. GDP per capita of **US\$68,971**.

The Growth of Real GDP and Real GDP per Capita, in the Pre-Reform Period, 1949-1978

- ◆ If we consider the thirty-year period 1949-1978, before the beginning of Chinese economic reform and opening to the world, the average annual rates of growth of real GDP and real GDP per capita were respectively **8.01%** and **5.85%**.
- ◆ This economic performance, due in part to the rapid recovery in the rehabilitation period of 1949-1952, was really quite respectable. The Chinese First Five-Year Plan (1953-1957) was also a success.
- ◆ The years of significant negative economic growth in the pre-reform period occurred during the Great Famine of 1959-1961 (in the aftermath of the Great Leap Forward of 1958), and the Great Proletarian Cultural Revolution of 1966-1967.

The Growth of Real GDP and Real GDP per Capita in the Post-Reform Period, 1978-2021

- ◆ Between 1978, the beginning of the Chinese economic reform and opening to the world, and 2021, real GDP has grown more than 40-fold, from 2.65 trillion Yuan to 114.4 trillion Yuan (in 2021 prices) (and from **US\$415 billion** to **US\$17.94 trillion**), and real GDP per capita has grown almost 30-fold, from 2,749 Yuan to 80,962 Yuan (and from **US\$431.2** to **US\$12,699**).
- ◆ During this period of more than four decades, there was not one single year in which the rate of growth of real GDP or real GDP per capita turned negative.
- ◆ The average annual rates of growth of real GDP and real GDP per capita for the post-reform period from 1978 to 2021 are respectively **9.15%** and **8.18%**, even higher than the average annual rates of growth achieved since 1949.

The Chinese Economic Fundamentals

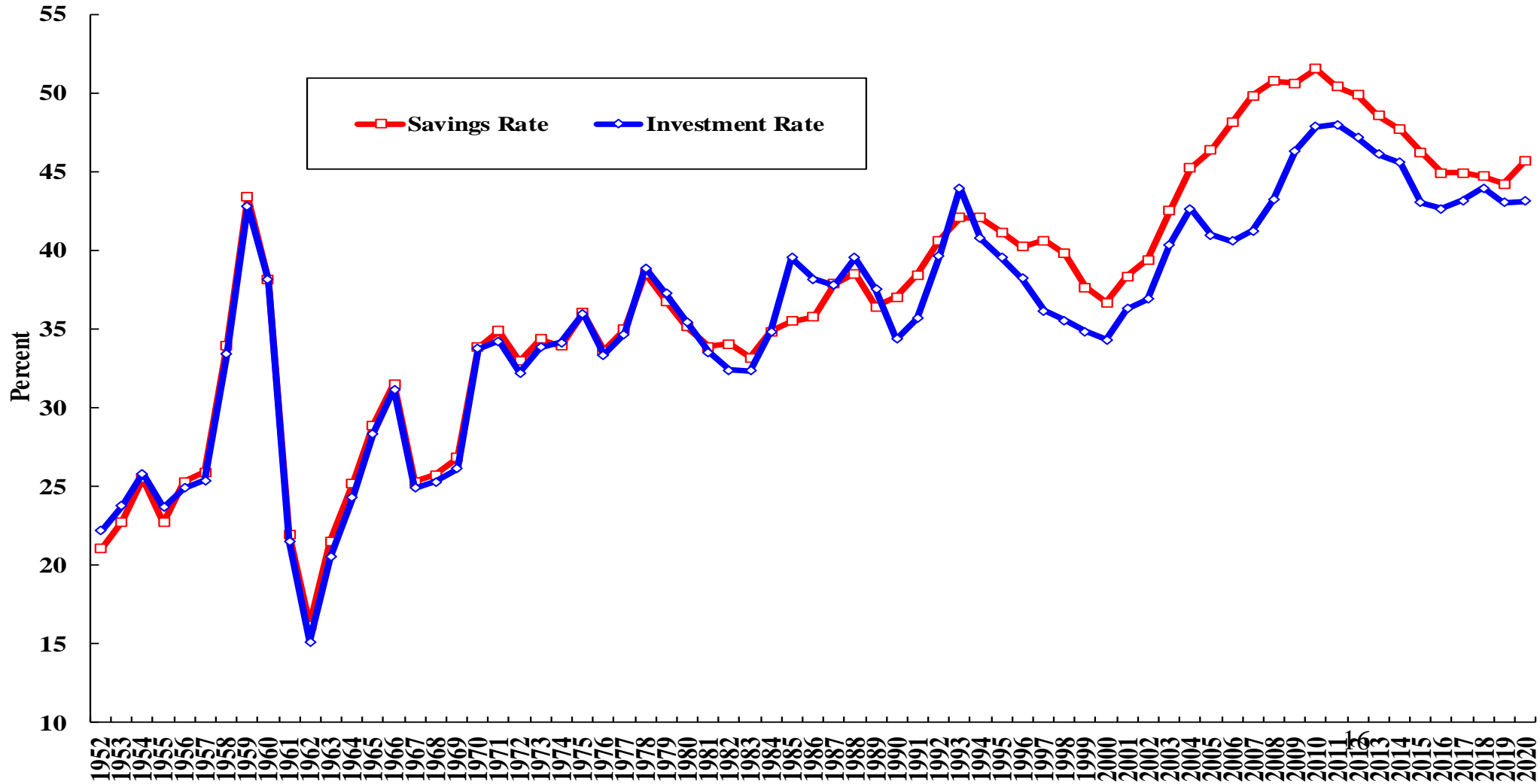
- ◆ Are there adequate capital and labour?
- ◆ The Chinese national savings rate has remained high, currently at approximately 45 percent, certainly the highest in the world amongst major economies. This means that the investment rate can also remain high, even in the absence of inflows of foreign direct investment.
- ◆ Chinese demographic developments appear unfavourable at the present time—its population is ageing rapidly, with almost zero growth. However, the labour supply problems are basically manageable.
- ◆ Indigenous innovation has been occurring in many areas, for example: 5G communication, the BeiDou Navigation Satellite System, high-speed trains, quantum communication, super-computers, and ultra-high-voltage transmission of electricity.

The National Savings Rate

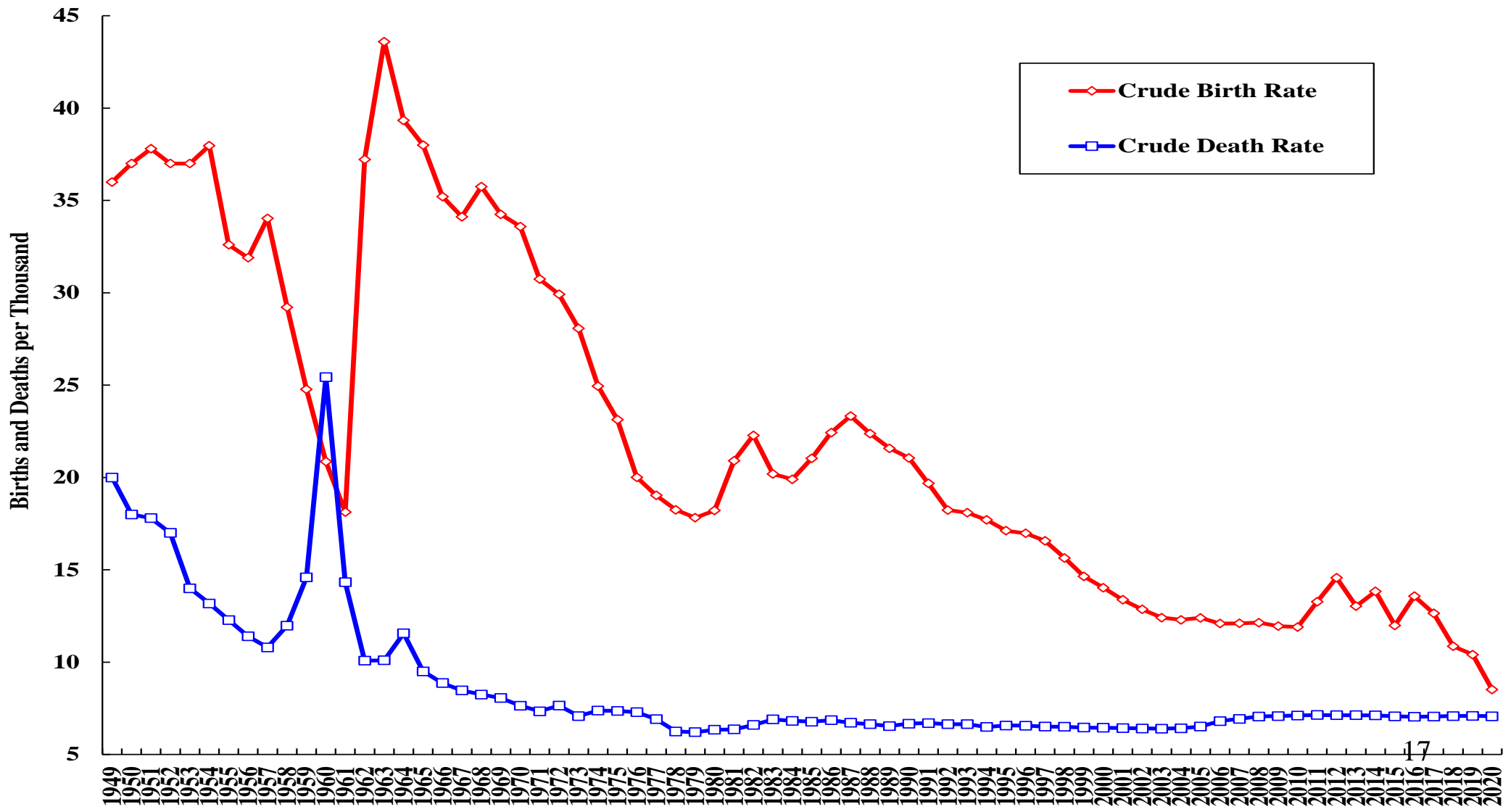
- ◆ The Chinese national savings rate rose from 21.1% in 1952 to 36.8% in 1979 and 45.7% in 2020. It will remain high and provide the necessary resources for additional fixed-assets investment, including investment in infrastructure, human capital, research and development (R&D), and the provision of public goods such as education, healthcare, environmental preservation, protection and restoration, and elderly care.
- ◆ Household consumption will rise as household income continues to rise and more and more households join the ranks of the middle class. However, as shares of GDP, household consumption as well as total consumption have been on a downward trend for the past sixty years. As of 2020, they were respectively less than 40% and 60% of GDP. Left on their own, they are probably not sufficient to shore up the aggregate demand.

Chinese National Savings and Gross Domestic Investment as Percents of GDP

Chinese National Savings and Gross Domestic Investment as a Percent of GDP since 1952

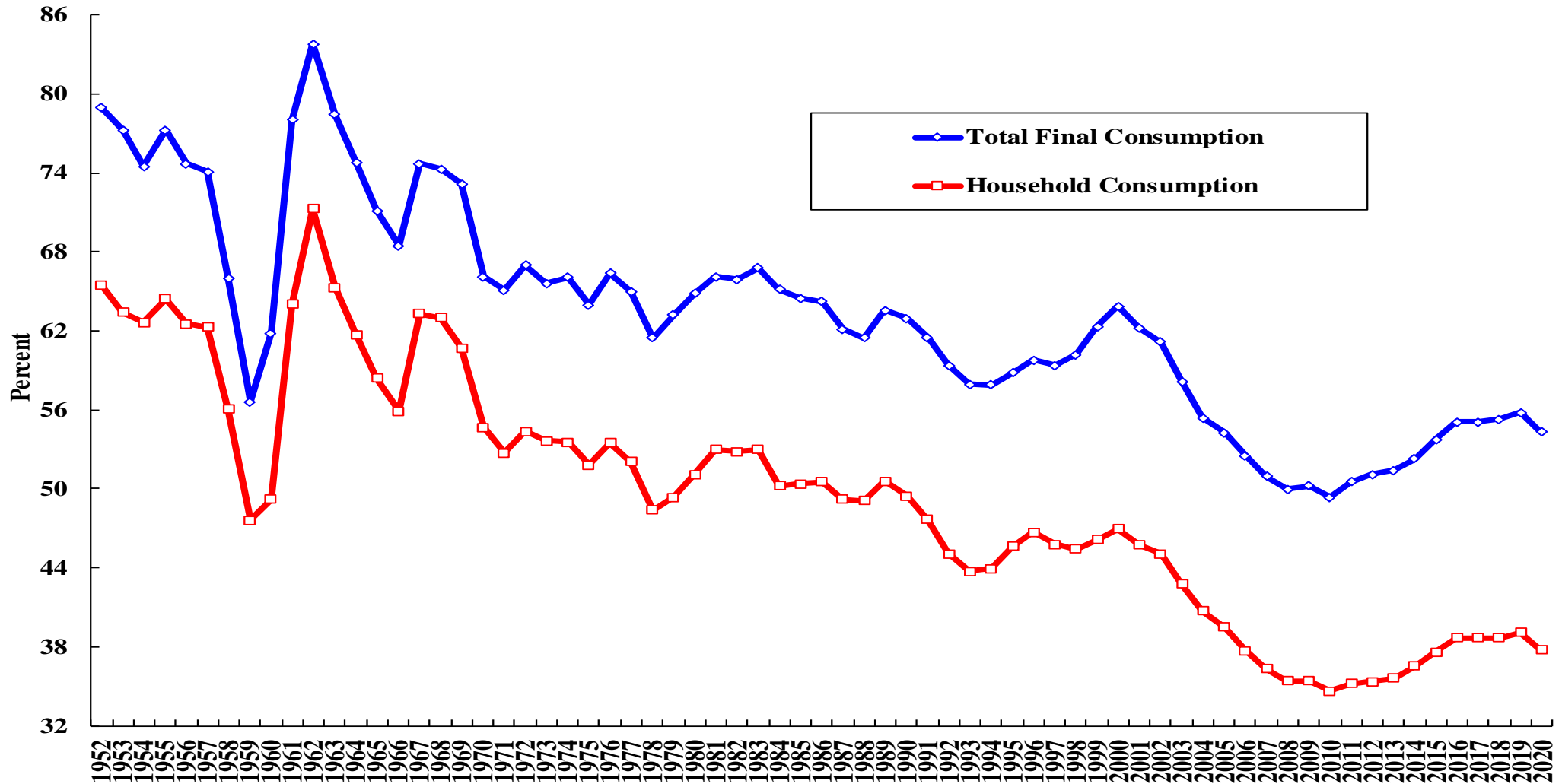


The Crude Birth Rate and Death Rate (Number per Thousand)



Chinese Total and Household Consumption as a Percent of Its GDP

Total Final Consumption and Household Consumption as a Percentage of GDP

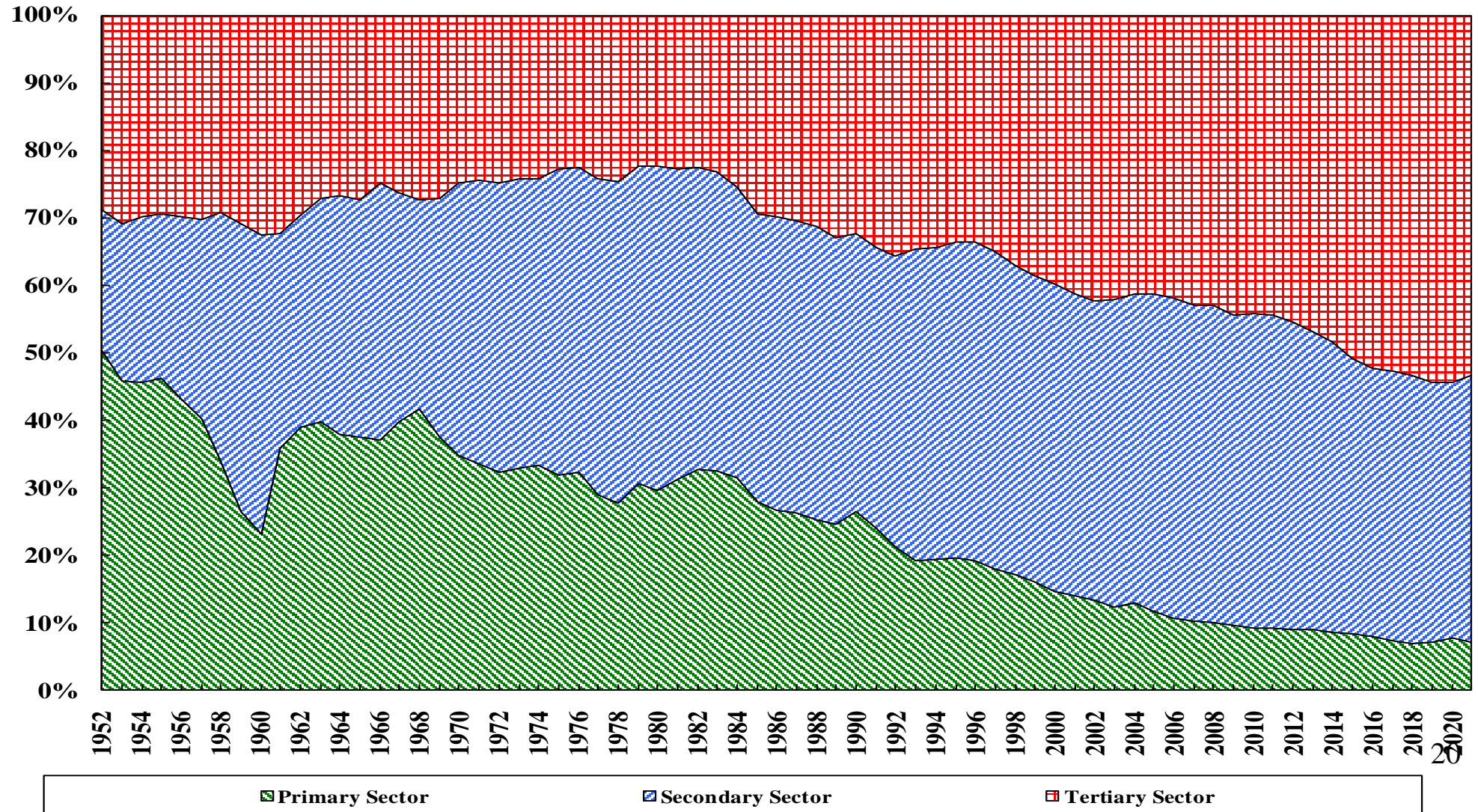


Demographic Developments

- ◆ While the growth of the total population has slowed, and may even turn negative soon (this is, in part, the legacy of the one-child policy), there is unlikely to be a serious shortage of labour.
- ◆ The demand for labour can be satisfied by continued urbanisation, that is, by the movement of surplus labour from the rural to the urban areas. Despite the claim that the “Lewis Turning Point” has arrived, there still exists substantial surplus labour—the primary (agricultural) sector generated only **7.3%** of GDP but accounted for **23.6%** of total employment in 2020.

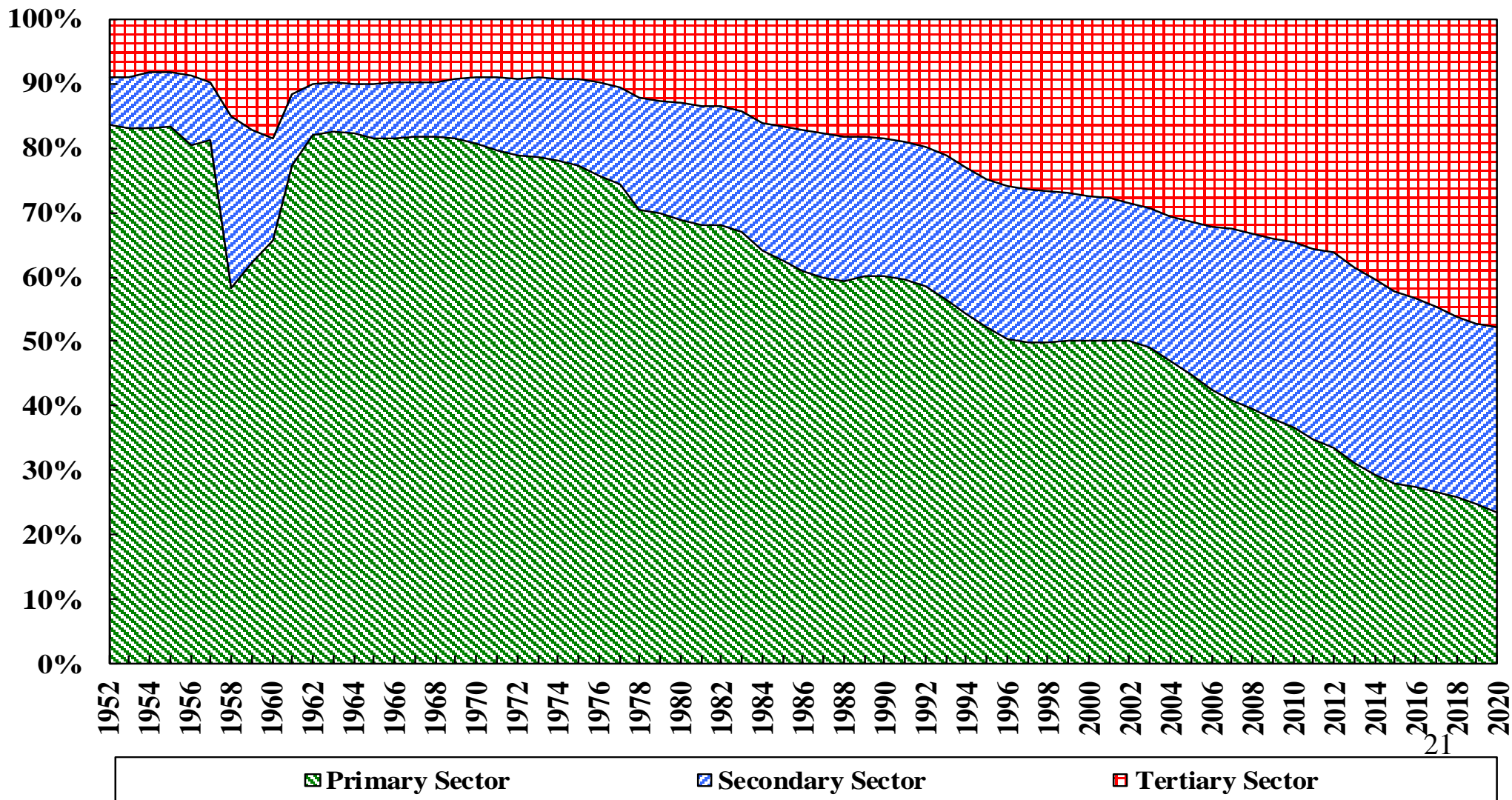
The Distribution of Chinese GDP by Sector Since 1952

The Distribution of Chinese GDP by Originating Sector Since 1952



The Distribution of Chinese Employment by Sector Since 1952

The Distribution of Employment by Sector since 1952



Demographic Developments

- ◆ In addition, the gradual raising of the mandatory retirement ages, which have officially remained at 55 for women and 60 for men, an anachronism inherited from the early 1950s, when life expectancy was in the low sixties, should help, as well as the adoption of automation and robotics through the application of artificial intelligence.
- ◆ Moreover, the quality of the Chinese labour force has also improved significantly through various investments in education and public health. The “efficiency-equivalent” quantity of labour force continues to grow even though numerically the labour force is no longer growing.
- ◆ The elimination of restrictions on the number of children and the possible lowering of the marriage-eligible ages should also help to increase the Chinese birth rate gradually, but it will take a couple of decades before there will be a noticeable impact.

The Chinese Economic Fundamentals

- ◆ China enjoys economies of scale, learning-by-doing (that is, efficiency improvement resulting from repetitive production of the same good, such as high-speed trains), and the advantage of longer upper tails in the ability distribution because of the size of its population.
- ◆ Moreover, as a large continental economy, the domestic Chinese economy is largely unaffected by external disturbances. Thus, while the Chinese rates of growth of exports and imports fluctuate like other East Asian economies, the rate of growth of its real GDP has remained relatively stable.

The Definition of a Public Good

- ◆ In economics, a public good is usually defined as a product or service that is openly available to be enjoyed by all members of a society. The Encyclopedia Britannica defines a public good to be a product or service that is non-excludable and non-depletable (or “non-rivalrous”).
- ◆ Examples of public goods include law enforcement, national defense, a stable local currency, and clean air and water. The elimination of a public bad, such as air pollution, is also a public good.
- ◆ The definition of a “public good” used in this lecture is slightly generalised to include potentially rivalrous goods, such as a seat on a train, so long as it is non-excludable ex ante. (The supply of a public good may have capacity constraints so that some form of rationing, whether by price or otherwise, may be necessary.)
- ◆ Basic education is a public good that is generally non-rivalrous; whereas mass transit is a public good that can be rivalrous; . The National Health Service in the United Kingdom is a public good, even though there may be rationing through waiting for some treatments.

The Definition of a Public Good

- ◆ Typically, these goods and services are administered and/or provided by central or local governments and paid for collectively through taxation. Public goods are unlikely to be supplied in sufficient quantities to satisfy potential demand through the free market because they are frequently “money-losers”.
- ◆ Public goods provision may therefore require taxes, subsidies, or even direct government intervention. A public good often faces the “free-rider” problem, that is, someone who is happy to enjoy the good or service, but will try to avoid bearing the cost.
- ◆ Food is a private good, but the provision of food security is a public good. Personal insurance is a private good. But a social safety net is a public good. Infrastructure is a (local) public good.
- ◆ Goods that generate externalities, e.g., mandatory basic education, and the simplification of Chinese characters—goods that provide a benefit for the society as a whole, are public goods.

The Possible Roles of Public Goods

- ◆ China has done a relatively good job in the provision of public goods to its people, as will be shown below. The provision of these public goods has in turn enhanced the real rate of growth of the Chinese economy in various ways.
- ◆ Public goods provision mandates both capital and current expenditures and will hence increase aggregate demand. They include, for example, fire and police protection, environmental preservation and protection, the maintenance of blue skies, green mountains, and turquoise waters. These current expenditures can become part of an important component of the aggregate demand for government consumption.
- ◆ The capital expenditures such as those on infrastructure (communication, transportation and power), and the building of schools and hospitals and charging stations for electric cars, can also become a part of an important component of the aggregate demand for fixed-assets investment.

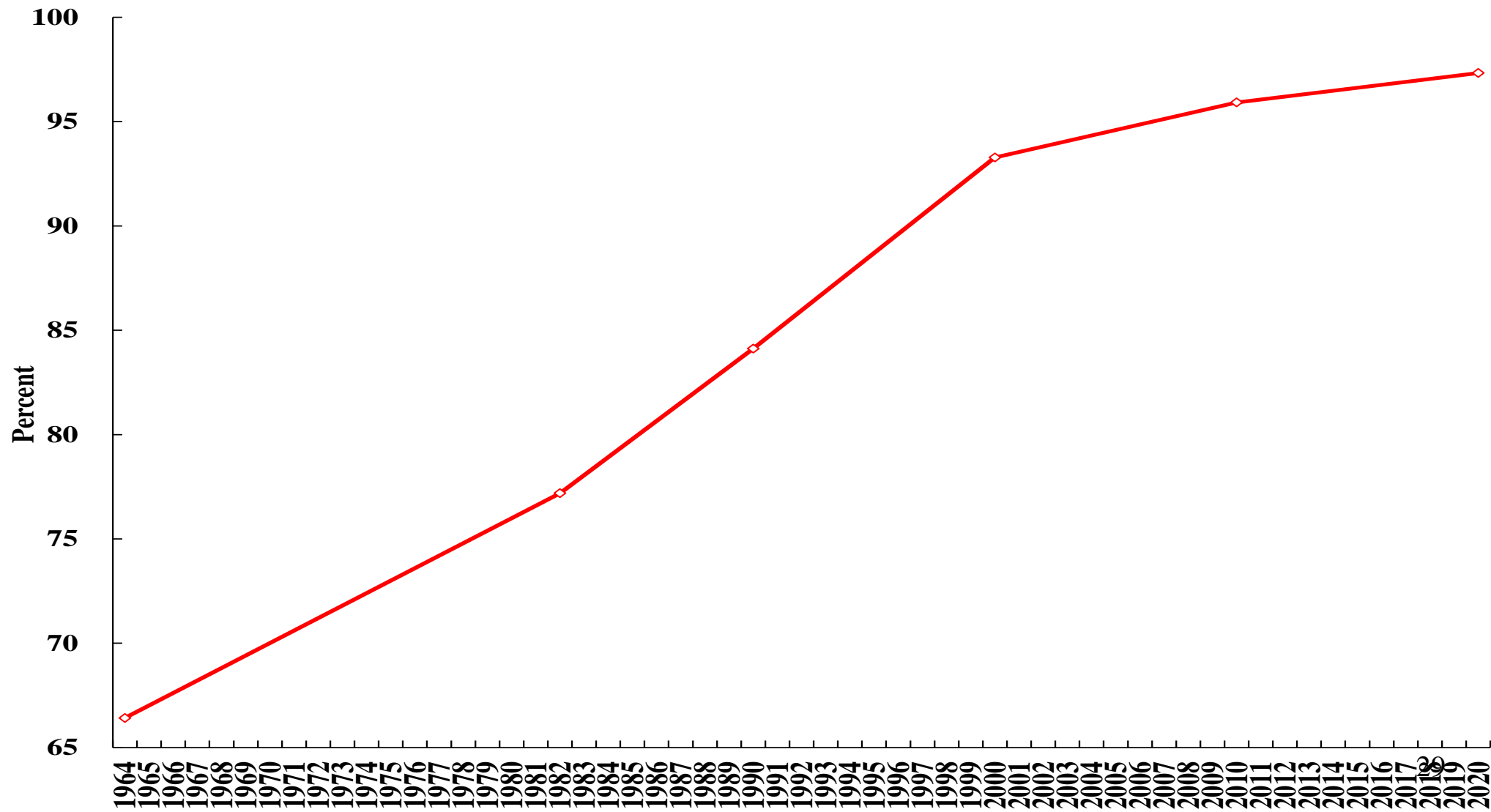
The Possible Roles of Public Goods

- ◆ Moreover, the provision of many public goods such as education, public health and basic research can be considered intangible investment even though they are often expensed on a current basis.
- ◆ The alleviation of poverty and the provision of a social safety net are also public goods.
- ◆ A stable currency (money), in terms of purchasing power, is also a public good.
- ◆ The regulation of the markets so that they remain competitive and free of monopolistic influences is also a public good.
- ◆ Finally, maintaining public confidence and creating positive expectations of the future are also important public goods.²⁷

Public Goods Provision as Intangible Investment—Literacy

- ◆ Traditionally, for at least a couple of millennia, the Chinese people have always valued education highly, in large part because it was one of the very few channels for upward social mobility.
- ◆ More generally, literacy (and the promotion of Putonghua) are clearly public goods because they enable all Chinese people to communicate with one another in both speech and writing.
- ◆ The literacy rate, which must have been way below 50% in 1949, increased from 66.4% in 1964 to 97.3% in 2020, thanks in part to the simplification of the Chinese characters undertaken in the 1950s and codified in 1964.
- ◆ The simplification has been subject to much criticism, some quite justifiable, but it did reduce the number of years of schooling required for an average person to be able to read a newspaper from eight to four years, a major accomplishment.

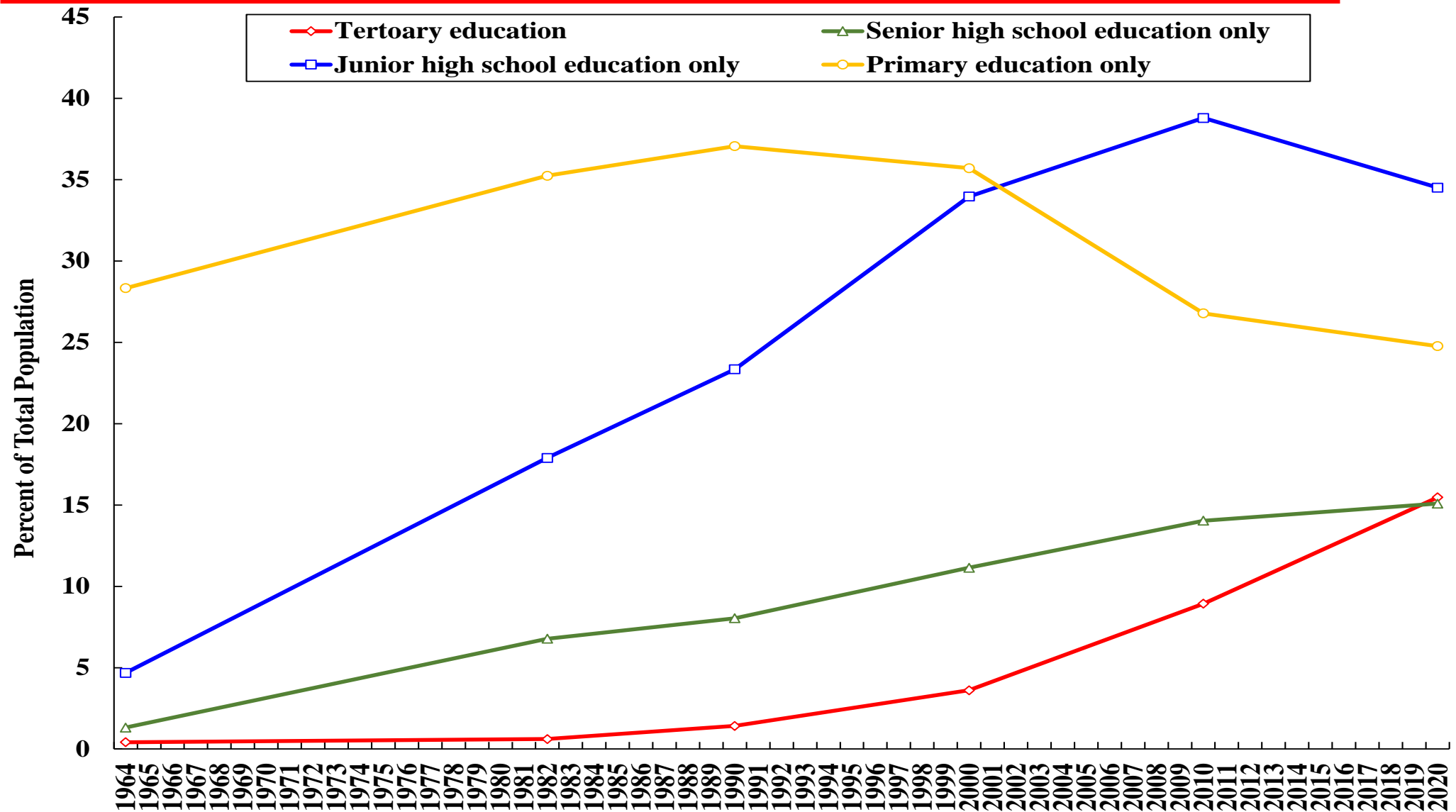
The Literacy Rate (Percent)



Public Goods Provision as Intangible Investment—Educational Attainments

- ◆ Mandatory 9-year education for all was introduced in China in 1986. Today, most young people have had at least 12 years of education, even though senior secondary education is still not yet mandatory at this time.
- ◆ The proportions of people with only primary education (the yellow line) or junior secondary education (the blue line) have already peaked and begun to decline.
- ◆ The tertiary enrolment rates of graduates of secondary schools was 24.6% in 1989 and rose to 94.5% in 2016. This means almost everyone who wishes to attend a tertiary educational institution is now able to do so. (However, the proportion of the population aged 18-22 that were enrolled in tertiary education institutions in 2019 was only 51.6%.)
- ◆ The proportion of the total population with tertiary education (the red line), which was only 0.42% in 1964, rose to 15.47% in 2020, and is expected to increase further with time.

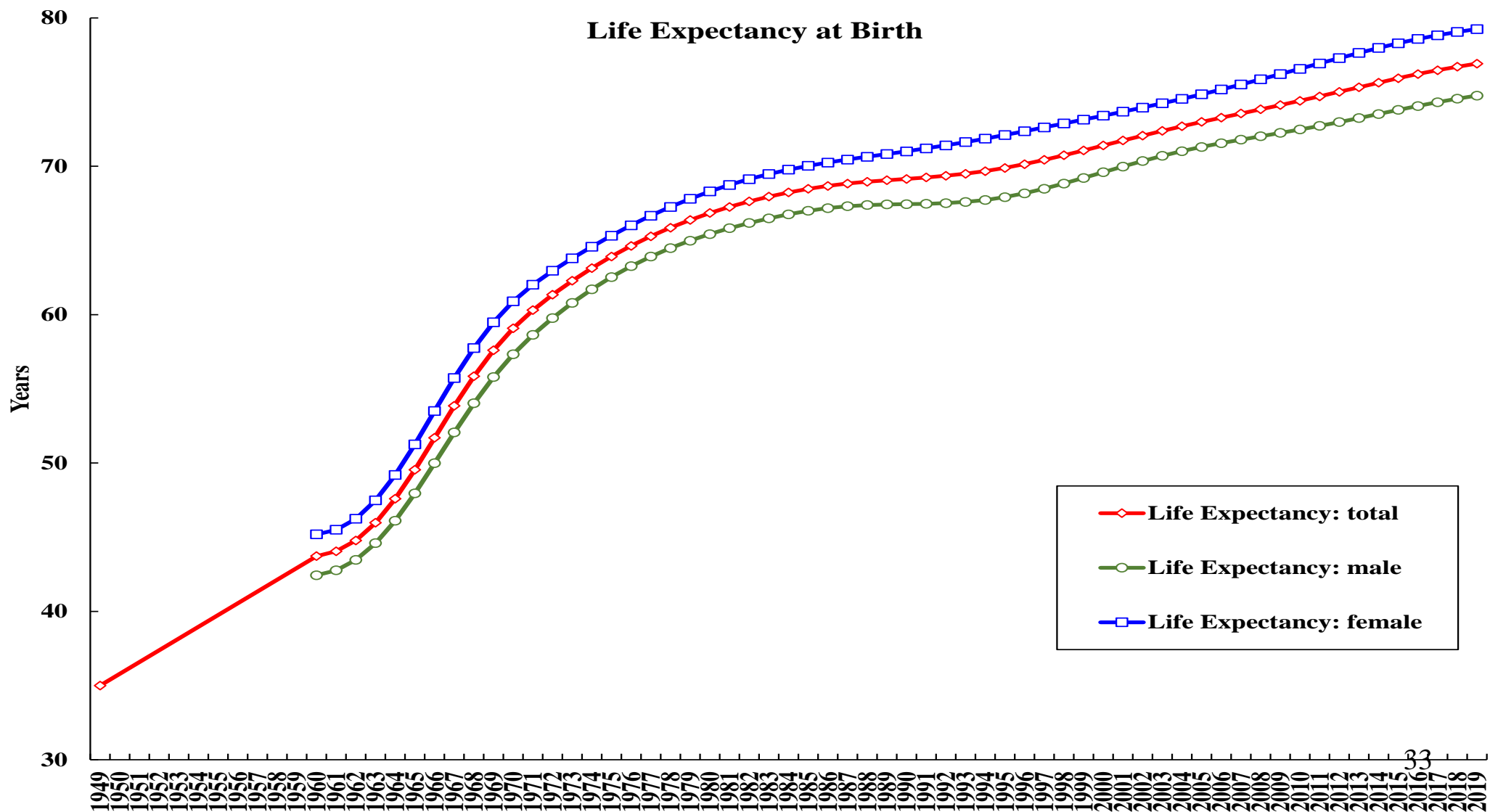
Educational Attainment Rates



Public Health

- ◆ Much improvement has occurred in healthcare and public hygiene in China.
- ◆ The population mortality rate has declined by more than half from 2.0% in 1949 to 0.71% in 2020.
- ◆ Life expectancy at birth, which was only 35 years in 1949 and 67.8 years in 1981, grew to 77.3 years in 2019 (compared to 72.6 years for the world as a whole). Life expectancy at age 60 was 20.21 years in 2020.
- ◆ The COVID-19 epidemic was successfully managed in China. As of 22 April 2022, the COVID-19 epidemic infected 180,982 persons (excluding imported cases) and resulted in 4,686 deaths on the Mainland, with a quarter of the world's population. By comparison, the rest of the world had, on the same date, a cumulative total of more than **508 million** (508,526,800) infected cases and more than **6.2 million** (6,235,952) fatalities.

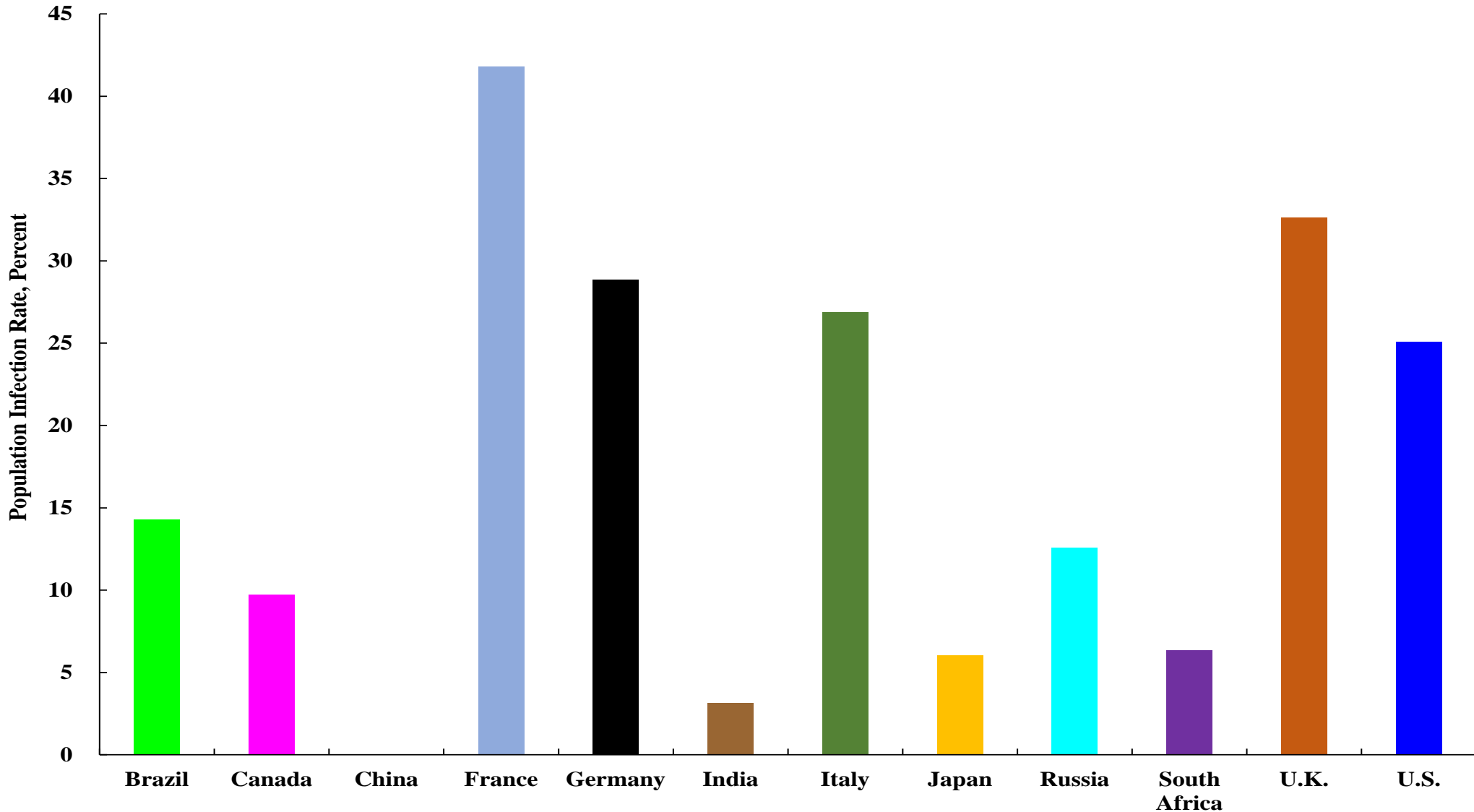
The Life Expectancy at Birth (Years)



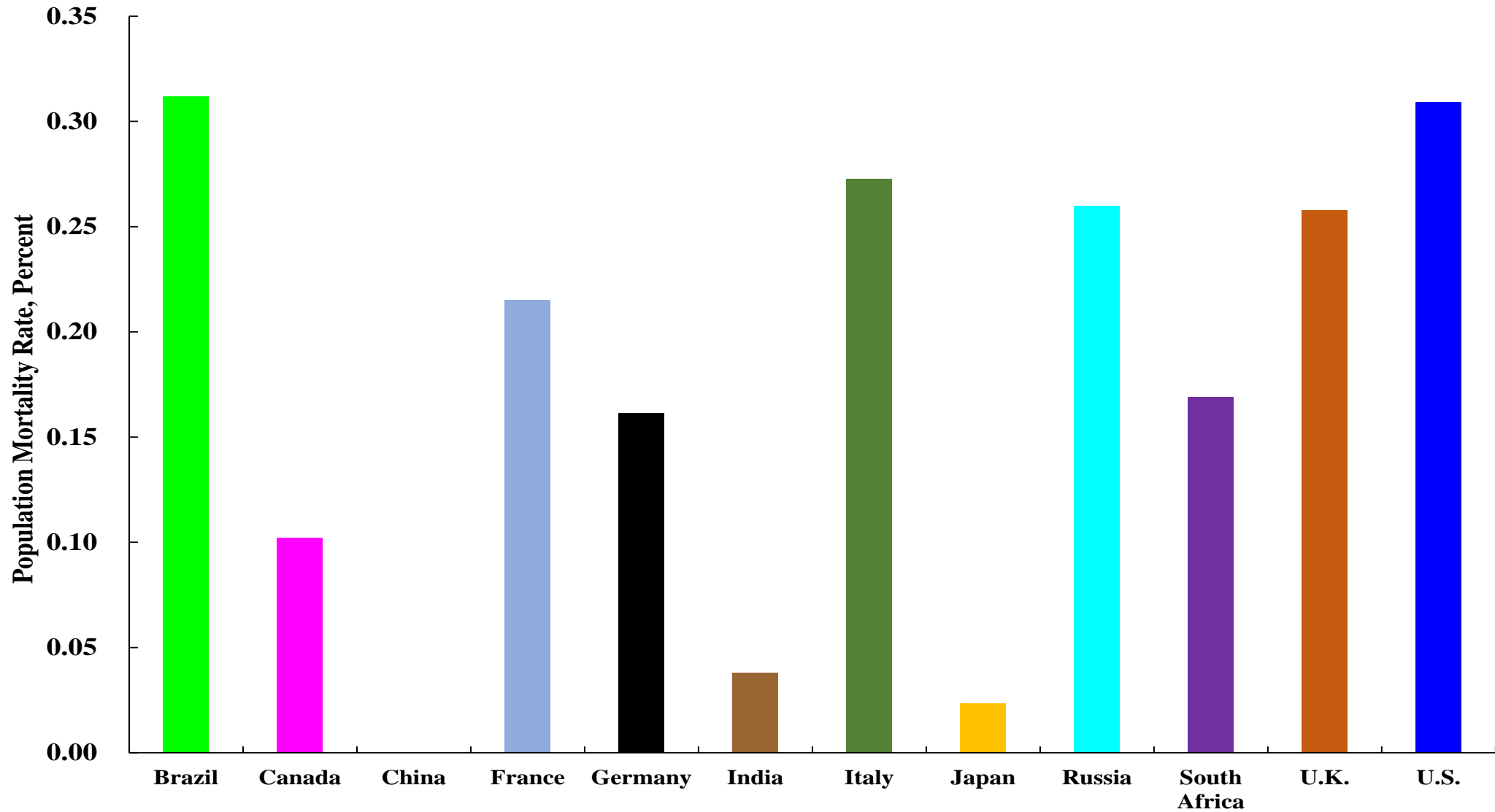
The COVID-19 Epidemic in China

- ◆ The COVID-19 epidemic first broke out in China in Wuhan, Hubei, in December 2019.
- ◆ However, it was soon successfully contained through a blockade of the city of Wuhan and the province of Hubei, and a complete lockdown in Hubei. Through rapid testing, isolation and quarantine of the infected, and timely treatment, the epidemic was brought under control by the end of March 2020.
- ◆ In early 2022, there were once again surges of the epidemic in different parts of China—Shanghai, Shenzhen, Jilin, Guangdong and Beijing--due to the omicron variant.
- ◆ As of 22 April 2022, Mainland China still had the lowest per capita cumulative infection rate and the lowest per capita cumulative death rate from COVID-19 among all major countries.
- ◆ There was a significant loss of GDP in 2020 that could be attributed to the epidemic, to the tune of approximately 4 percent. This was partially compensated by the growth of 8.1 percent in 2021. The potential reduction in 2022 GDP due to COVID-19 may be estimated to be between 0.5 and 1 percent.

The COVID-19 Epidemic: International Comparison of Population Infection Rates



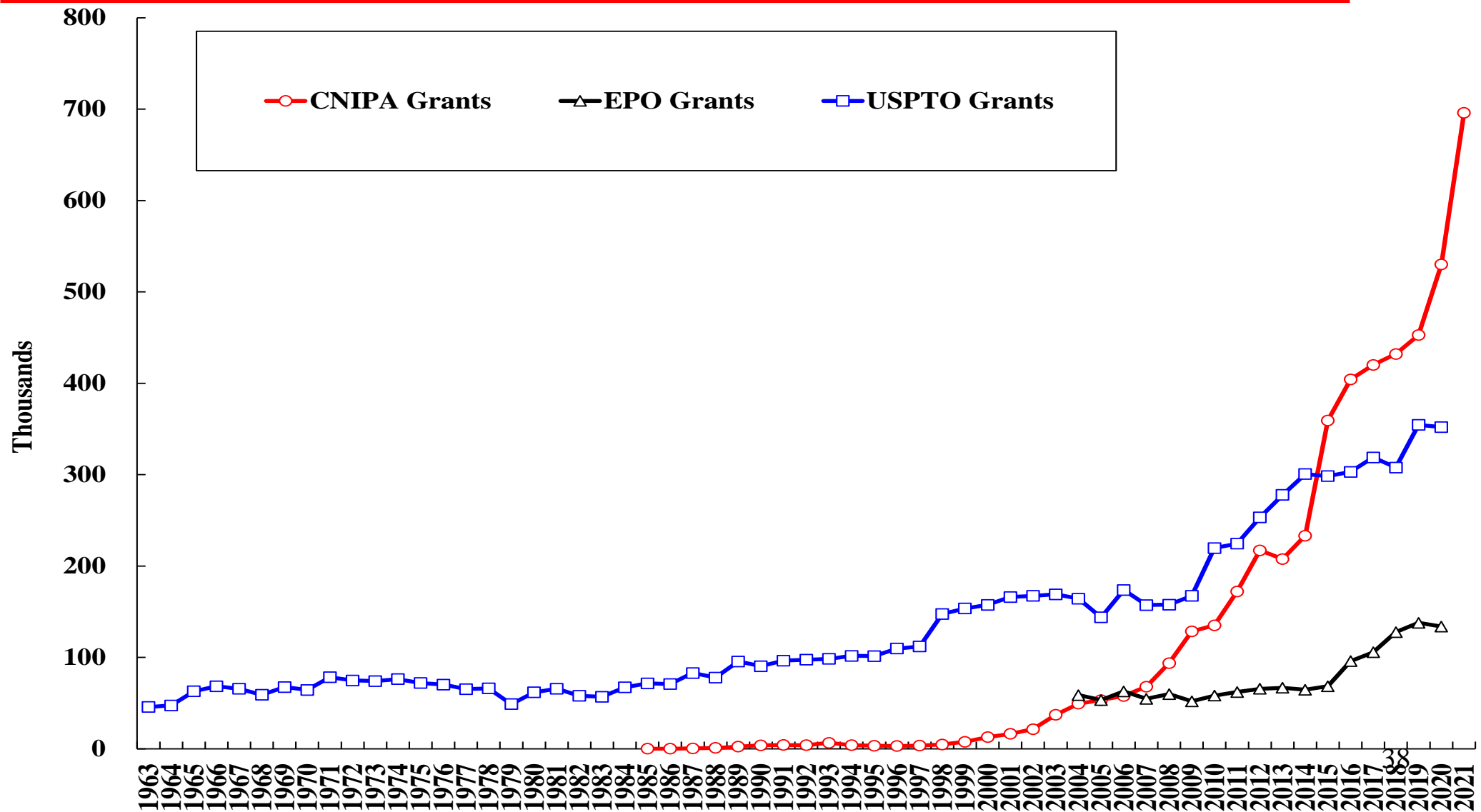
The COVID-19 Epidemic: International Comparison of Population Mortality Rates



Innovation: Patents Awarded

- ◆ China has been increasing its investment in research and development (R&D), which reached 2.44% of GDP in 2021.
- ◆ Since 2014, it has also strengthened intellectual property right protection significantly by establishing special intellectual property courts with sole nationwide jurisdiction on such matters.
- ◆ The numbers of patents awarded to Chinese discoverers and inventors by respectively the United States Patent and Trademark Office (USPTO) (blue line), the European Patent Office (EPO) (black line), and the China National Intellectual Property Administration (CNIPA) (red line), have all been increasing by leaps and bounds in recent years.
- ◆ China is now the recipient of the largest number of patent grants in the world from these three patent offices combined.

Chinese Patent Grants Awarded by USPTO, EPO and CNIPA



Innovation:

Scientific and Engineering Articles Published

- ◆ The total number of science and engineering scholarly articles published in international professional journals by Chinese authors exceeded that by U.S. authors in 2018. Chinese authors now collectively publish the largest number of such articles in the world.
- ◆ The number of top 10% most cited scientific articles by Chinese authors overtook that by U.S. authors in 2019, according to a Japanese study.
- ◆ A recent study published in the journal Scientometrics shows that China and the U.S. were neck and neck in the number of top 1% most cited scientific articles in 2019. China trailed the U.S. and the European Union countries for many years.

Innovation: The Number of Top 1% Most Cited Articles

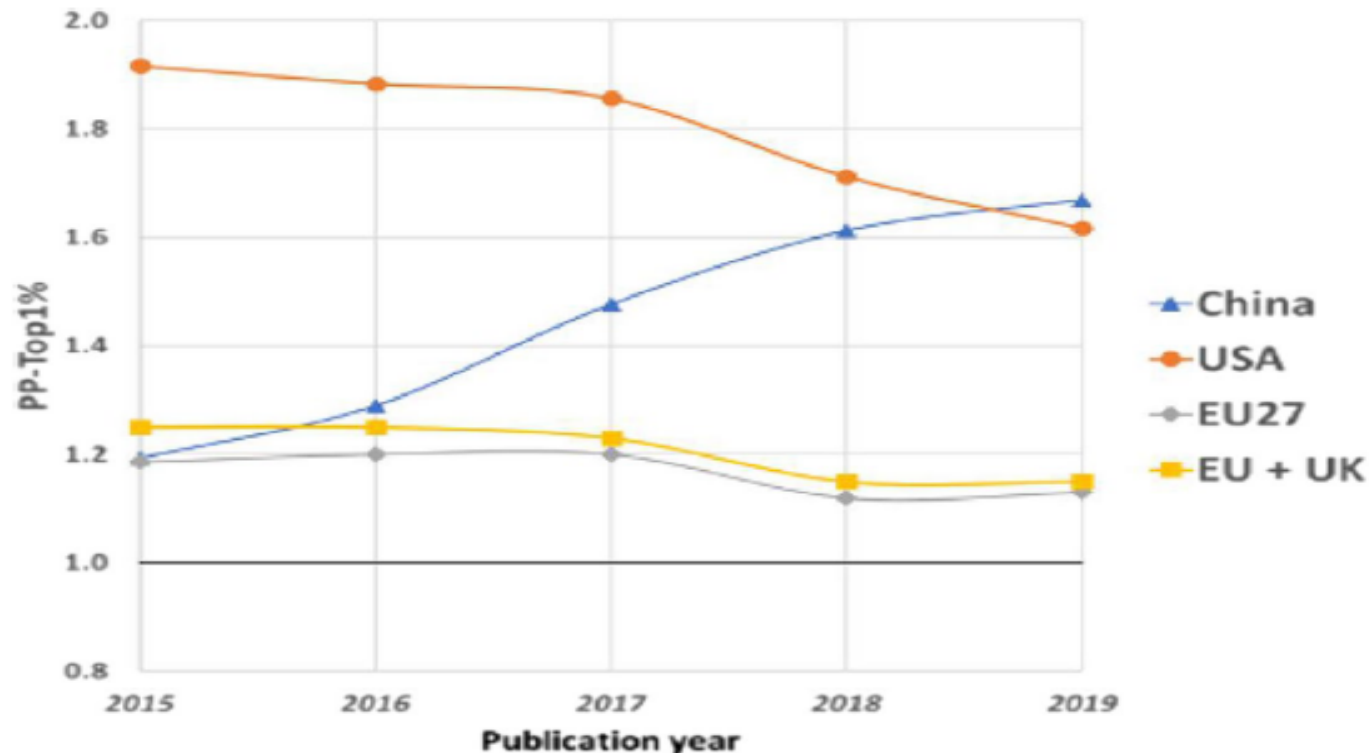


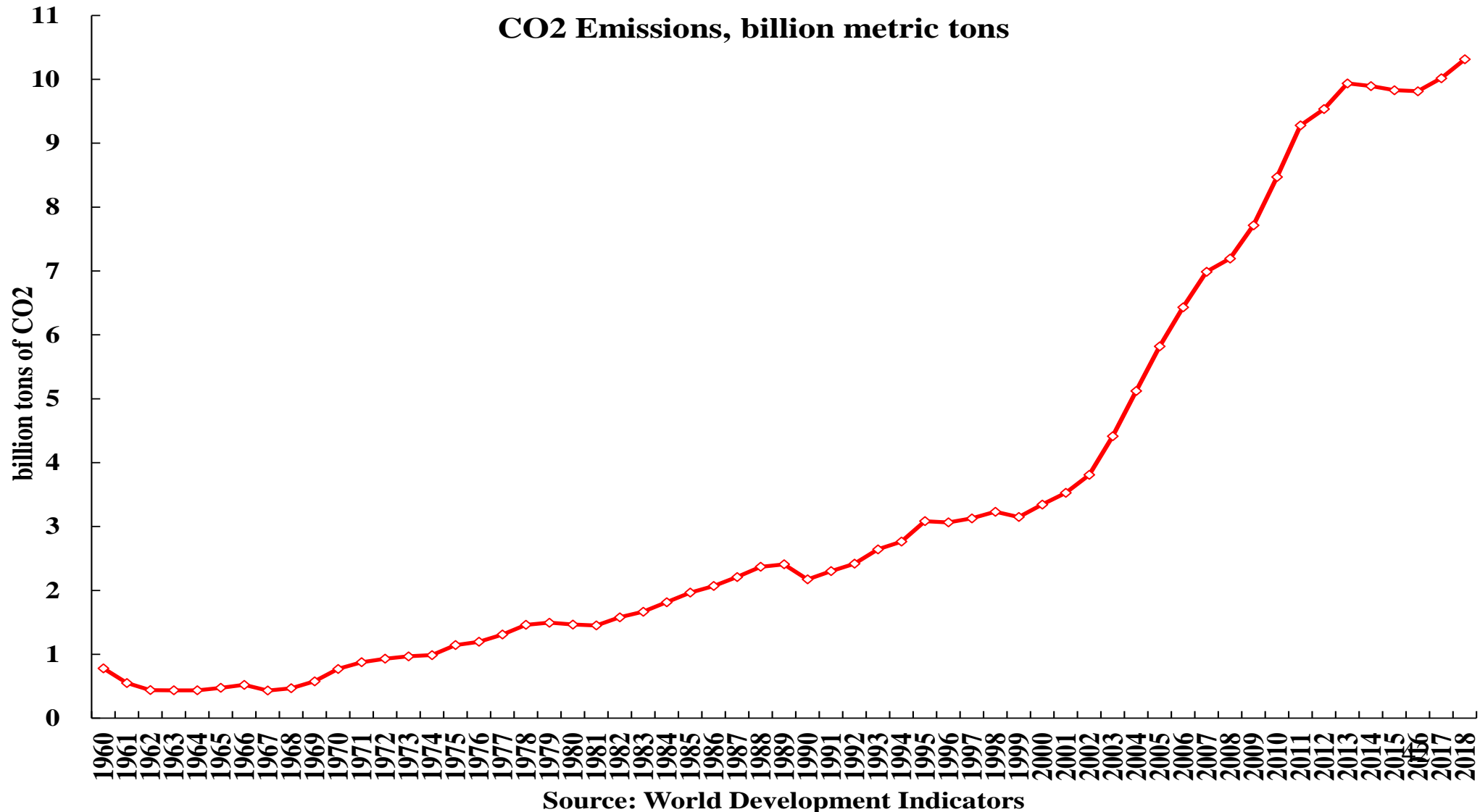
Fig. 2 Percentage participation in the top-1% (PP-Top1%) most-highly-cited publications (worldwide) by papers with an address in the United States, China, and the EU (with and without the UK); articles, reviews, and letters; retrieval from the Web of Science “Flagship” Collection on March 6, 2021

Source : Wagner, Caroline S., Lin Zhang, and Loet Leydesdorff. “A discussion of measuring the top-1% most-highly cited publications: quality and impact of Chinese papers,” 40 *Scientometrics*, 2022. <https://doi.org/10.1007/s11192-022-04291-z>

Prevention of Climate Change: Peaking by 2030 and Achieving Neutrality by 2060

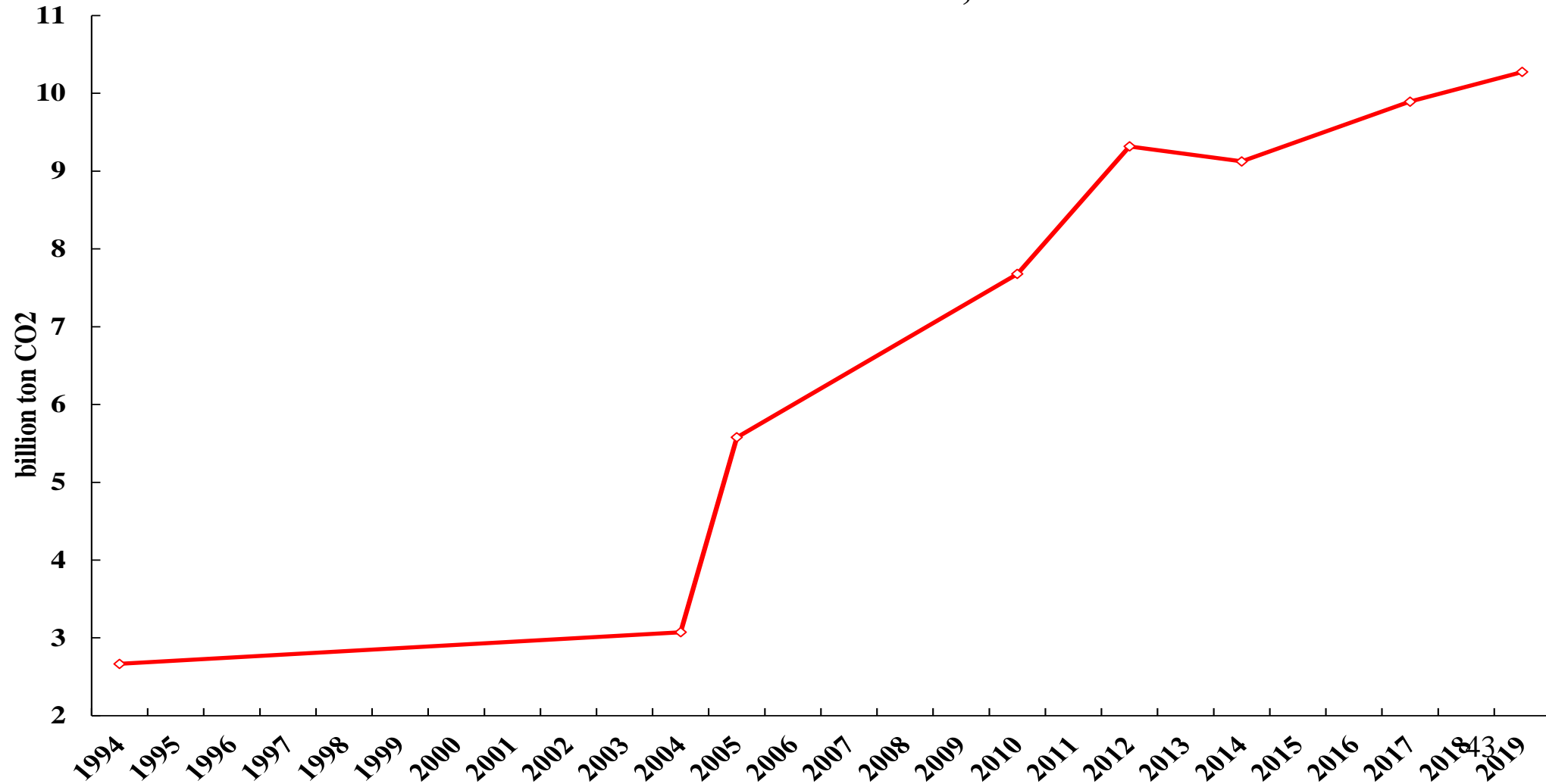
- ◆ President XI Jinping committed China to peak its carbon emissions by 2030 and to achieve carbon neutrality by 2060. Prevention of climate change is not only a Chinese public good, it is also a global public good.
- ◆ These objectives will be achieved through, for example:
 - ◆ Massive expansion of renewable energy, including hydro, massive solar and wind power farms, and potentially nuclear fusion, as sources of electricity generation, replacing the fossil fuels;
 - ◆ Ultra-high-voltage long-distance transmission of electricity from the West to the East;
 - ◆ Replacement of fossil-fuel vehicles with electric and hydrogen vehicles;
 - ◆ Substitution of airplanes by high-speed trains for domestic travel;
 - ◆ Large-scale re-forestation.
- ◆ Carbon dioxide emissions have basically plateaued in China since the early 2010s, after a period of rapid increase. The emissions have been growing very slowly in the past few years. If current trends continue, it is entirely feasible that emissions will peak before 2030 and fall to zero by 2060.

Total Carbon Dioxide Emissions, 1960-the Present: World Development Indicators Data



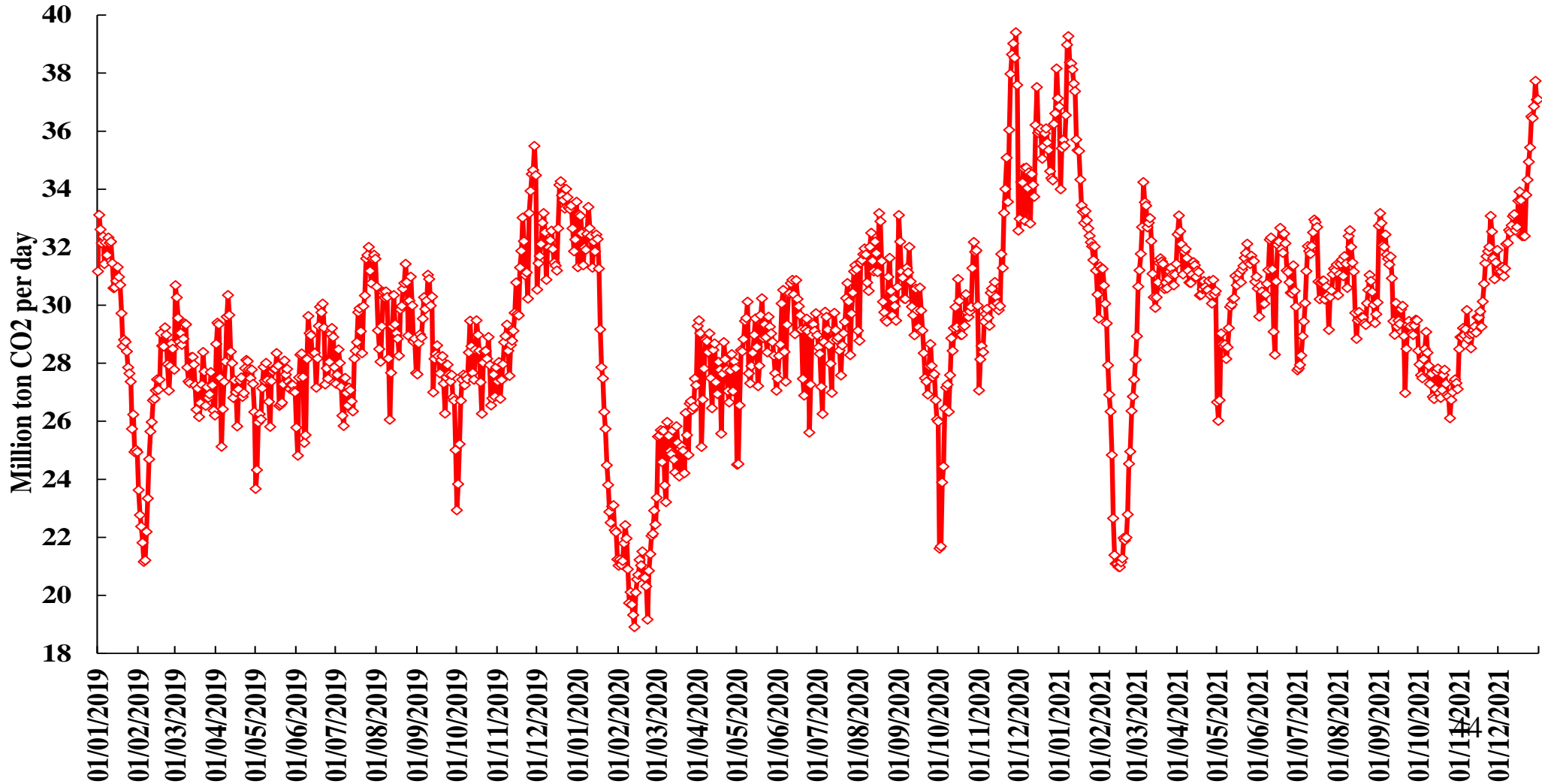
Total Carbon Dioxide Emissions, 1994-the Present: Chinese Data

Chinese Carbon Dioxide Emissions, metric tons



Daily Chinese Carbon Dioxide Emissions: 01/01/2019-31/12/2021

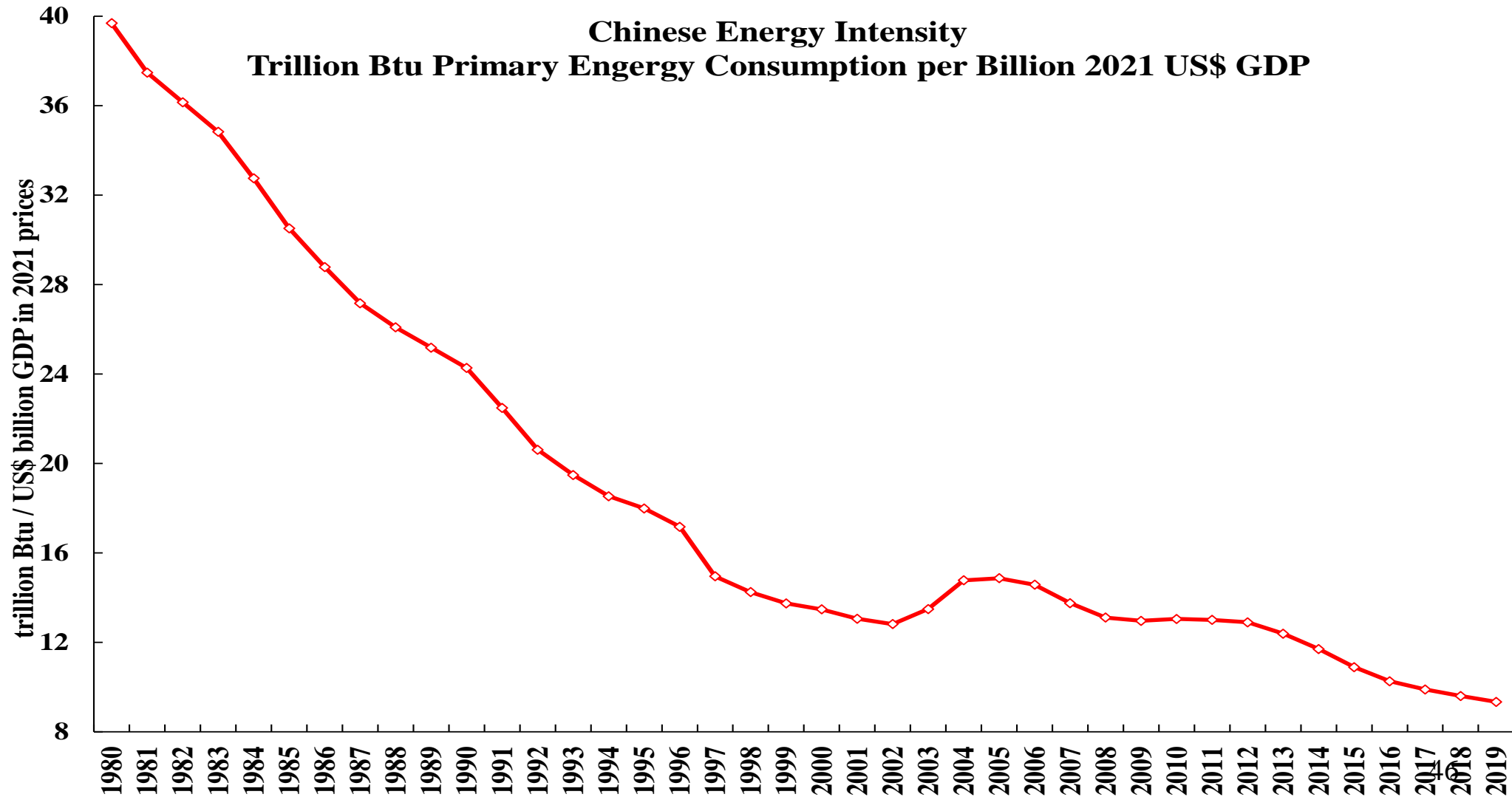
Daily Chinese CO2 Emissions from Fossil Fuel and Cement Production



The Energy Intensity Has Declined

- ◆ The energy intensity, primary energy consumed per unit real GDP, has been declining over time in China.
- ◆ This is due to a number of factors:
 - ◆ Energy conservation efforts both public and private as a result of prices, taxes and regulatory requirements;
 - ◆ Technological improvements, e.g., higher efficiency and lower transmission losses; and
 - ◆ The relative contraction of the energy-intensive secondary (manufacturing, mining and construction) sector and the relative expansion of the much less energy-intensive tertiary (services) sector.

The Energy Intensity—Primary Energy Consumed per Unit Real GDP, 1980-2019

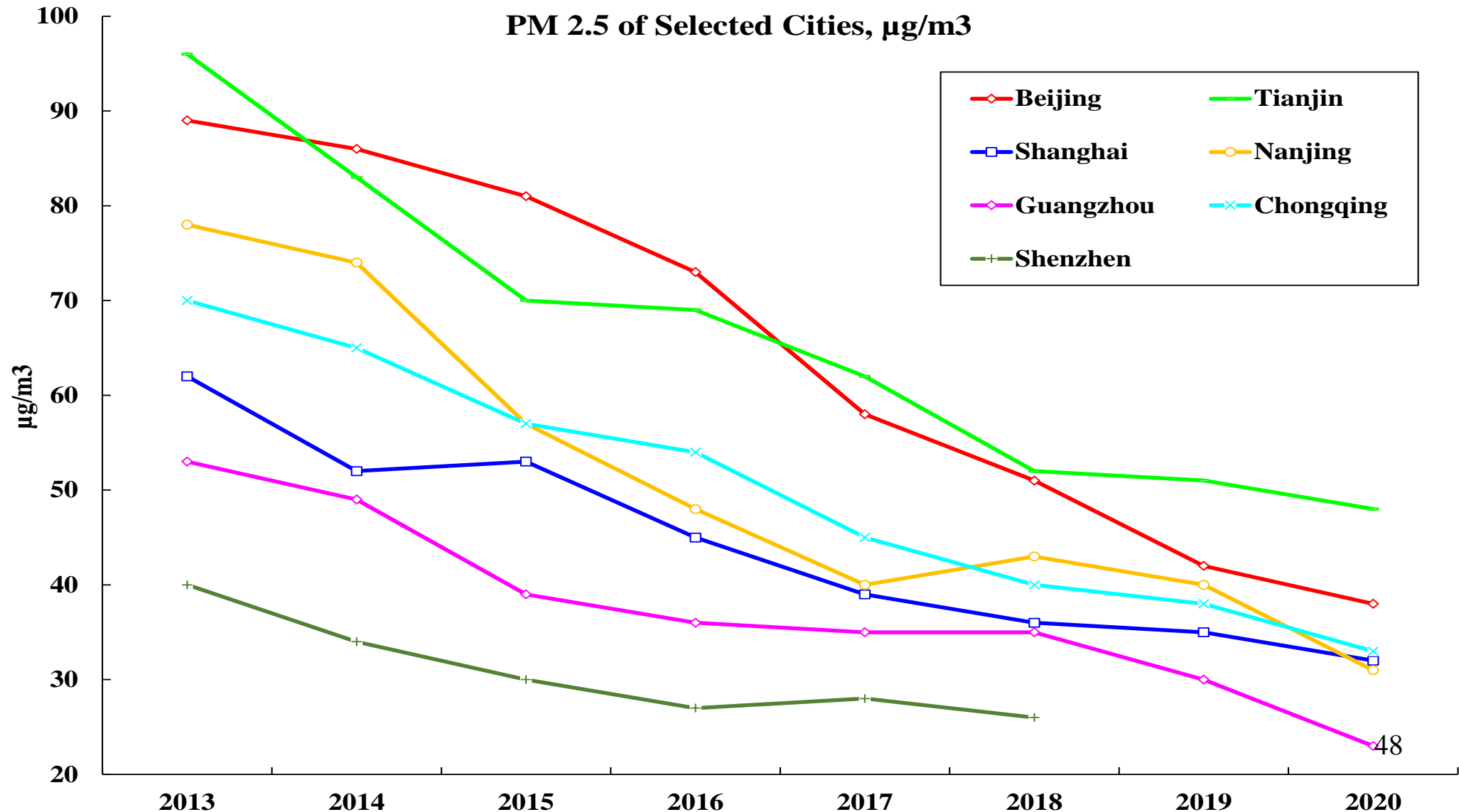


Source: U. S. Energy Information Administration

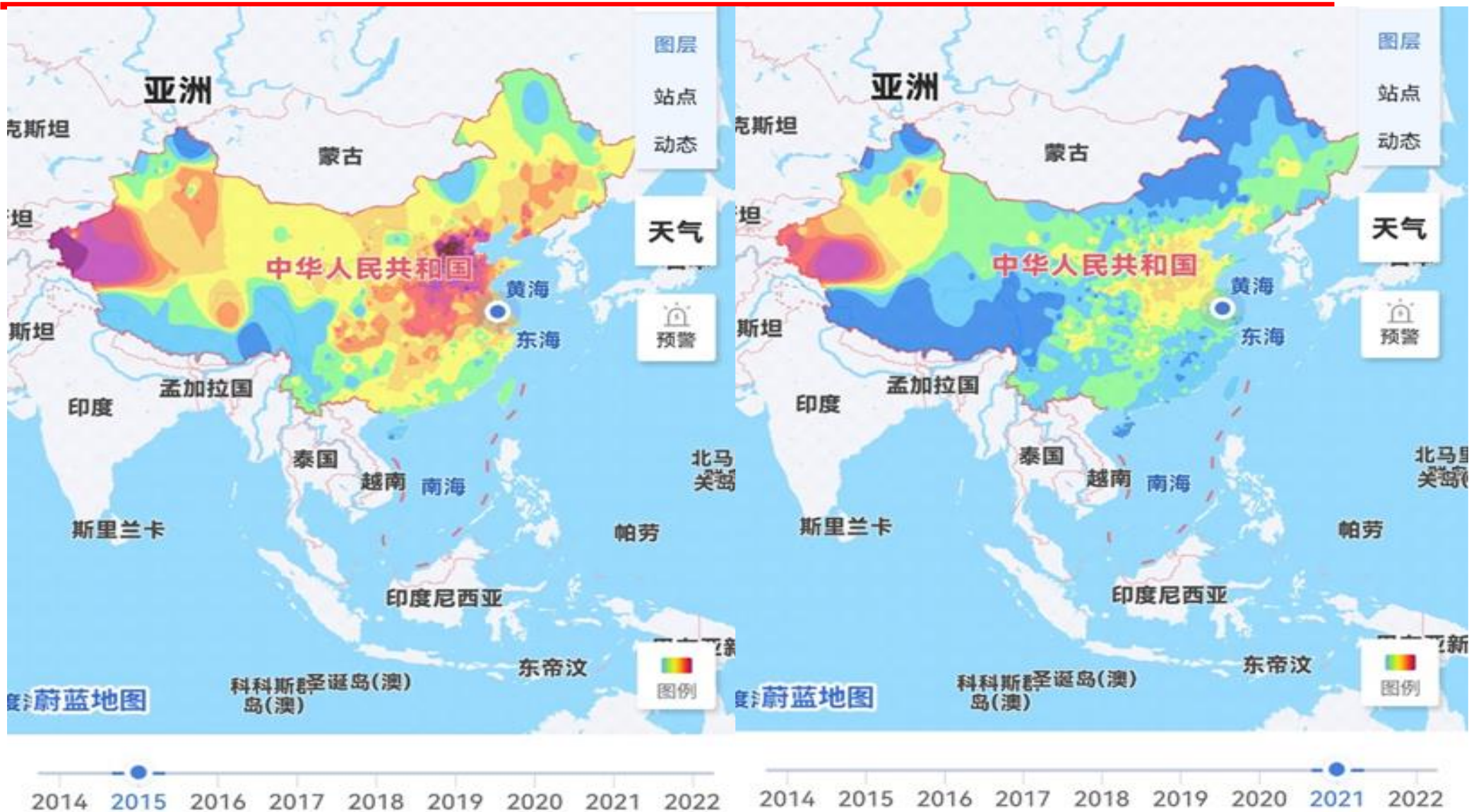
Air and Water Quality

- ◆ The quality of air in major Chinese urban centres has improved significantly.
- ◆ Fine particulate matter 2.5 (PM2.5) is an air pollutant that reduces visibility and causes the air to appear hazy when the level is high. It is also a concern for people's health.
- ◆ China implemented the new ambient air quality standard (GB3095-2012) in 2013. The levels of PM2.5 in the air of 31 major Chinese cities have been declining since. The actual levels of PM 2.5 of seven major cities—Beijing, Chongqing, Guangzhou, Nanjing, Shanghai, Shenzhen and Tianjin—between 2013 and 2020 are shown in the following chart.
- ◆ A comparison of a PM2.5 map of China in 2015 and 2021 is presented in the chart following the next chart (blue is good and red is bad).

The Level of PM2.5 in the Air of Major Chinese Cities, microgramme per cubic metre



The Level of PM2.5 in the Air: A Comparison of 2015 and 2021 (from <http://www.ipe.org.cn>)



Air and Water Quality:

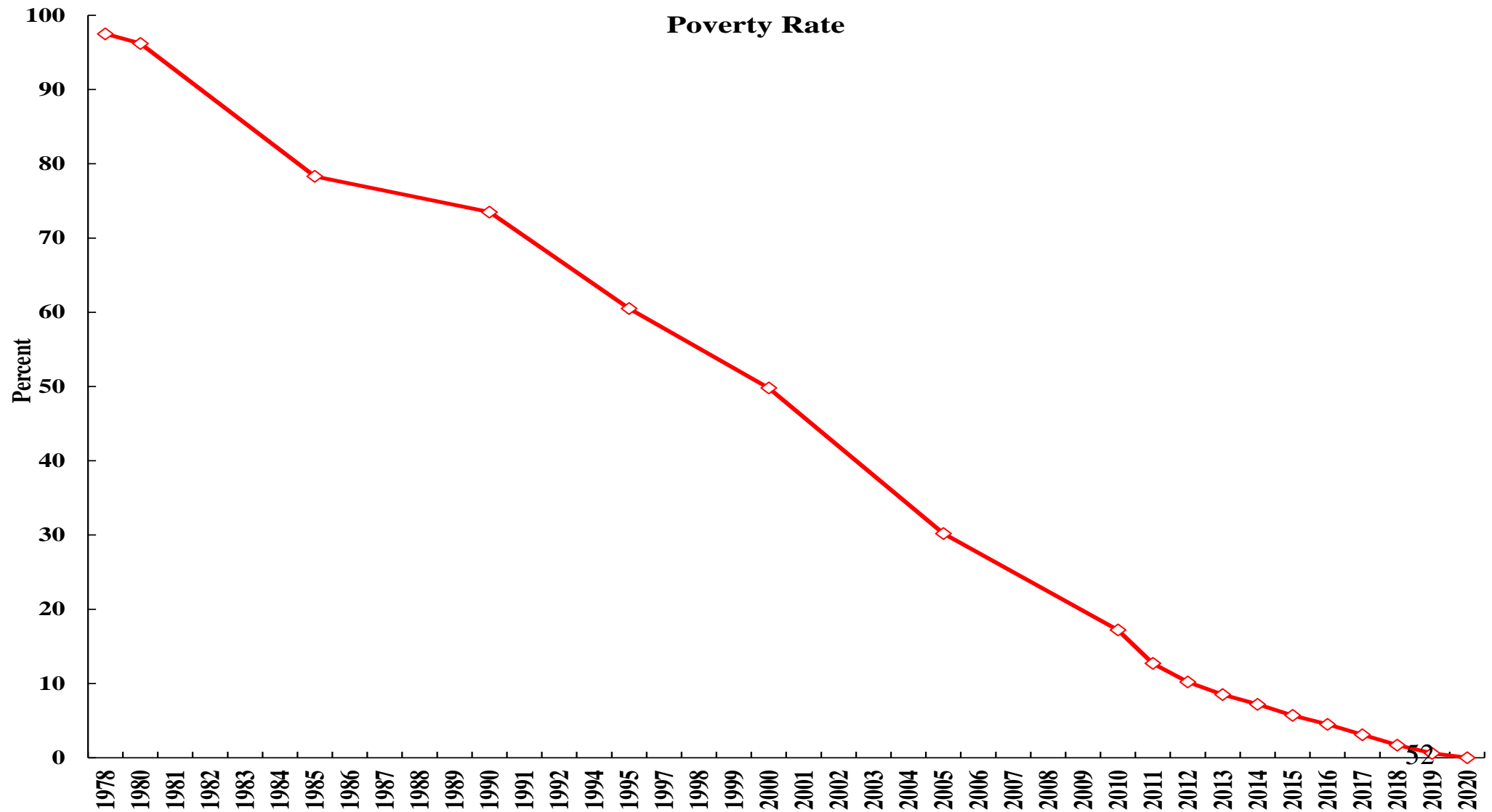
The Clearing of Huang He (The Yellow River)

- ◆ The Huang He (Yellow River), the second longest river in China, used to be very polluted and full of fine sediments, and would flood easily. Its water is now in the process of being cleared up through the planting of vegetation in the upstream regions of the River. The vegetation holds the top soil in place and prevents it from being blown into the river by the winds. The River is expected to clear up within the next decade.

The Eradication of Extreme Poverty

- ◆ China has been the most successful in the eradication of chronic extreme poverty.
- ◆ The Chinese poverty standard of 2010 defines a family to be in poverty if its annual per capita income is below 2,300 Yuan in 2010 prices. This is equivalent to approximately 3,054 Yuan in 2021 prices (**US\$479**).
- ◆ In 1978, before the beginning of the economic reform and opening, the poverty rate according to this standard was a whopping 97.5%! By the end of 2020 it reached zero. Granted that this is still a rather low level of annual income per capita, but it is slightly more than US\$1.30 per person per day, slightly higher than the United Nations standard of one U.S. Dollar a day.
- ◆ We should emphasise that this is a permanent eradication of extreme poverty, rather than a one-off relief. The formerly extremely poor are now able to provide a decent living for themselves in a sustainable manner.

The Eradication of Extreme Poverty: The Share of Population under the 2010 Poverty Line



Public Goods Provision through Infrastructural Investment

- ◆ In the short run, all increases in government expenditures have the same macroeconomic effects on both GDP and employment. However, in the long run, increases in real fixed-assets investments augment the real capital stock and increase the real GDP, whereas increases in consumption due to increases in disposable income through, for example, tax cuts and transfer payments, generate no direct lasting benefits.
- ◆ Infrastructural investment, which is often needed for the provision of public goods, can generate benefits that can be widely shared in the economy even though they cannot be fully captured or internalised by the projects themselves.
- ◆ Historically, in China, the Great Wall, built in the Qin Dynasty, was an infrastructure for national defense, and the Grand Canal, constructed in the Sui Dynasty, was an infrastructure for the transportation of grains. Over the past few millennia, there were numerous water conservancy projects for irrigation and flood control. These were all government financed and often depended on conscripted labour.

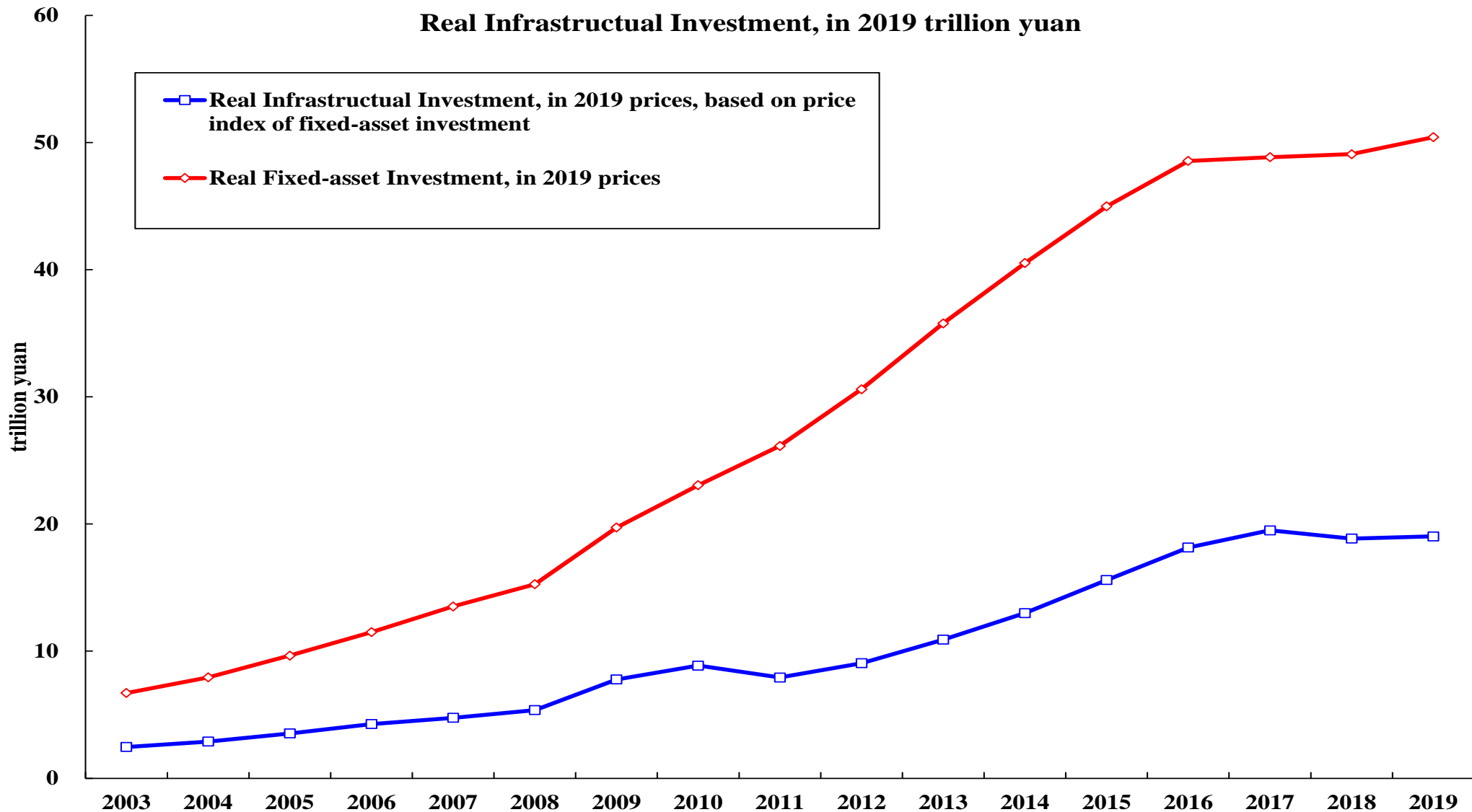
Infrastructural Investment

- ◆ Infrastructural investment includes investment in communication, transportation, and power. Infrastructural investment is complementary to non-infrastructural fixed-assets investment because it can enhance the latter's rate of return. (Think of how a new highway can enhance and facilitate the expansion of trade among the enterprises located en route.)
- ◆ The existence of appropriate infrastructure can make the markets even more efficient (the “visible hand” working with the “invisible hand”).
- ◆ In addition, many infrastructural investments are “development-leading” investments, with their supplies creating their own demands, as opposed to “developing-lagging” investments, that is, investments that are undertaken only when the demands already exist. “Development-leading” infrastructural investments can generate significant externalities and enhance the returns of other fixed-assets investments both public and private.

Public Goods Provision through Infrastructural Investment

- ◆ Real fixed-assets investment, including real infrastructural investment, grew rapidly in China between 2008 and 2017, partly as a response to the Global Financial Crisis of 2008. Since 2017, their rates of growth have considerably moderated.
- ◆ Infrastructural investment is a major component of fixed-assets investment. The share of infrastructural investment in total fixed-assets investment ranged between a low of 30 percent and a high of 40 percent between 2003 and 2021, with an average of 35.8 percent.
- ◆ Infrastructural investment in communication and transportation has also helped to make the Chinese economy a single unified market, realising the huge benefits of its economies of scale.
- ◆ However, infrastructural investment frequently generates benefits known as externalities that cannot be captured by the investment itself and hence must be financed or subsidised by the government.
- ◆ On 26 April 2022, in a meeting of the Central Committee for Financial and Economic Affairs, President Xi Jinping called for “all-out efforts to strengthen infrastructure construction” in the country.

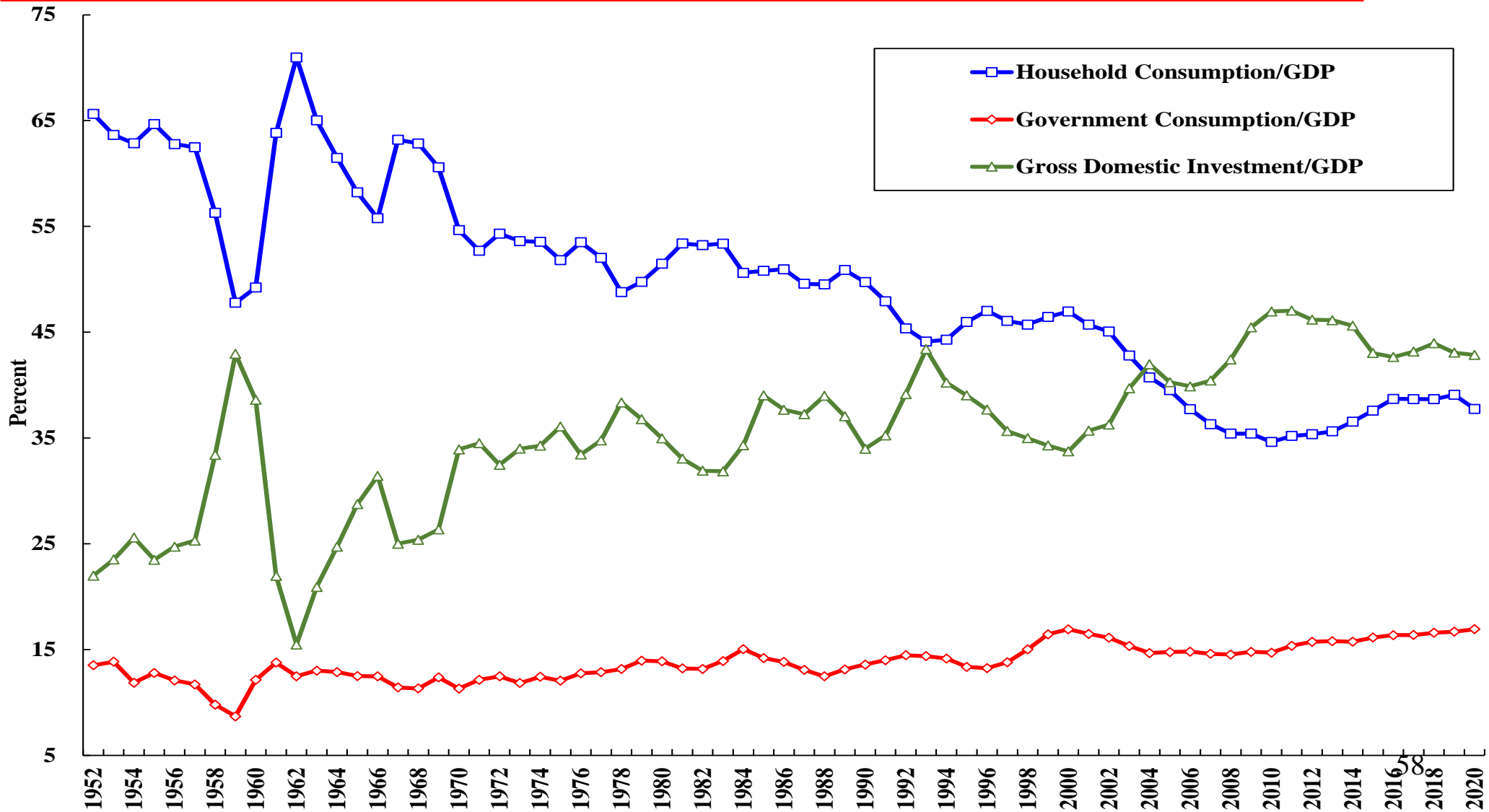
Real Fixed-Assets Investment and Real Infrastructural Investment, 2019 prices



The Components of Chinese Aggregate Demand

- ◆ The share of household consumption in aggregate demand (GDP) has been declining over time, from a peak of almost 71 percent in 1962 to less than 38 percent in 2020.
- ◆ Gross domestic investment, which includes real fixed-assets investment, has become the most important source of aggregate demand since 2004. It was not quite 43 percent in 2020.
- ◆ Government consumption, which includes most public goods consumption, has been increasing slowly and gradually from 13.5 percent in 1952 to just below 17 percent in 2020.
- ◆ There is a great deal of room for both government investment and government consumption to grow through increased public goods provision.
- ◆ Net exports will continue to decline in relative importance as a component of Chinese aggregate demand, given the Chinese objective of balanced international trade.

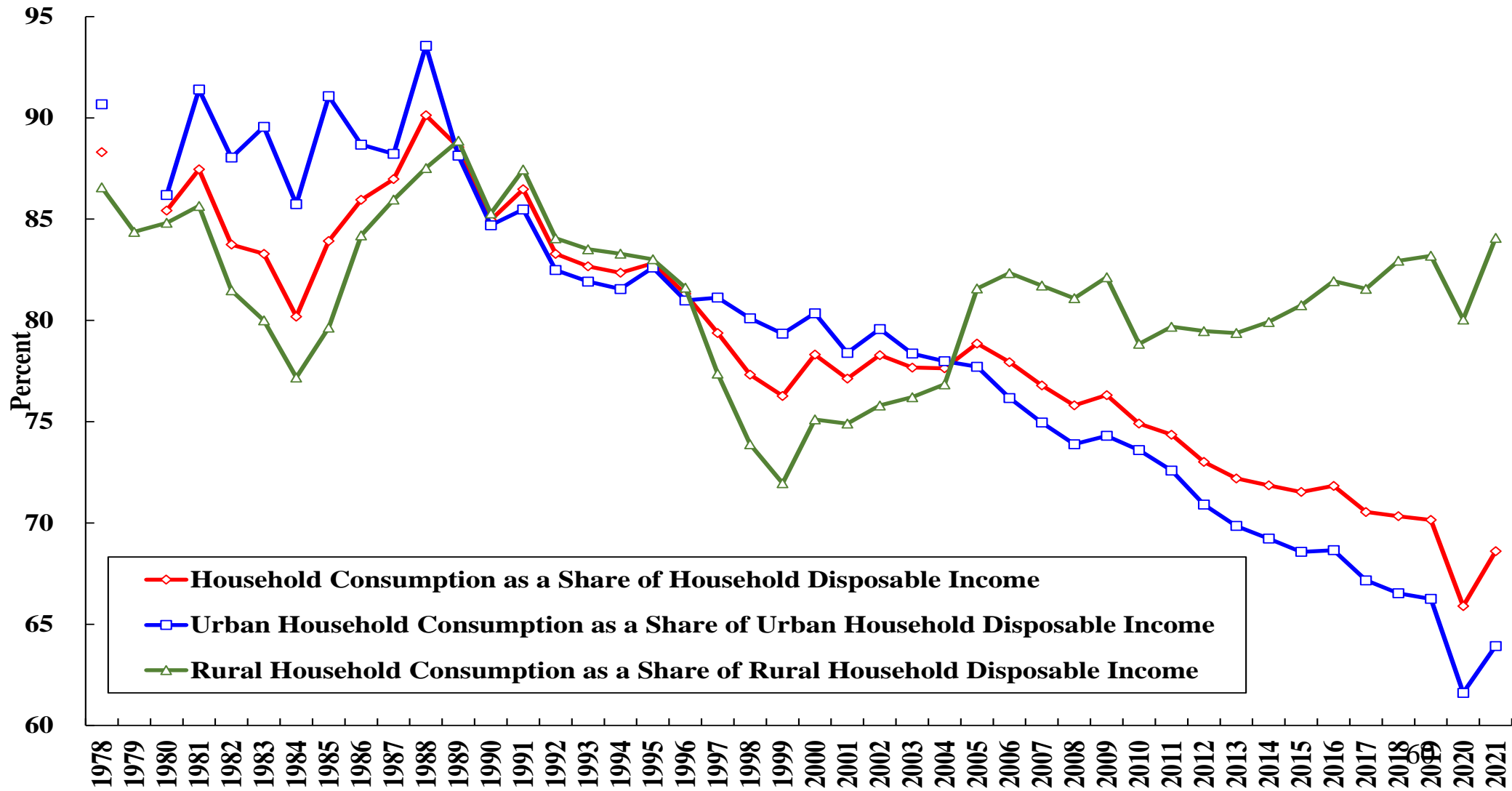
The Percentage Distribution of the Sources of Aggregate Demand



Household Consumption is a Declining Share of Household Disposable Income

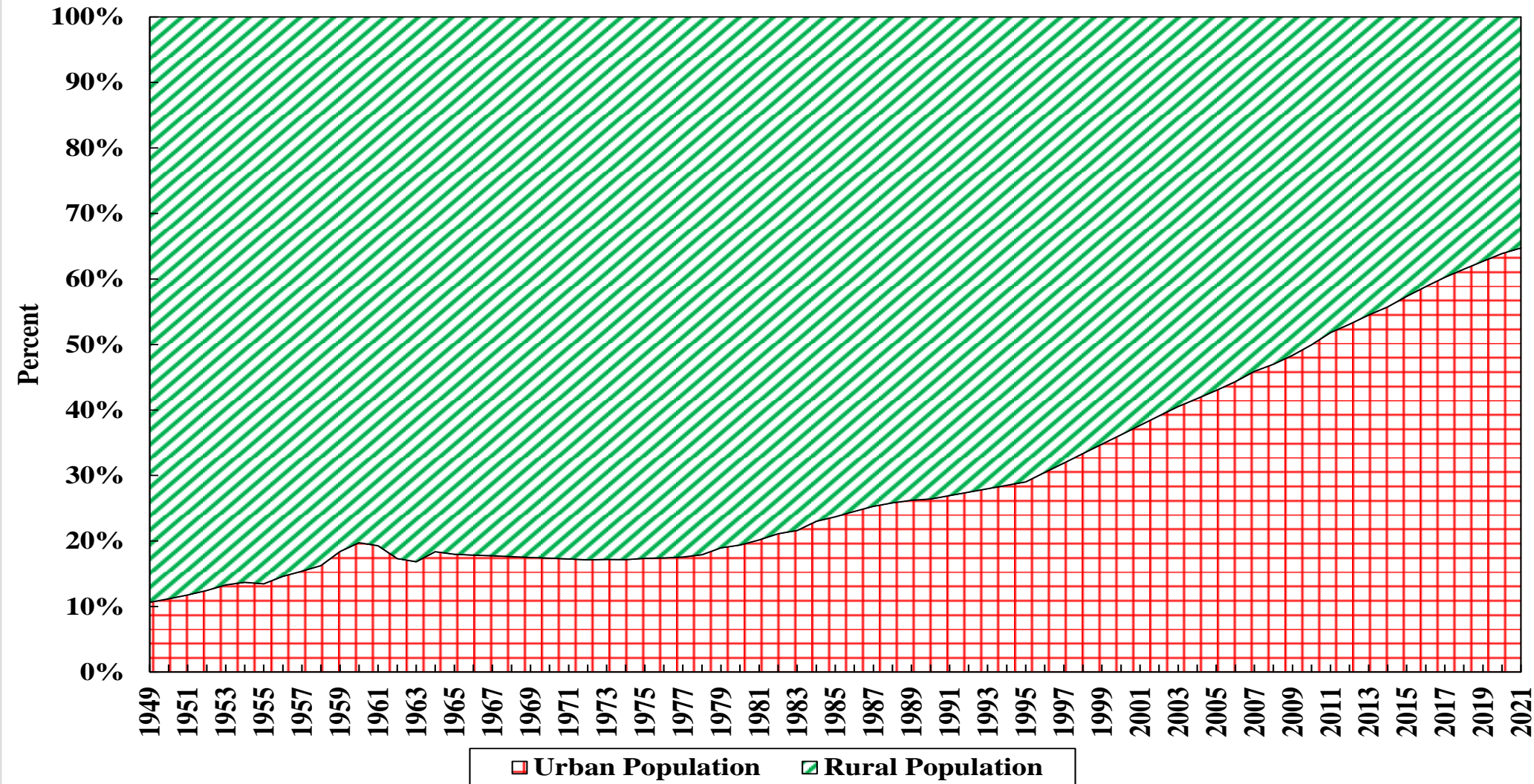
- ◆ The share of household consumption in household disposable income has also been declining over time, from over 90 percent in 1988 to 68.6 percent in 2021.
- ◆ Moreover, as China becomes increasingly urbanised, the share of household consumption in household disposable income is likely to decline further, since urban households have a higher propensity to save than rural households.
- ◆ In 2021, the shares of household consumption in disposal income were respectively 84.1 percent for rural households and 63.9 percent for urban households.
- ◆ Between 1949 and 2021, the share of rural population fell from almost 90 percent to slightly more than 35 percent.
- ◆ Thus, increases in household disposable income alone are not sufficient to increase household consumption significantly as a component of aggregate demand. Increases in fixed-assets investments and government consumption are needed. This is where public goods provision comes in.⁵⁹

The Percentage Distribution of the Sources of Aggregate Demand



The Distribution of Chinese Population between Rural and Urban

Thr Distribution of Chinese Population between Rural and Urban



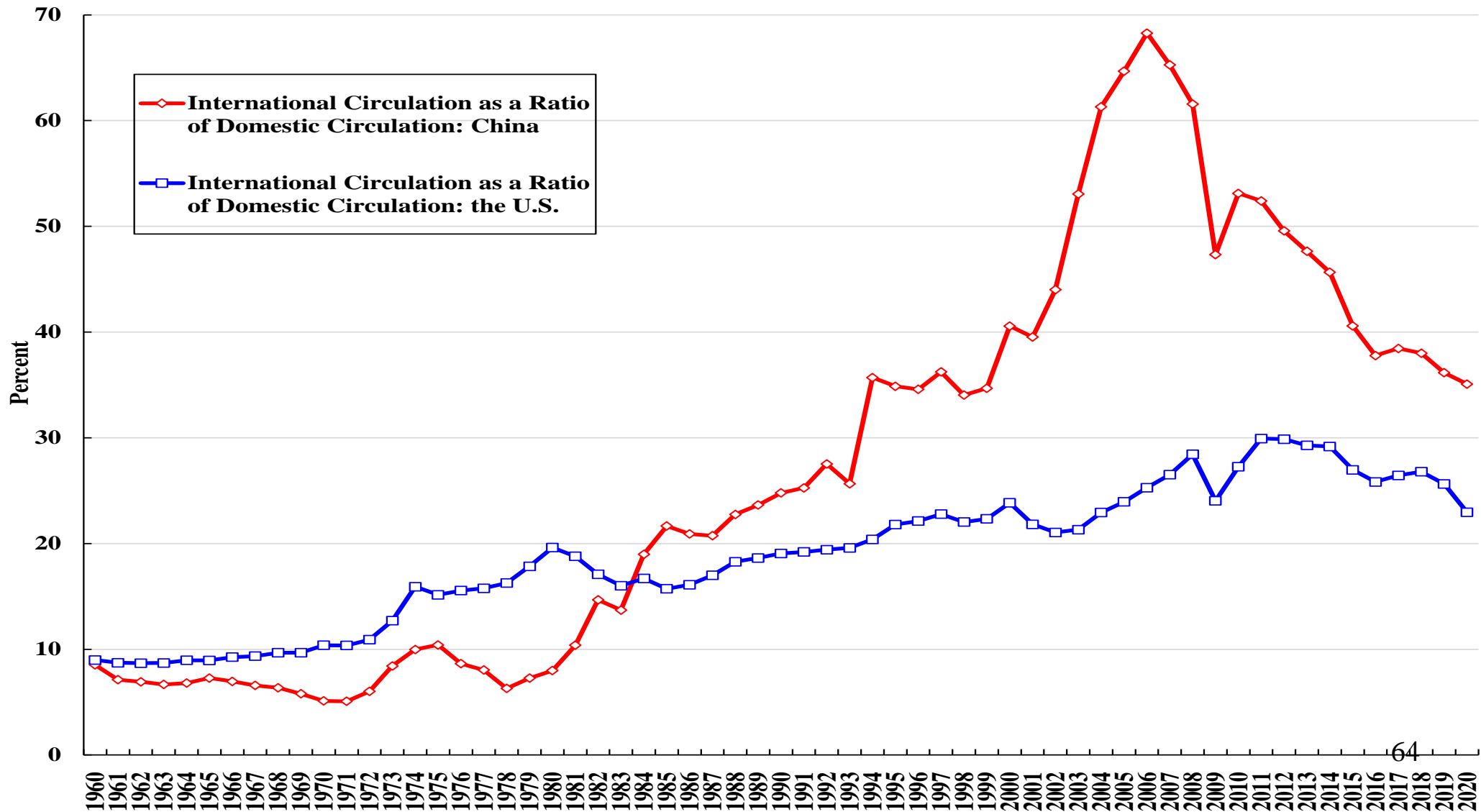
The Dual-Circulation Economic Development Strategy

- ◆ The Chinese economy will pursue a dual-circulation development strategy with a domestic circulation and an international circulation complementing each other, but with the domestic circulation playing the primary role, which is to be expected for large continental economies like China (and also the U.S.).
- ◆ The Chinese economy is no longer export-driven. It aims to have balanced international trade. It will be domestic demand-driven—by household consumption, gross domestic investment, and public goods consumption.
- ◆ The adoption of a dual circulation strategy by China is evidence of its recognition that total self-sufficiency is not a viable alternative and of its continuing commitment to an open economy and to economic globalisation.

The Dual-Circulation Economic Development Strategy

- ◆ The Chinese ratio of international circulation to domestic circulation was below 10 percent before 1981, when it began to rise. It reached a peak of almost 70 percent in 2006, but then declined to 35 percent by 2020.
- ◆ The U.S. ratio was around 20 percent between 1980 and 2000 and rose to a peak of 30 percent in 2011, but then declined to 23 percent by 2020. It is expected that the ratios for both countries will be declining some more over time and eventually reach similar levels.
- ◆ A possible de-coupling of the Chinese and U.S. economies will increase the importance of domestic circulation for China.
- ◆ Public goods provision can become a major source of increase in domestic aggregate demand for both consumption and investment going forward.

International Circulation as a Ratio of Domestic Circulation: China and the U.S. (%)



Public Goods Provision as Aggregate Demand

- ◆ What are some of the public goods that need to be provided in the next decade or decades that require significant capital and current expenditures?
 - ◆ Prevention of climate change. This will require both infrastructural and non-infrastructural fixed-assets investment—the replacement of fossil-fuel-based infrastructure and equipment, carbon sequestration, research on nuclear fusion;
 - ◆ Environmental preservation, protection and restoration;
 - ◆ Common prosperity—alleviation of poverty in accordance with a new 2030 standard;
 - ◆ A free and free-standing public text (including email), voice and video communication system that is respectful of personal data privacy;
 - ◆ The construction and operation of elderly care homes;
 - ◆ The construction and operation of hospitals, pre-schools, schools and universities;
 - ◆ The construction and operation of public rental housing in urban areas;
 - ◆ Outer space exploration.

The Financing of Public Goods Provision

- ◆ One problem of public goods provision is that most of the activities do not generate positive value-added at market prices. For example: cleaning up air pollution is costly but does not generate any net revenue and hence does not create any net positive GDP; providing mass transit improves the environment, reduces traffic congestion, and enhances welfare, but often cannot break even on its own.
- ◆ Thus, increasing public goods provision is likely to result in a reduction of the rate of growth of measured real GDP even as it enhances social welfare (unless and until we adopt a “green GDP”).
- ◆ How can public goods provision be financed? In general, it has to be subsidised. Public goods can be financed through general revenue, project bonds, user fees, or specific taxes such as a carbon tax.

The Financing of Public Goods Provision

- ◆ One potential source of government revenue that can be tapped by China is the accumulated undistributed earnings of state-owned enterprises and their parents. Publicly listed SOEs should be required to pay annual cash dividends to their shareholders, including their state-owned parent companies. These funds will eventually end up in the State Treasury to help finance the budget deficit, if any.
- ◆ General revenue can also be increased through a reform of both individual and enterprise taxation and through enhanced tax compliance and enforcement. For example, Chinese income taxation is supposed to be “worldwide”, just like that of the U.S., but the income of Chinese individuals from foreign sources is currently effectively not taxed.

Concluding Remarks

- ◆ The economic development of China during the past seven decades is characterised by not only quantitative growth, but also significant improvements in the “quality” of growth. Most of the improvements in quality have been brought about through the provision of more and better public goods .
- ◆ Provision of public goods such as education, public health, elderly care, environmental preservation, protection and restoration, basic research, infrastructure, social safety net, and alleviation of poverty has been vastly expanded over the past seventy years, with significant positive results.
- ◆ The provision of public goods has also raised the potential GDP of the Chinese economy through its effects on increasing the aggregate demand for investment and consumption, the productivity of the labour force, and the rate of return on other fixed-assets investment. For example, the productivity of the Chinese labour force has been greatly enhanced because of the improvements in its quality.

Concluding Remarks

- ◆ Public goods are by their very nature mostly “local”, and their provision is consistent with the Chinese “dual circulation development strategy”, which has its primary focus on domestic circulation.
- ◆ The provision of public goods also constitutes a form of re-distribution in kind, for example, clean air and water, which can be enjoyed by everyone, and hence also directly advances the goal of “common prosperity”.
- ◆ Finally, increasing the provision of public goods can be a significant source of growth of the domestic aggregate demand for both consumption and investment, over and above what increases in household consumption alone is able to provide. Maintaining an adequate growth of domestic aggregate demand is essential for continued Chinese economic prosperity.

Concluding Remarks

- ◆ However, the provision of public goods frequently results in negative value-added at market prices, and will therefore reduce rather than enhance the rate of growth of measured GDP. This is one reason why the targeted rate of growth of the Chinese economy in 2022 has been set at a relatively low level of 5.5 percent, the lowest in more than four decades.
- ◆ Despite the significant rise in the value of the Gini coefficient in China, the welfare of all Chinese people has improved significantly since 1980.