贸易冲突和新冠疫情对中美经济关系的影响

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The Impacts of the Trade War and the COVID-19 Epidemic on China-U.S. Economic Relations

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Introduction

- The China-U.S. trade war actually started in January 2018, even though the first tariffs did not actually take effect until mid-2018. It is still ongoing despite an interim "Phase 1" truce.
- The average U.S. tariff rate on imports of goods from China rose from 3.1% in January 2018 to 19.3% by March 2020. Most Chinese exporters do not have this kind of profit margins so that the new U.S. tariff rates will prove to be prohibitive to many of them.
- The U.S. tariffs against imports from China became effective in mid-2018. The rate of growth of the Chinese economy declined from 6.9% in 2017 to 6.7% in 2018, and then to 6.1% in 2019, a total reduction of 0.8%. The year-over-year quarterly rate of growth tells more or less the same story—it declined from 6.9% in 2018 Q2 to 6.0% in 2019 Q4—q net reduction of 0.9%. These declines may be largely attributed to the China-U.S. trade war.
- The trade war caused only a very slight decline in the rate of growth of the U.S. economy in 2019.

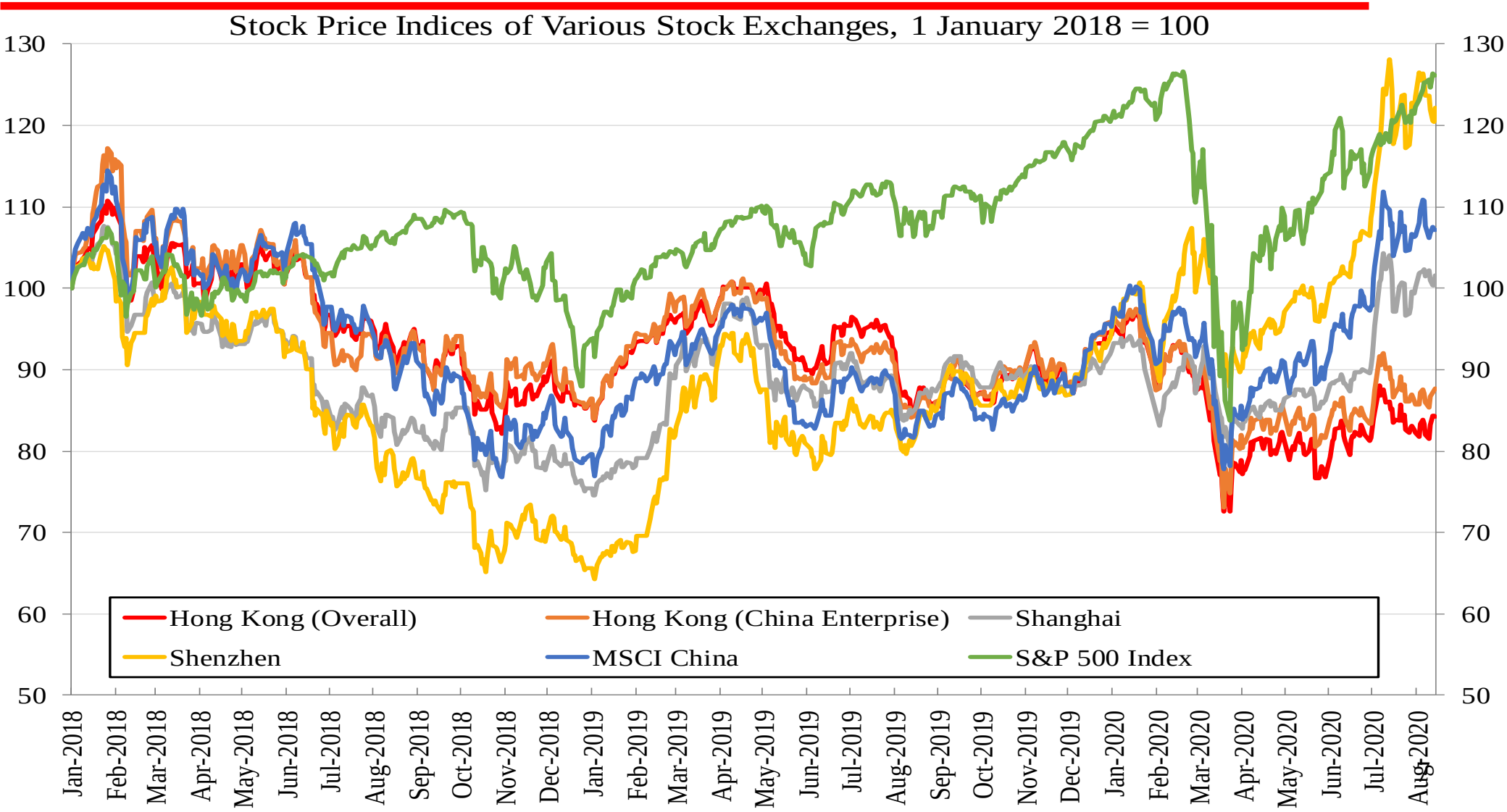
The Immediate Impacts of the China-U.S. Trade War—The Stock Markets

- The Chinese stock markets took heavy hits at the beginning, as the psychological effects dominated. As of the end of 2018, the shares on the Shenzhen Stock Exchange had on average lost 30%, and those on Shanghai and Hong Kong exchanges 20% and 10% respectively. In contrast, the Standard and Poor 500 Index of U.S. stocks did not suffer any loss on a whole-year (2018) basis.
- At the beginning of 2019, the Chinese stock markets continued to fall, until the latter part of January, then it began to rise, buoyed by hopes of a successful conclusion of a China-U.S. trade agreement.
- However, between May 2019 and March 2020, the stock markets became quite volatile, reflecting the progress or lack thereof of the trade negotiations, reacting to every trade-related tweet of U.S. President Donald Trump.

The Immediate Impacts of the China-U.S. Trade War—The Stock Markets

- The Standard and Poor 500 Index also fell at the beginning of 2019 and experienced volatility similar to the Chinese stock market price indices. As of year-end 2019, it showed a gain of approximately 20% from the beginning of 2018, in part due to the continuing low U.S. rate of interest.
- In 2020, there was a large sell-off in all markets in March, caused by the uncertainties created by the COVID-19 epidemic. But as of August 2020, the S&P index as well as the Shenzhen index reached new highs and the Shanghai index recovered all of its losses since January 2018.

The Chinese, Hong Kong and U.S. Stock Market Indexes, 2018M1 to Date



Introduction

- The first COVID-19 case in China was found in Wuhan, Hubei in December 2019. China has actually managed the COVID-19 epidemic quite well--imposing a blockade on Wuhan and Hubei and lockdowns in many cities, and mandating measures such as testing, isolation, social distancing, contact-tracing, and quarantine.
- As an indicator of the success of the blockade and lockdown, consider that on 31 August 2020, the bulk of the cumulative total COVID-19 cases and deaths on the Mainland (**85,058** and **4,634** respectively) were found in Hubei (**68138** and **4512** respectively) with a population of only 60 million. For Mainland ex Hubei, with a population of 1.34 billion, the cumulative total numbers were only **16,920** and **122** respectively (these numbers include imported cases).
- The blockade and lockdown of Wuhan and Hubei effectively prevented the COVID-19 virus from spreading to the rest of Mainland China.
- However, the COVID-19 epidemic lowered the year-over-year rates of growth of the Chinese economy in 2020Q1 and Q2 to -6.8% and 3.2% respectively. For 2020 as a whole, the rate of growth may be projected to be 3.4%, compared to an expected 6% under normal circumstances, a reduction of 2.6%.

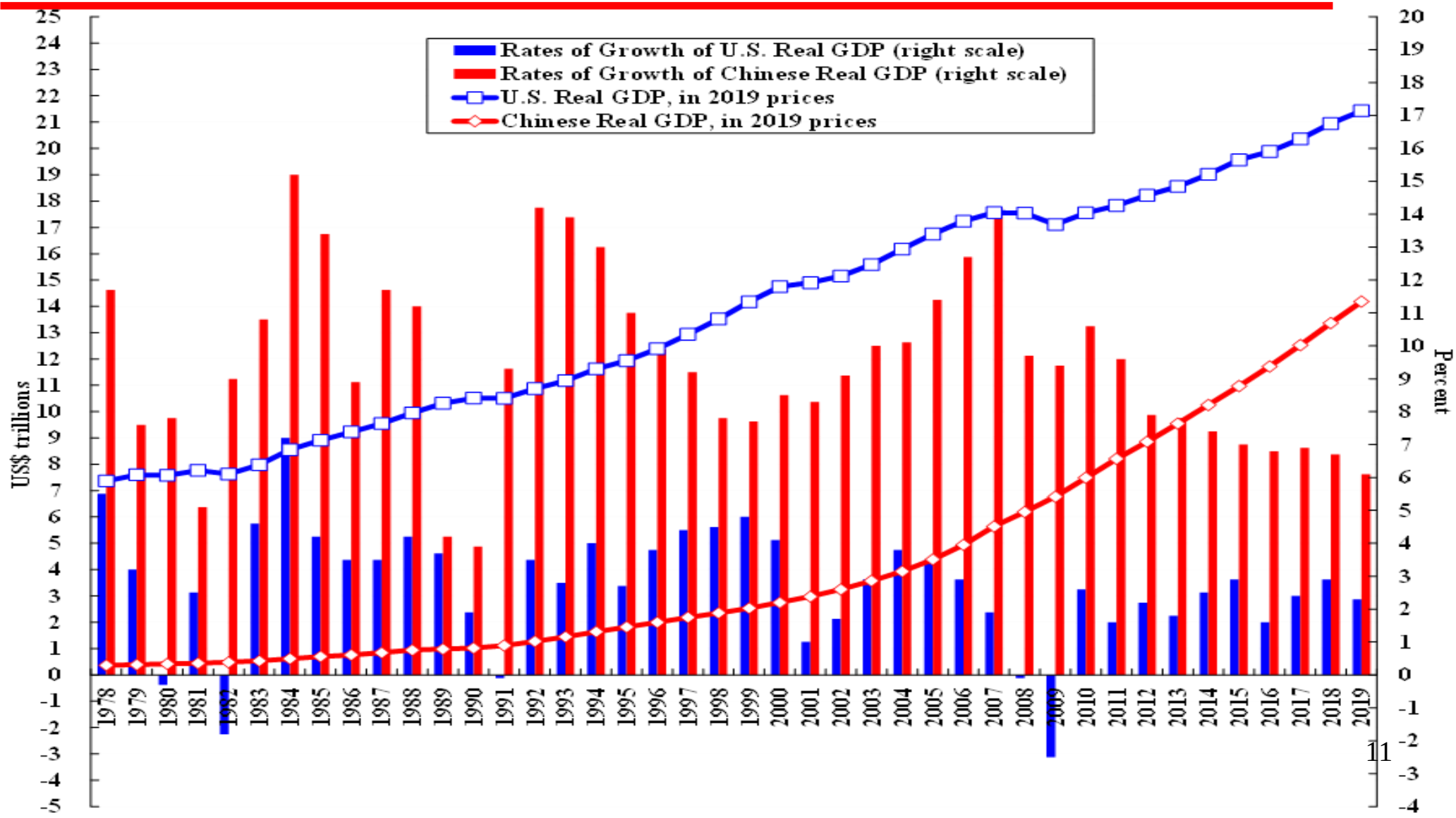
Introduction

- The first confirmed COVID-19 case in the U.S. was reported on 21 January 2020. Unfortunately, the U.S. did not handle the epidemic too well. The cumulative number of confirmed cases began growing quickly a month later, on 22 February.
- As of 31 August 2020, the U.S. had more than **6.17 million** cumulative confirmed cases and **187 thousand** cumulative deaths, the highest such numbers of any country in the world, compared to **85,058** cumulative cases and **4,634** cumulative deaths for the Mainland of China.
- The COVID-19 epidemic has also resulted in a projected contraction of the U.S. economy in 2020 of more than 5%. (My own projection is a contraction of 5.7%.)
- The trade war and the COVID-19 epidemic also led to the deterioration of China-U.S. relations to arguably the lowest point since 1971.

Why is the U.S. so Anti-China Today?

- First of all, the influence of the military-industrial complex in the U.S. has always been very strong. They need a hypothetical enemy in order to justify a large and increasing national defense budget, which benefits both the military and the national defense contractors. The enemy used to be the former Soviet Union and now it is China.
- Second, some in the U.S. are concerned that it may not be able to maintain its hegemony status over the world as China rises, that it may have to share influence and power with China, if not today, perhaps some time in the not too distant future. China is considered a "strategic competitor" and a potential threat to the national security of the U.S.
- Moreover, the rise of China as an economic competitor has been extraordinarily and unexpectedly rapid. In 1978, Chinese GDP was only less than 5% of U.S. GDP. Even by 2000, Chinese GDP was only 18.7% of U.S. GDP; by 2019, Chinese GDP was 66.2% of U.S. GDP. Moreover, this percentage is expected to rise in the future.
- In addition, even though China is still behind the U.S. technologically overall, it has made great progress and leads the U.S. in quite a few areas, including 5G telecommunication, artificial intelligence (AI) applications, and quantum communication.
- Thus, slowing China down has become a priority.

The Real GDPs and Their Rates of Growth: China and the U.S. (tril. 2019 US$ & %)



Why is the U.S. so Anti-China Today?

- Third, many of the liberals in the U.S., who used to support engagement with China, are disillusioned that China has not become the liberal democracy that they once envisioned.
- Fourth, even though U.S. businesses have by and large done well in China, they have accumulated many grievances of various kinds over the years (even though some of these grievances have become moot: e.g., the requirement of a 50/50 Chinese joint-venture partner, which has since been abolished; and lax enforcement of intellectual property rights, which has also been considerably strengthened since 2014).
- Fifth, we should also recognize that some Americans look down on the Chinese people (in fact, more generally, on non-whites). This is a combination of a feeling of white racist supremacy, as well as a resentment that the Chinese people have advanced so much so fast, and they believe, at their expense. It is also in part how one may feel if and when one's former house-maid offers to buy one's house.

Why is the U.S. so Anti-China Today?

- Finally, as the U.S. presidential election approaches, the easiest thing for the incumbent president to do is to blame China for all of the ills in the U.S. society, including unemployment, low wages, and the COVID-19 epidemic. The challenger has no incentive to correct the incumbent and may even take more extreme anti-China positions at least for the purposes of the election. A military confrontation with China right before the election may also conveniently boost support for the re-election of the Commander-in-Chief.
- However, it should also be borne in mind that the shift from an engagement of China strategy to a containment of China strategy on the part of the U.S. is broadly bipartisan. Both "pivot to Asia" and the "Trans-Pacific Partnership" were initiatives proposed by the Obama administration in part to contain China. Continuing China-U.S. competition is the "new normal".

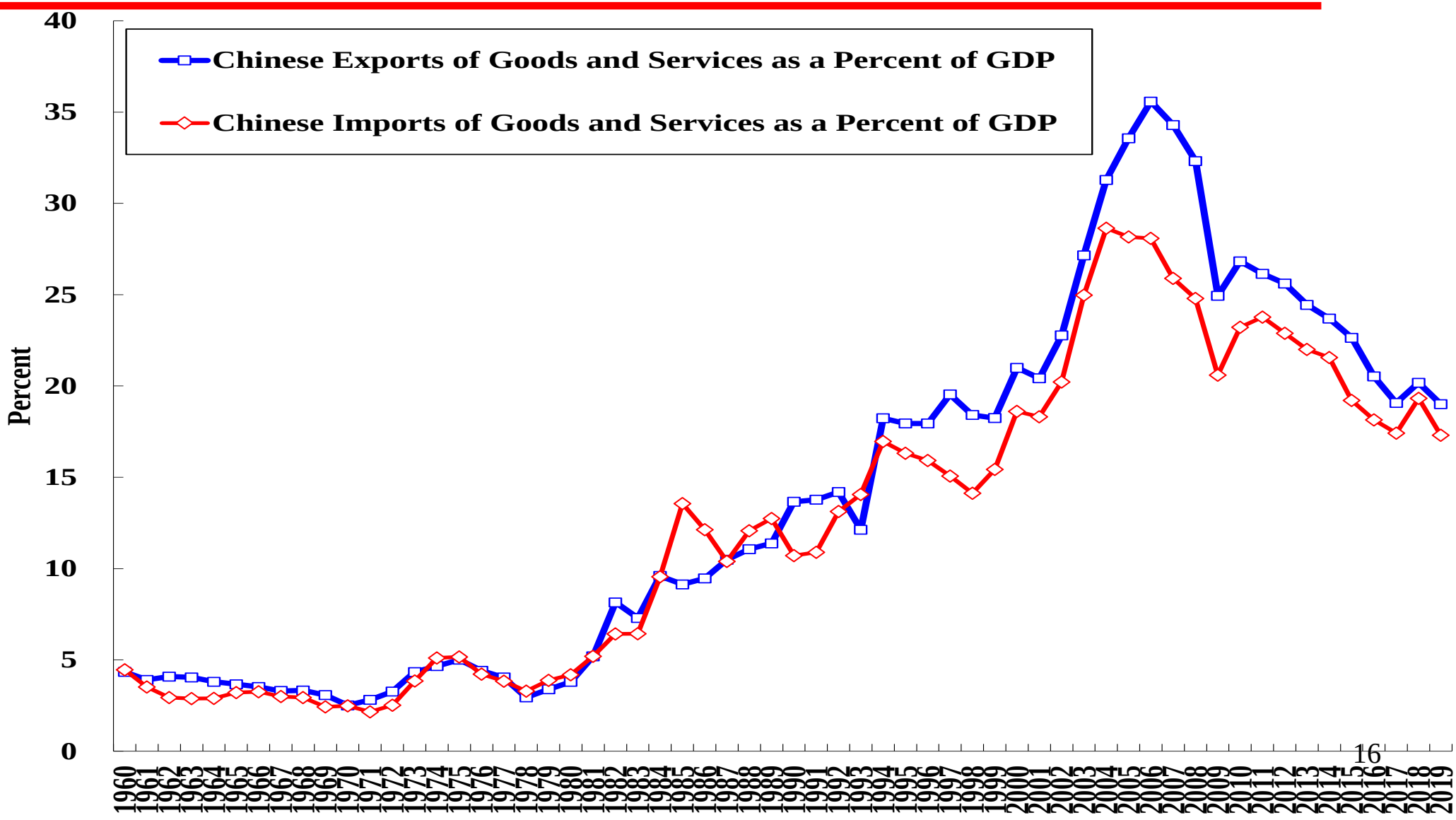
The Underlying Trends in the Chinese Economy

- Economic De-globalisation
- The Declining Importance of International Trade and Investment to China
- The Continuing High Rate of Chinese Economic Growth

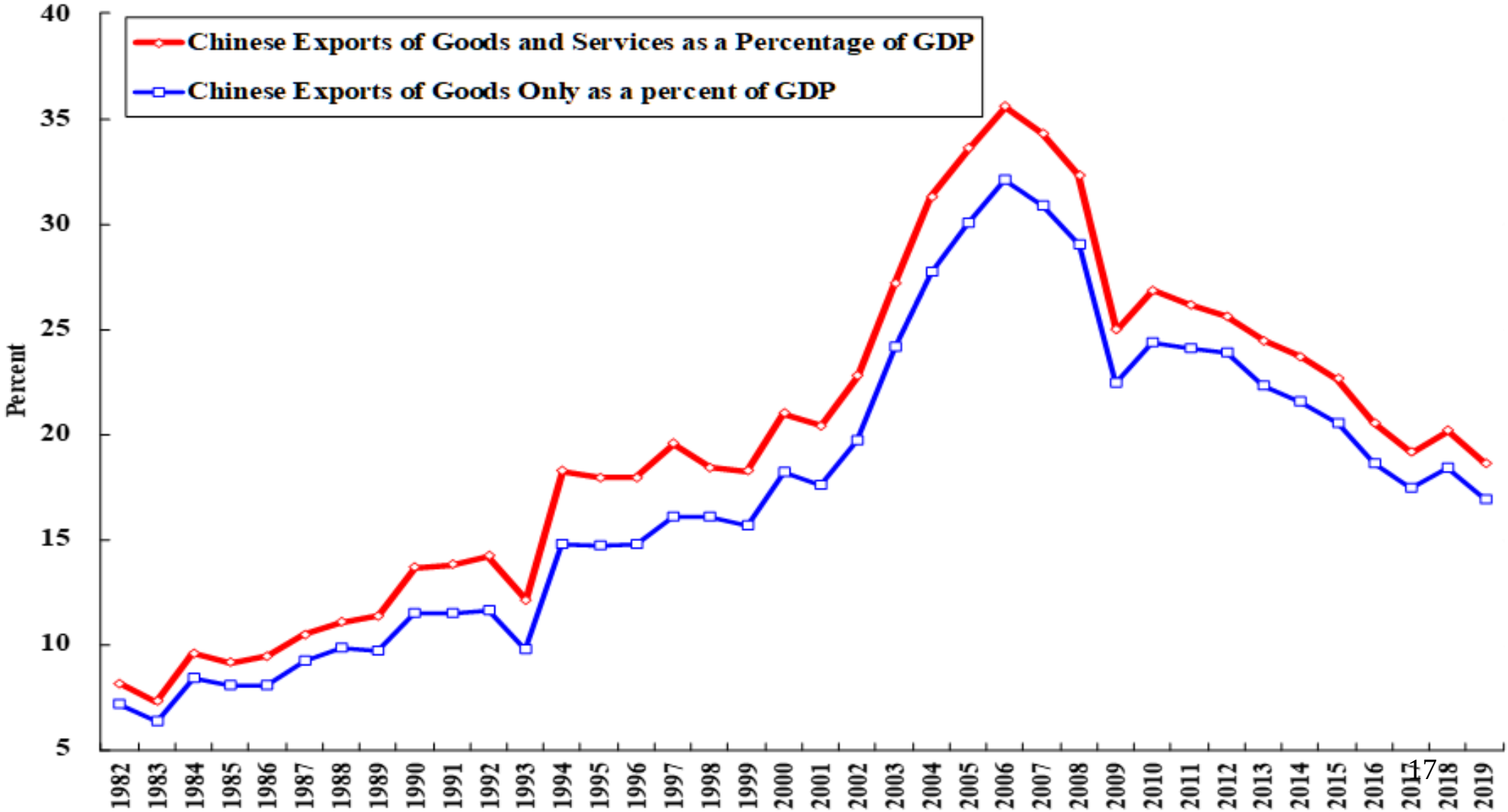
Economic De-Globalisation

- While economic globalisation has brought huge benefits to all countries, including both China and the U.S., it has also created winners and losers in every country. The free market will only reward the winners but cannot compensate the losers. It is those people who did not benefit from economic globalisation who want to reverse economic globalisation. These sentiments have been manifested around the world, especially in the U.K. and the U.S.
- Economic globalisation actually generates sufficient gains in each economy so that everyone can be made better off. However, the free market on its own cannot compensate the "losers" . It is the responsibility of each government to compensate the "losers" in its own country.
- It is the failure, over a long period of time, of many governments to compensate the "losers" from globalisation that has led to the rise of populism, protectionism and isolationism worldwide. That is also why a trade war enjoys popular support domestically.
- The COVID-19 pandemic further reinforces call for economic de-globalisation because of its interruption of global supply chains.

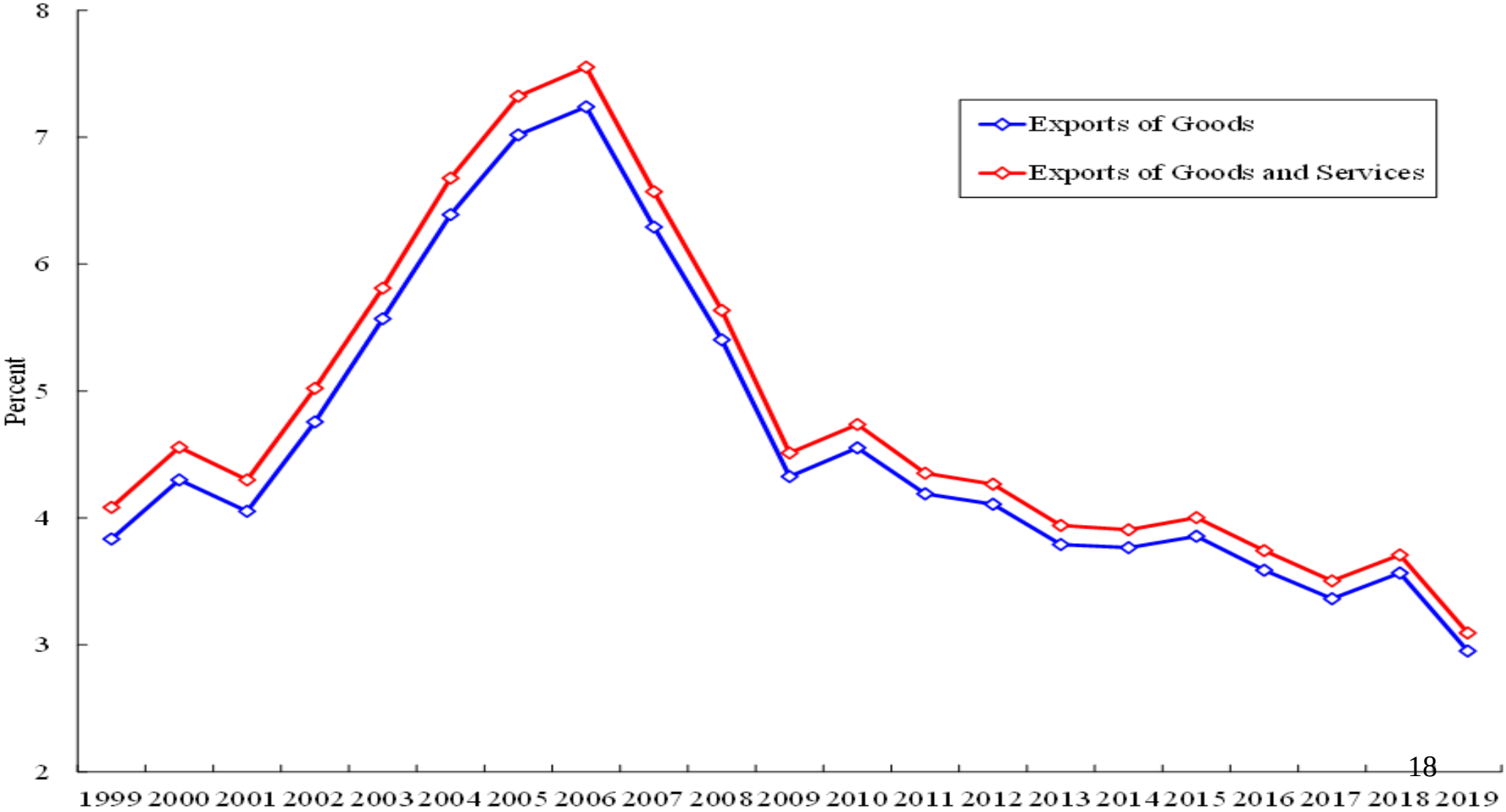
Chinese Exports and Imports of Goods and Services as a Percentage of Chinese GDP



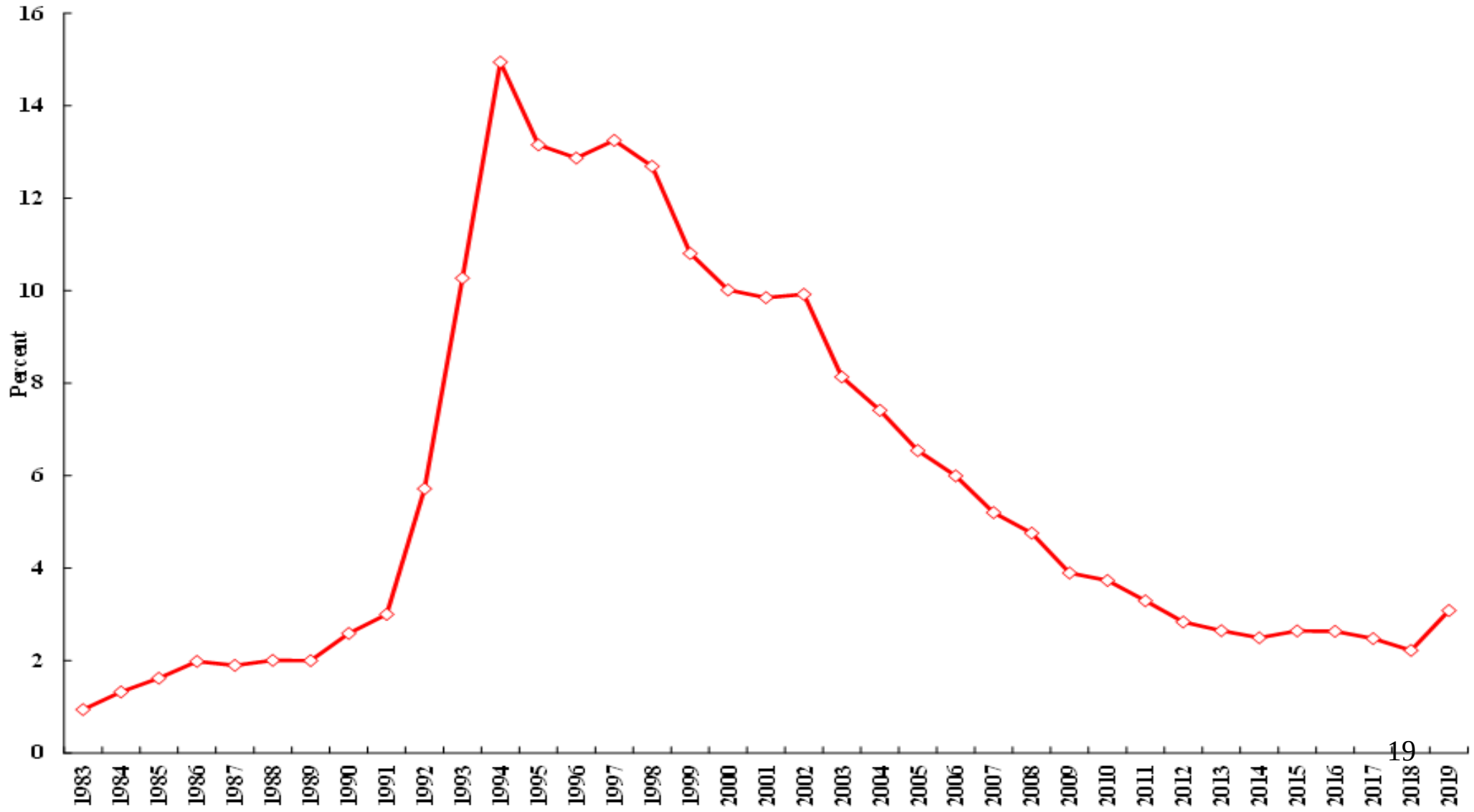
Chinese Exports of Goods and Services and Goods to the World as a Percentage of GDP



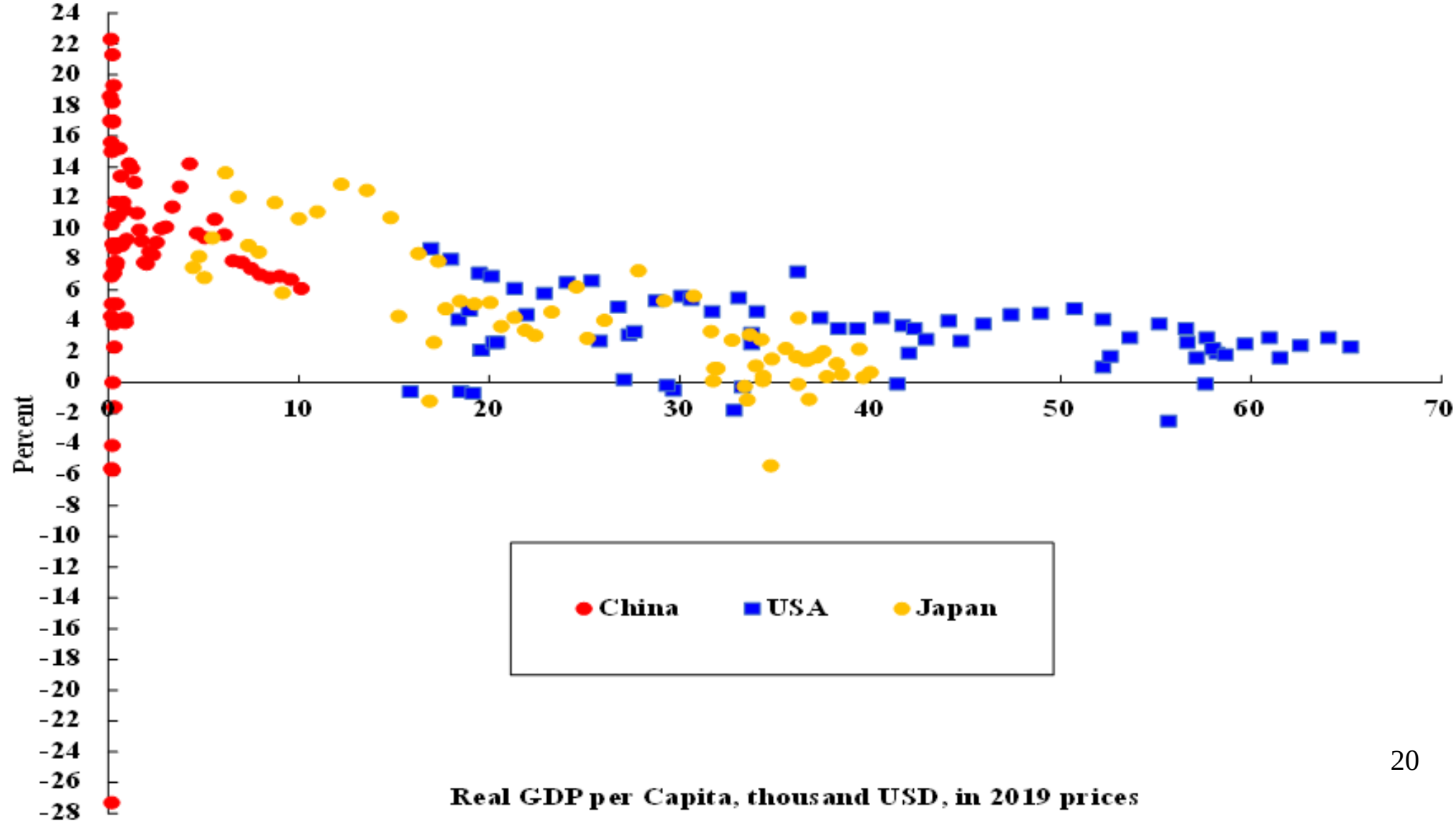
Chinese Exports of Goods and Services and Goods to the U.S. as a Percentage of GDP



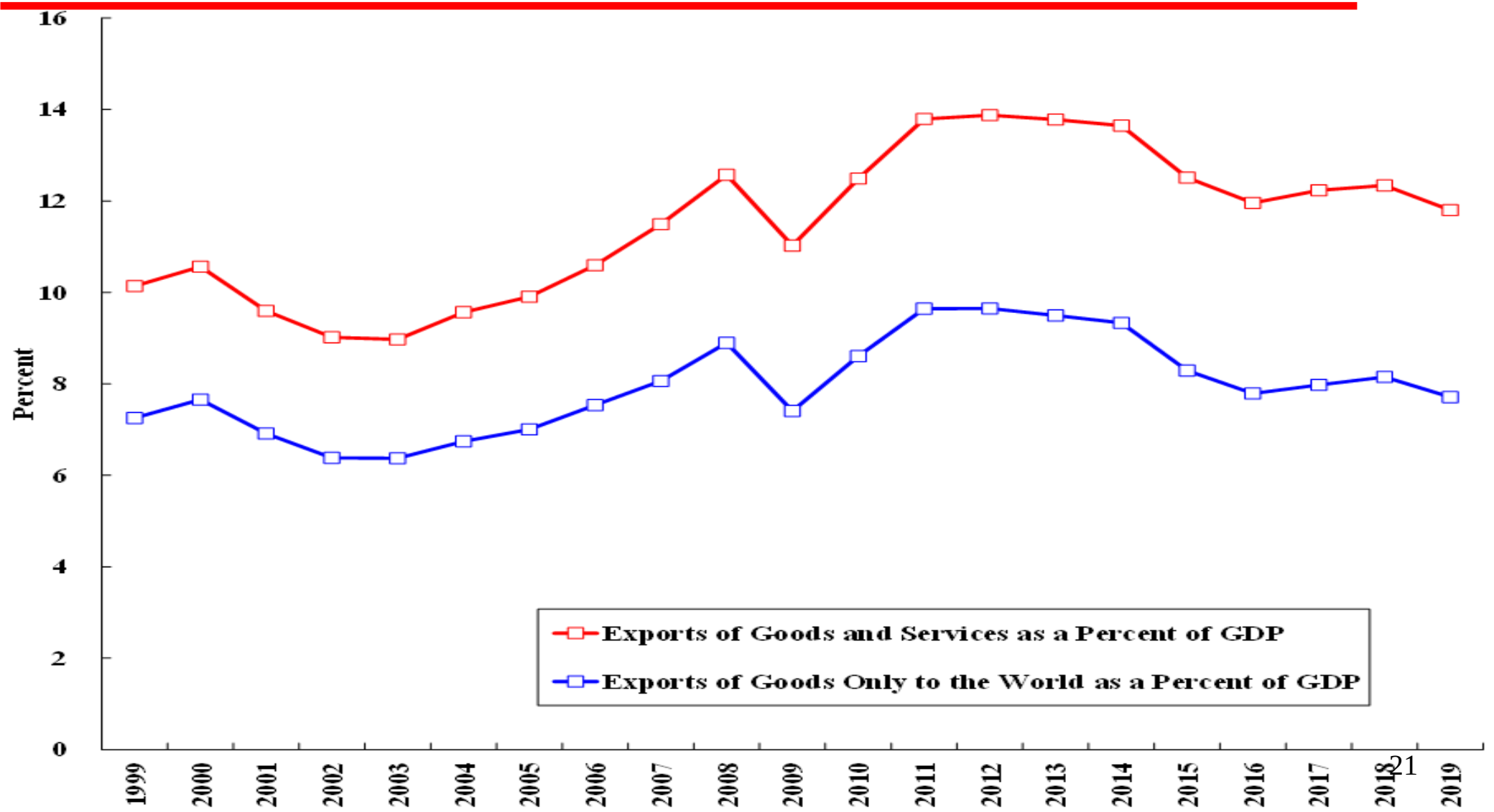
Chinese Inbound Foreign Direct Investment as a Percentage of Gross Domestic Investment



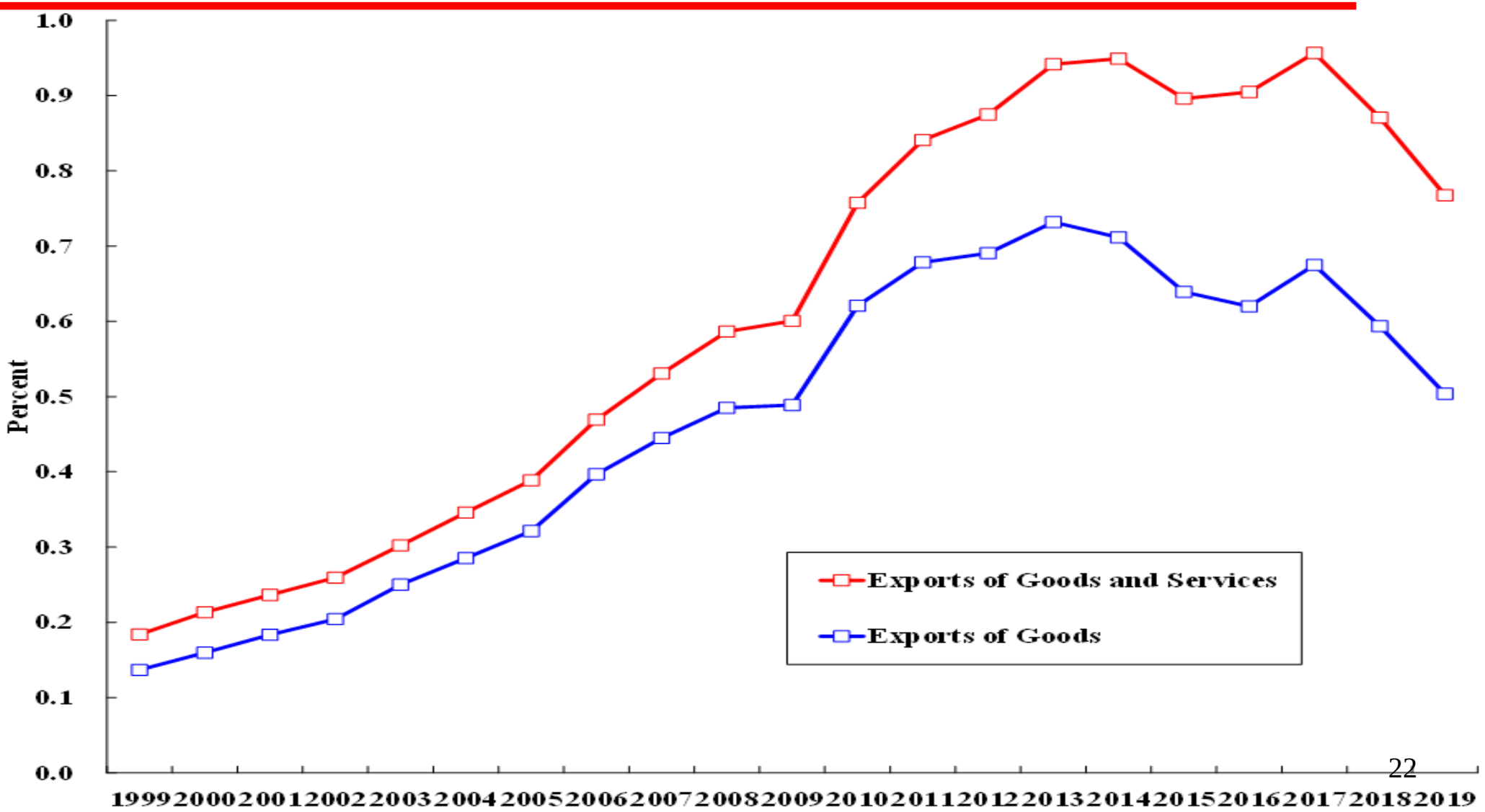
Rate of Growth of GDP vs. Level of Real GDP per Capita: China, Japan and the U.S.



U.S. Exports of Goods and Services and Goods to the World as a Percentage of GDP



U.S. Exports of Goods and Services and Goods to China as a Percentage of GDP



The Impacts of the China-U.S. Trade War

- The gross value of exports does not reflect accurately the real benefits of exports to the exporting country. What really matters is the GDP created by the exports, that is, the domestic value-added created by the exports, directly and indirectly. (The employment and GNP generated by the exports are also important.)
- As an example, consider the Apple iPhone, an export of China since it is finally assembled by Foxconn (Hon Hai Precision Industry Co., Ltd. of Taiwan) in China. The value of an iPhone is at least US$600 whereas the Chinese domestic value-added is less than US$20, with a direct value-added content of at most 3.3%. (The GNP generated is even lower since Foxconn is not a Mainland Chinese company.)

The Impacts of the China-U.S. Trade War

- The average direct domestic value-added content of Chinese exports of goods to the U.S. is approximately 24.8%, so that US$100 billion worth of Chinese exports to the U.S., f.o.b., generates directly no more than US$24.8 billion of Chinese GDP.
- However, the reduction of exports leads to a reduction in the demands for domestic inputs used in their production and the demands for consumption goods by the workers in the exporting industry, which in turn lead to a second-round reduction in the demands for domestic inputs used in the production of the domestic inputs and demands for domestic final consumption.
- With the indirect, that is, second-, third-, fourth- and higher-round effects of the reduction of Chinese exports kicking in, the total domestic value-added affected will eventually increase to approximately **66%** cumulatively, with the indirect value-added content being approximately 41%.

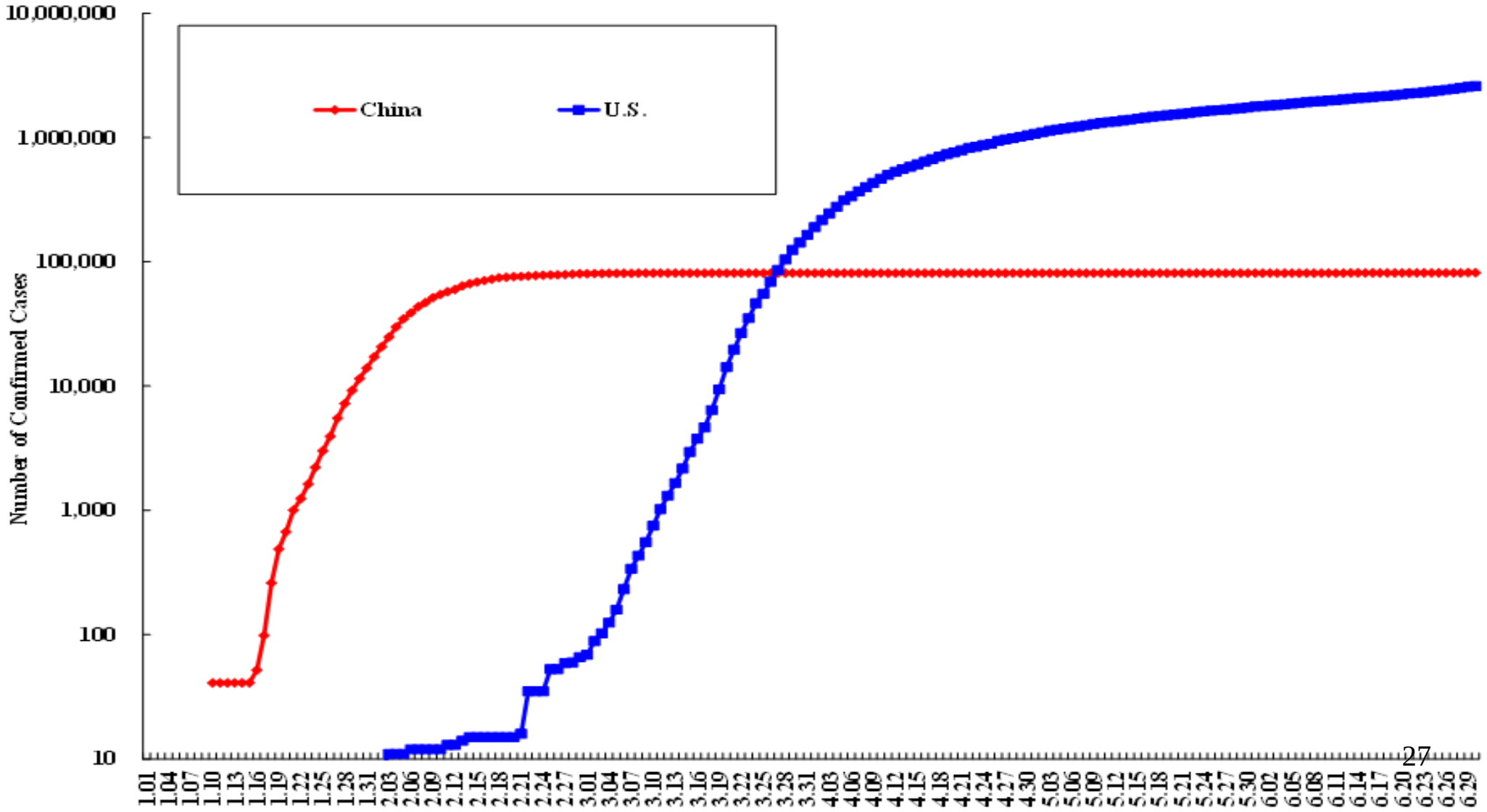
The Impacts of the China-U.S. Trade War

- The U.S. economy is much less dependent on exports than the Chinese economy, even though the Chinese economy has already become much less dependent on exports over the years.
- The Chinese share of exports of goods to the U.S. in Chinese GDP was **3.0%** in 2019. The U.S. share of exports of goods to China in U.S. GDP was **0.50%** in 2019.
- The total (direct plus indirect) domestic value-added content of Chinese exports of goods to the U.S. may be estimated as **66%**. The direct total domestic value-added content of U.S. exports of goods to China may be estimated as **50.8**%, whereas the total (direct plus indirect) domestic value-added content of U.S. exports may be estimated as **88.7**%.
- If trade in goods is halted completely in both directions, the loss in Chinese GDP may be estimated at **1.98%** (3.0 x 0.66) and the loss in U.S. GDP may be estimated at **0.44%** (0.50 x 0.887).
- At the present time, the Chinese economy is still more dependent on the U.S. than the U.S. economy is dependent on China. Hence the economic impacts of the trade war will be much heavier on China than the U.S.

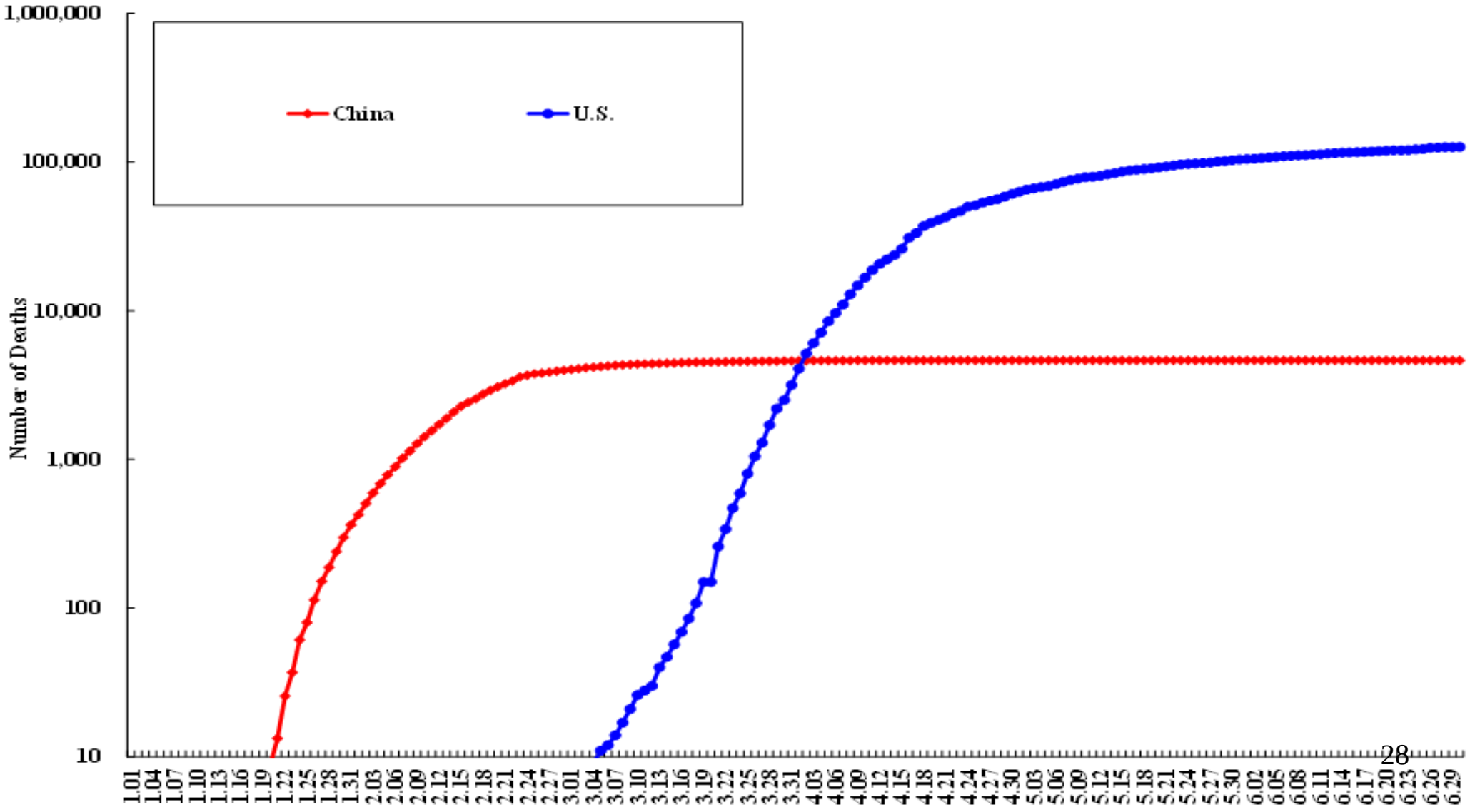
Estimated Impacts of the Trade War on the GDPs of China and the U.S.

	Assuming 50% of Exports Halted		Assuming 100% of Exports Halted	
	US$ Billion	Percent of GDP	US$ Billion	Percent of GDP
China	-135	-0.99%	-269	-1.98%
U.S.	-47	-0.22%	-94	-0.44%

The Cumulative Number of Confirmed COVID-19 Cases, China and the U.S.



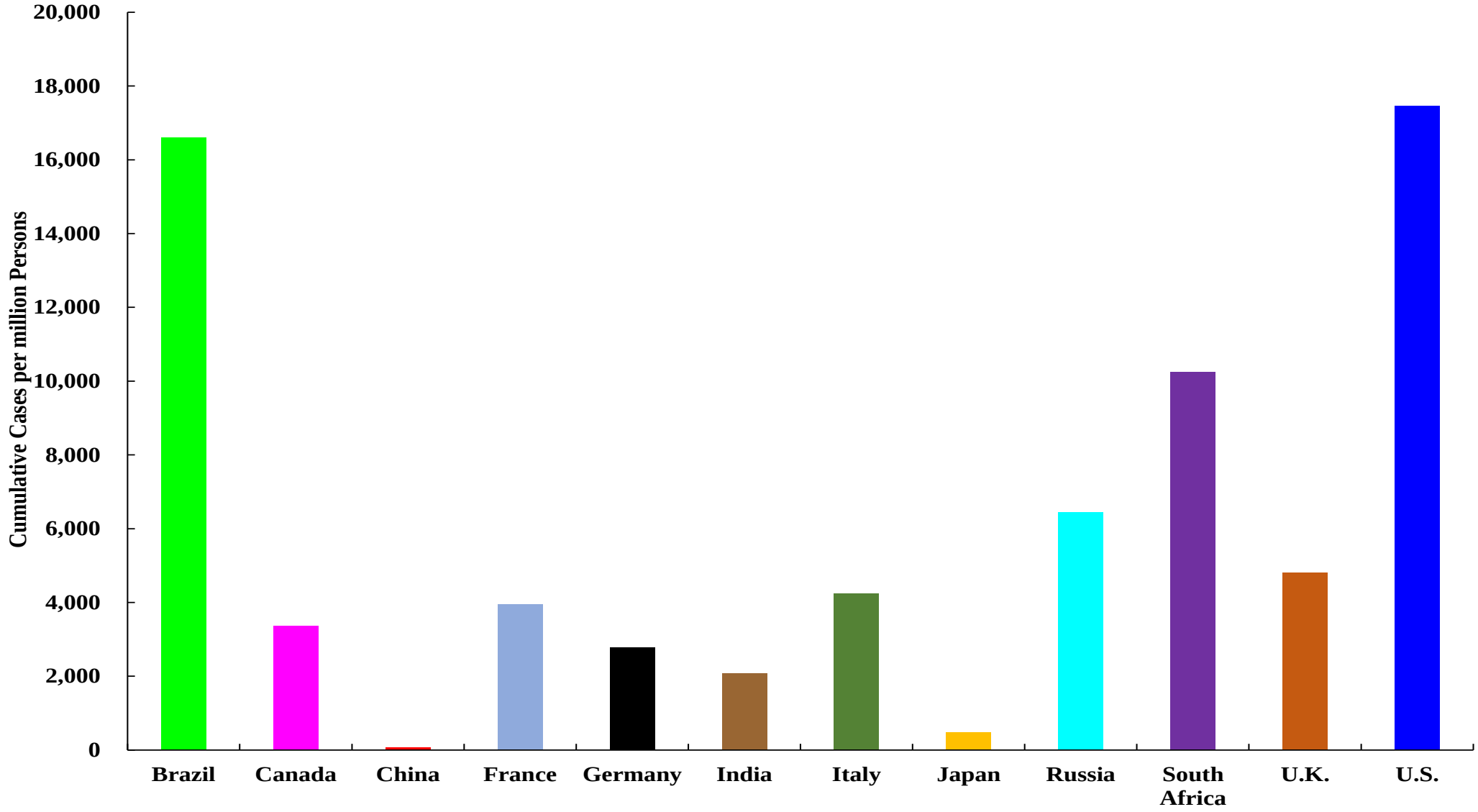
The Cumulative Number of COVID-19 Deaths, China and the U.S.



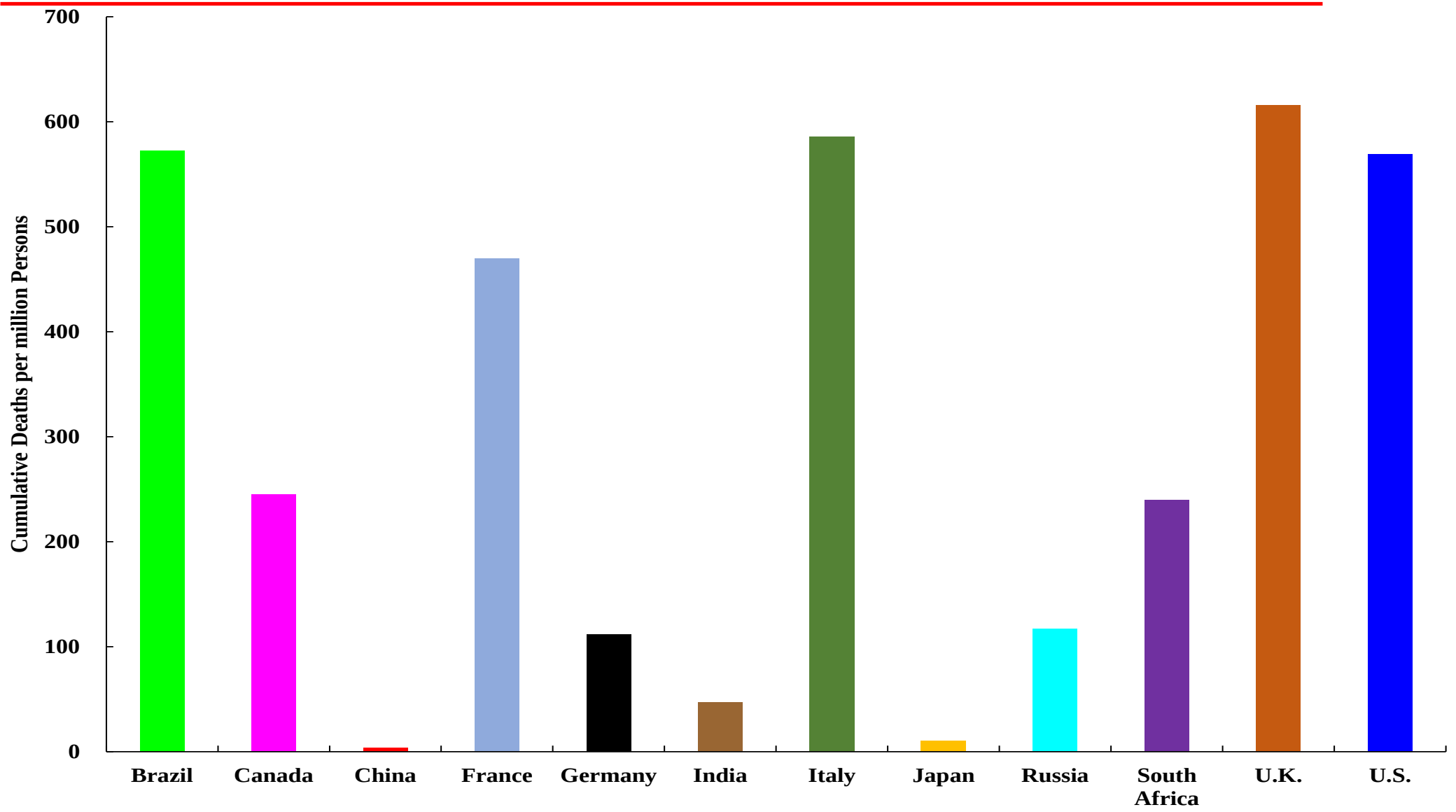
The COVID-19 Epidemic

- Among the Group-of-Seven (G-7) Countries (Canada, France, Germany, Italy, Japan, the U.K. and the U.S.) and the BRICS (Brazil, Russia, India, China and South Africa) Countries, China has performed the best in terms of controlling the COVID-19 epidemic.
- As of 31 August 2020, China's population infection rate (the number of confirmed COVID-19 cases per million persons) was **61** and its population mortality rate (COVID-19 deaths per million persons) was **3.3**, the lowest among these twelve countries, followed by Japan. By comparison, the U.S. population infection and mortality rates were **18,760** and **569** per million persons respectively.
- However, this has not prevented the U.S. from blaming China for causing the COVID-19 outbreak and allowing it to spread to the rest of the world. This has become a major bone of contention between the two countries.

COVID-19 Population Infection Rates: Group-of-Seven and BRICS Countries, 31/08/20



COVID-19 Population Mortality Rates: Group-of-Seven and BRICS Countries, 31/08/20



The Costs of the COVID-19 Epidemic to China and the U.S.

	Loss of GDP (2020)		Loss of Lives (up to 31 August 2020)	
	US$ Trillion	Percent of GDP	Number (thousands)	Percent of Population
China	0.5	3.5%	4.6	0.0003%
U.S.	1.8	8.5%	187	0.0568%

De-Coupling of Supply Chains

- In the short run, the costs of the de-coupling of supply chains will not be low for China, especially in the high-technology sector. This may even affect trade in services. The de-coupling will turn out to be lose-lose for both sides, certainly initially.
- For example, Google is forbidden by the U.S. Government to supply the Android operating system to Huawei for its cell phones. Huawei will have no choice but to develop its own substitute, which will take both time and resources. Of course, Google will also be deprived of a significant stream of revenue not only today but also in the foreseeable future.
- Similarly, if Intel is forbidden to sell its chips to ZTE, ZTE will be unable to continue to manufacture cell phones and servers, but Intel will lose significant sales.
- In the short run, Huawei may not be able to procure the advanced semiconductors that it needs for its cell phones and 5G equipment.

De-Coupling of Supply Chains

- These are "Sputnik" moments for China, as the 1957 successful launch of the first man-made satellite into space by the former Soviet Union was for the U.S. at the time. China must step up its investment in R&D massively, especially in basic research, so that it does not have to depend on other countries for the supply of critical products, parts, equipment and technologies.
- Every major country must make provisions for sudden and unforeseen disruptions of supply. No major country wants to depend solely on another country for the supply of a critical input.
- The U.S. does not want to be put in the position to have to rely solely on Huawei for its 5G telecommunication technology, which is understandable. That is why it is doing all it can to try to destroy Huawei. But it will mean a delay in the roll-out of 5G in the U.S. and a higher cost in the 5G telecommunication equipment.
- The de-coupling of supply chains will also affect producers in the U.S. that rely on inputs from China—raw material, components, parts and semi-finished products.

De-Coupling of Supply Chains

- Eventually alternate, or second, sources will be developed, either domestically or overseas. Having two (or more) sources of supply is good for the world, especially for its consumers. But having a second source is not the same as trying to achieve total self-sufficiency. A second source in a third country, which is often a possibility, is in many cases good enough.
- The U.S. can certainly be self-sufficient in oil, if the world price stays at $50 a barrel, or it can impose tariffs on oil imports to ensure that the domestic price stays at or above $50 a barrel. Who loses in the latter case? The Middle Eastern producers and the American consumers. It is of course for the American people to decide whether it is worth it.
- Second-sourcing is one way to ensure adequate supplies of critical commodities and products. Maintaining a stockpile is another. For example, the U.S. has maintained a Strategic Petroleum Reserve since 1975, with a storage capacity equal to approximately 10% of the total annual U.S. oil consumption, but a much larger percentage, around 50%, of U.S. annual oil imports. The “Strategic Petroleum Reserve”, is a potential second source in the event that supplies from the Middle East are interrupted. China should maintain a similar reserve.

De-Coupling of the Capital Markets

- Currently several hundred Chinese enterprises are listed on either the New York Stock Exchange or NASDAQ as primary or secondary (American Depositary Receipts (ADRs)) listings.
- However, the use of the New York stock exchanges by Chinese enterprises to raise capital has declined significantly over time. Back in 2014, the distribution of Chinese Initial Public Offering (IPO) funding broke down to approximately 43% U.S., 29% Hong Kong and 28% A-shares in Shanghai. In 2019, the distribution of Chinese IPO funding broke down to 7% U.S., 12% Hong Kong and 81% China. The total market capitalisation of publicly listed Chinese enterprises was distributed 8.7% U.S., 20.9% Hong Kong and 70.4% China in 2019.

De-Coupling of the Capital Markets

- On 20 May 2020, the U.S. Senate passed the "Holding Foreign Companies Accountable Act", with the intention of potentially de-listing the Chinese enterprises listed in New York. However, the economic impact should be completely manageable.
- Moreover, the A-share market has out-performed the ADRs. The P/E ratio has been much higher. So it is the preferred market for an IPO for Chinese enterprises.
- Netease and JD.com have returned to Hong Kong for secondary listings. YumChina may follow.
- In the longer term, given that China has become a major source of savings and wealth itself, there is also the potential of U.S. and other foreign companies raising capital in China by issuing Chinese Depositary Receipts (CDRs).

Educational Exchanges

- In 2020, there are an estimated 360,000 Chinese students enrolled at U.S. educational institutions. They generate, conservatively speaking, at least US$18 billion worth of expenditures in the U.S. a year, on the assumption of US$50,000 per student per year.
- Recent U.S. government attempts to discourage or even forbid the admission of Chinese students, especially those in science and technology fields, and the tightening of their visa application process, and the generally anti-China atmosphere in the U.S., are likely to reduce significantly the number of Chinese students coming to the U.S. in the future.
- This is not only a loss to Chinese students, but also to the U.S. as well. The top universities in the U.S. has had the first choice of the best eighteen-year-olds in the world, without the cost of having to raise them, but probably not any more with respect to China.

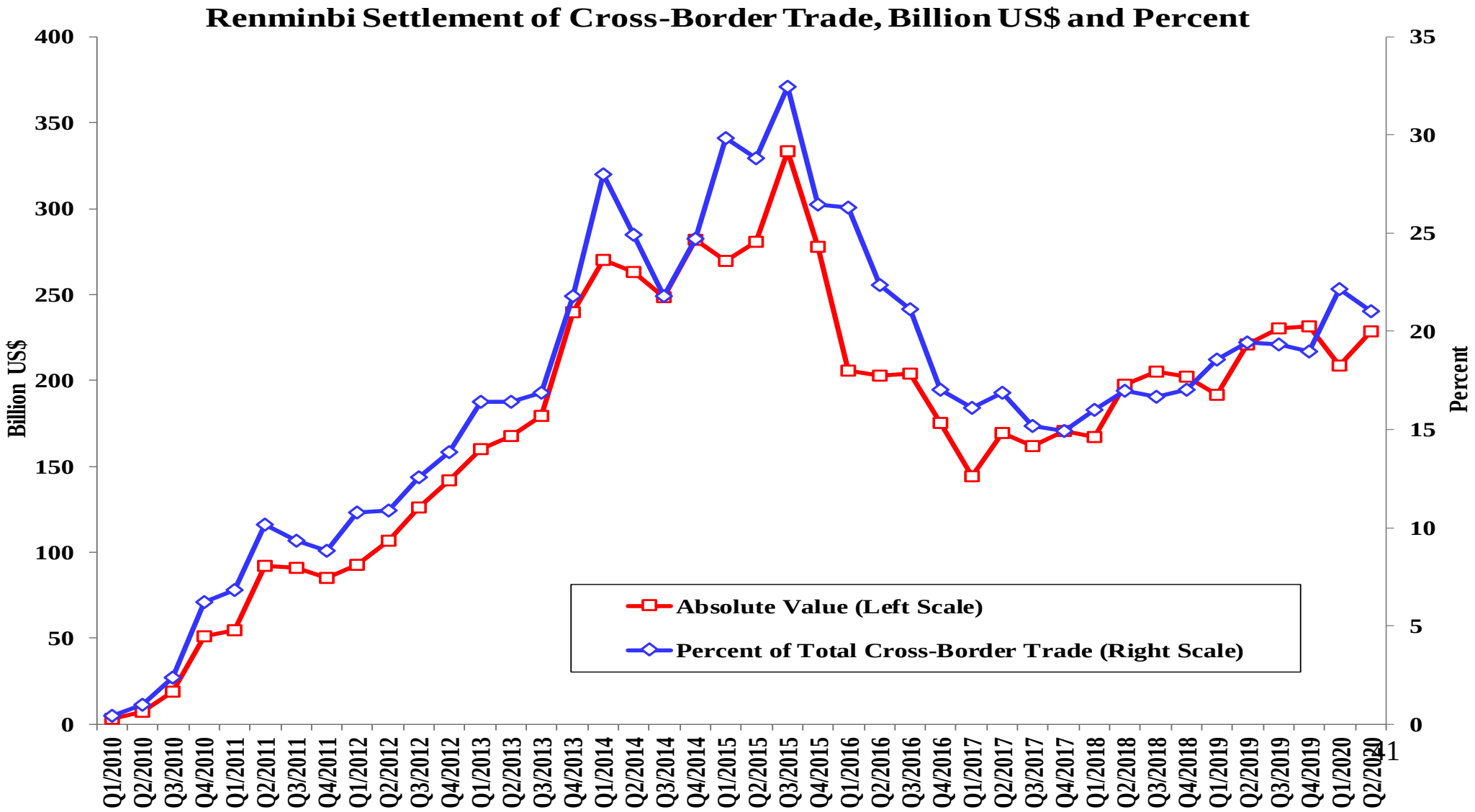
Educational Exchanges

- Another potential problem for the U.S. is the shortage of qualified graduate students. At the present time, graduate students in science and engineering at the top U.S. research universities are drawn from three main sources—China, India and Russia. Not admitting Chinese graduate students will reduce both the quality and the quantity of graduate enrollment in these fields significantly.
- The de-coupling of higher education may marginally have some adverse impact on Chinese graduate students as they will lose access to the more systematic U.S. model of research training.
- However, it is also possible that the de-coupling will lead to more Chinese scientists and engineers returning to China from the U.S.

De-Coupling of the International Clearing and Settlement System

- Before 2010, almost all Chinese international transactions were settled in U.S. Dollars.
- Then China began to try to settle part of its international trade transactions in Renminbi in 2010. The share of settlement in Renminbi began to rise and grew steadily until it reached a peak of 32.5% in mid-2015. Then, because of an abrupt devaluation of the Renminbi, it declined to just below 15% in 2017Q4. It has recently begun to recover, to 21.0% by the end of 2020Q2. There is a great deal of room for the Renminbi to expand its use in the settlement of Chinese international trade.
- In the medium to long run, China should encourage its trading-partner countries to settle in their own respective currencies rather than in U.S. Dollars. This can reduce exchange risks as well as transactions costs all around.
- China does not and should not aspire to replacing the U.S. Dollar, but should encourage the use of own currencies for settlement of international trade transactions by all countries, as was the case under the Bretton Woods agreement.

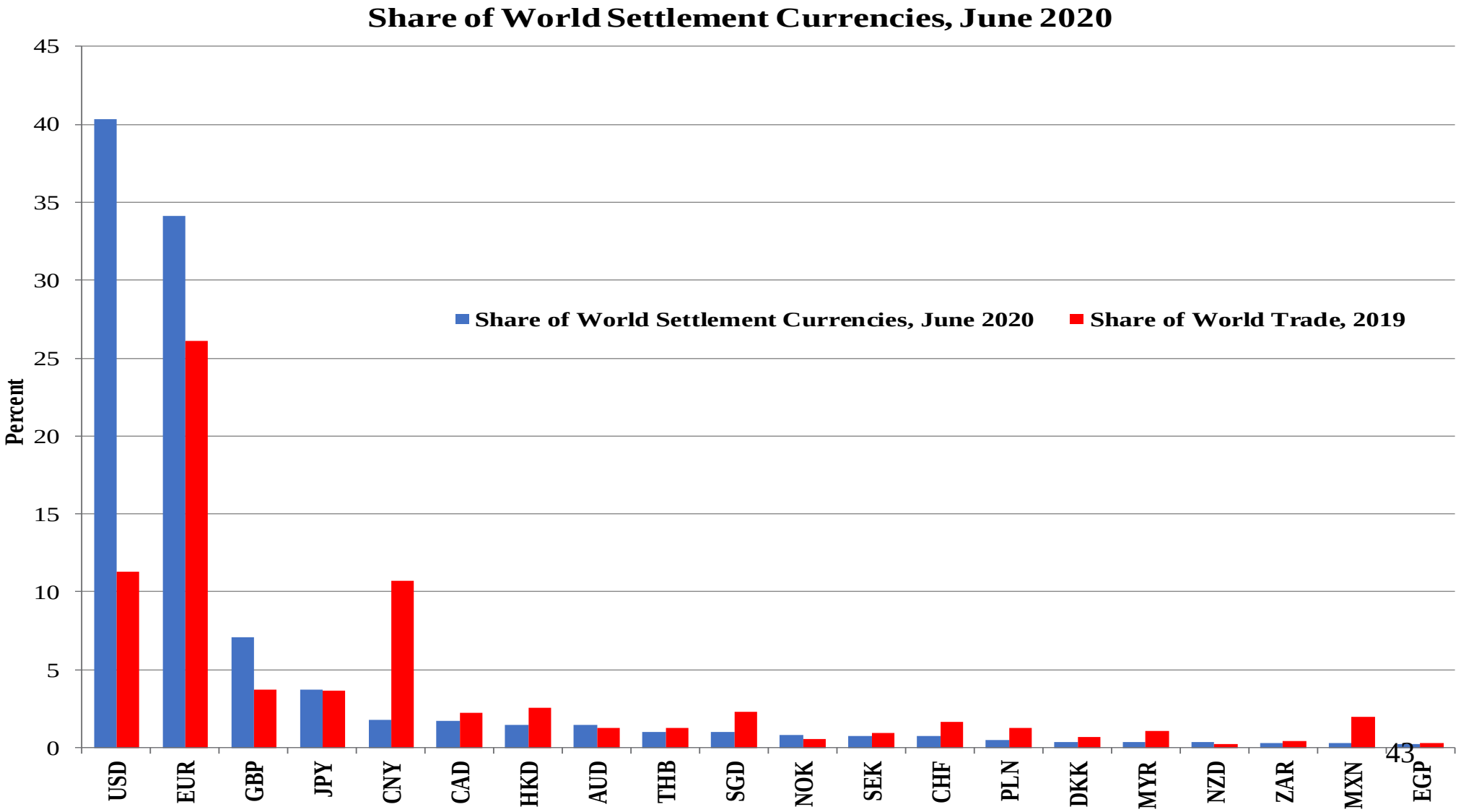
Renminbi Settlement of Chinese Cross-Border Trade, Billion US$ and Percent



De-Coupling of the International Clearing and Settlement System

- The U.S. Dollar is the most important medium of international exchange. It accounts for 40% of world settlement of all international transactions even though the U.S. accounts for only 11.3% of all international trade (including both goods and services) transactions. For most countries, international trade transactions constitute the bulk of their international transactions, but this is not true of major international investors such as the U.S. and Japan.
- In contrast, even though China accounts for 10.7% of all international trade, almost as much as the U.S., only 1.76% of all international transactions is settled in Renminbi.
- By comparison, Japan accounts for 3.7% of all international trade and its currency, the Japanese Yen, is used in the settlement of 3.7% of all international transactions.
- There is obviously a great deal of room for the use of the Renminbi to grow in the settlement of international transactions, especially international trade transactions.

The Shares of World Settlement by Currency and World Trade of the Issuer



De-Coupling of the International Clearing and Settlement System

- Many bilateral trading-partner countries invoice, clear and settle their international trade with the U.S. Dollar because they do not trust each other's currency.
- By supplying the world with the international medium of exchange, the U.S. derives seigneurage, called by some the "exorbitant privilege", similar to the seigneurage generated by central banks in their own countries. A government can simply print money and use it to purchase real goods in the economy.
- However, the U.S. did not always have this privilege. Under the Bretton Woods agreement created in 1944, all currencies are equal and relative exchange rates are set at fixed parities to one another, subject to periodic adjustments that reflect their balance of payment conditions under the supervision of the International Monetary Fund (IMF).

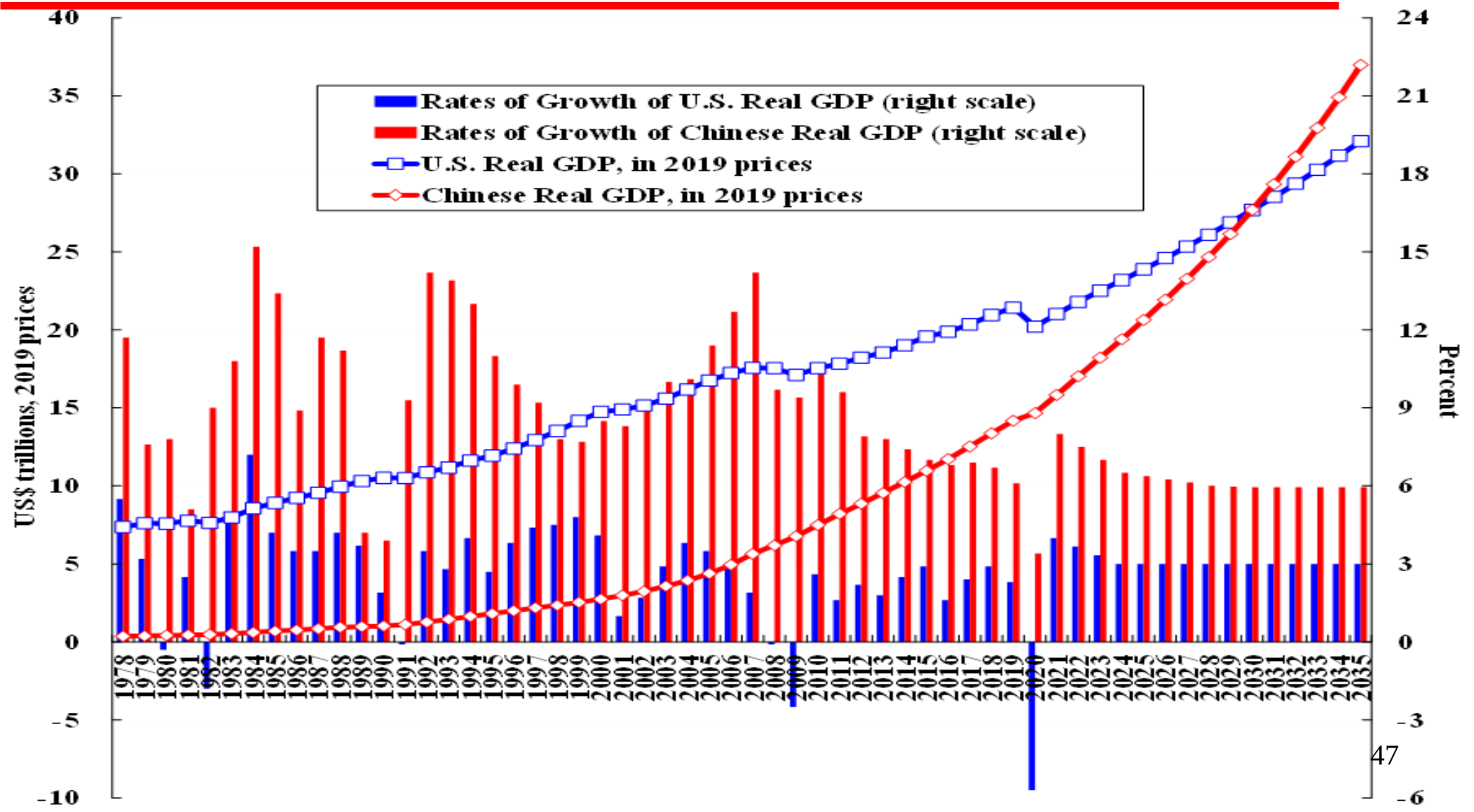
De-Coupling of the International Clearing and Settlement System

- The first step towards the internationalisation of the Renminbi is for China to persuade its trading-partner countries to use their own currencies to clear and settle their bilateral trade transactions. This will reduce both transactions costs (only one currency exchange) and exchange rate risks (only one exchange rate risk). The People's Bank of China (PBoC) should stand ready to buy or sell forward currencies at cost from or to bona fide exporters and importers to encourage the use of own currencies for clearing and settlement.
- The PBoC has developed the Cross-Border Interbank Payment System (CIPS) for the clearing and settlement of cross-border RMB payments which operates independently of the SWIFT system.
- The second step is to enable other countries to trade among themselves using their own currencies to clear and settle their bilateral trade transactions. The Bank for International Settlements experience in post-World War II Western Europe provides an example of how this can be done, to the benefit of all participating countries. China, possibly together with Japan and the Republic of Korea, can form a Bank for East Asian Settlements for this purpose.
- The Renminbi should not aspire to replace the U.S. Dollar, certainly not any time soon, especially since China does not wish to run a large trade deficit.

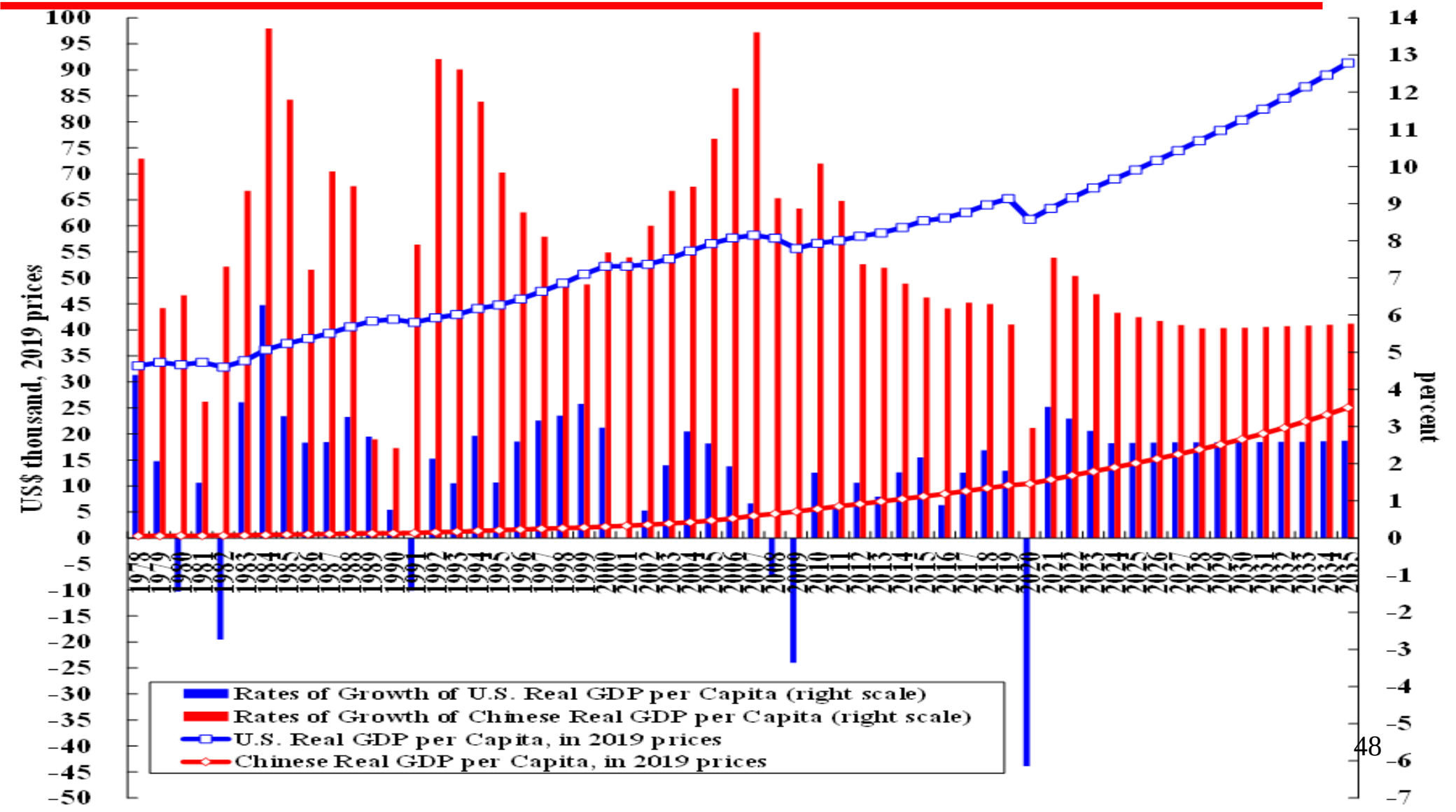
Projected Rates of Growth of Real GDP in China and the U.S., 2020 and 2021 (% p.a.)

	Source of Projections					
	Lawrence J. Lau	IMF	The World Bank	OECD	A US Investment Bank	Chinese Academy of Sciences
China 2020 Projected	3.4	1.2	1.0	-2.6	2.3	2.8
China 2021 Projected	8.0	9.2	6.9	6.8	8.9	8.5
China 2020-2021 combined	11.4	10.4	7.9	4.2	11.2	11.3
U.S. 2020 Projected	-5.7	-5.9	-6.1	-7.3	-5.3	N.A.
U.S. 2021 Projected	4.0	4.7	4.0	4.1	3.4	N.A.
U.S. 2020-2021 combined	-1.7	-1.2	-2.1	-3.2	-1.9	N.A.

Actual and Projected Real GDPs (2019 US$) and Their Rates of Growth: China and the U.S.



Actual and Projected Real GDPs per Capita and Their Rates of Growth: China and the U.S.



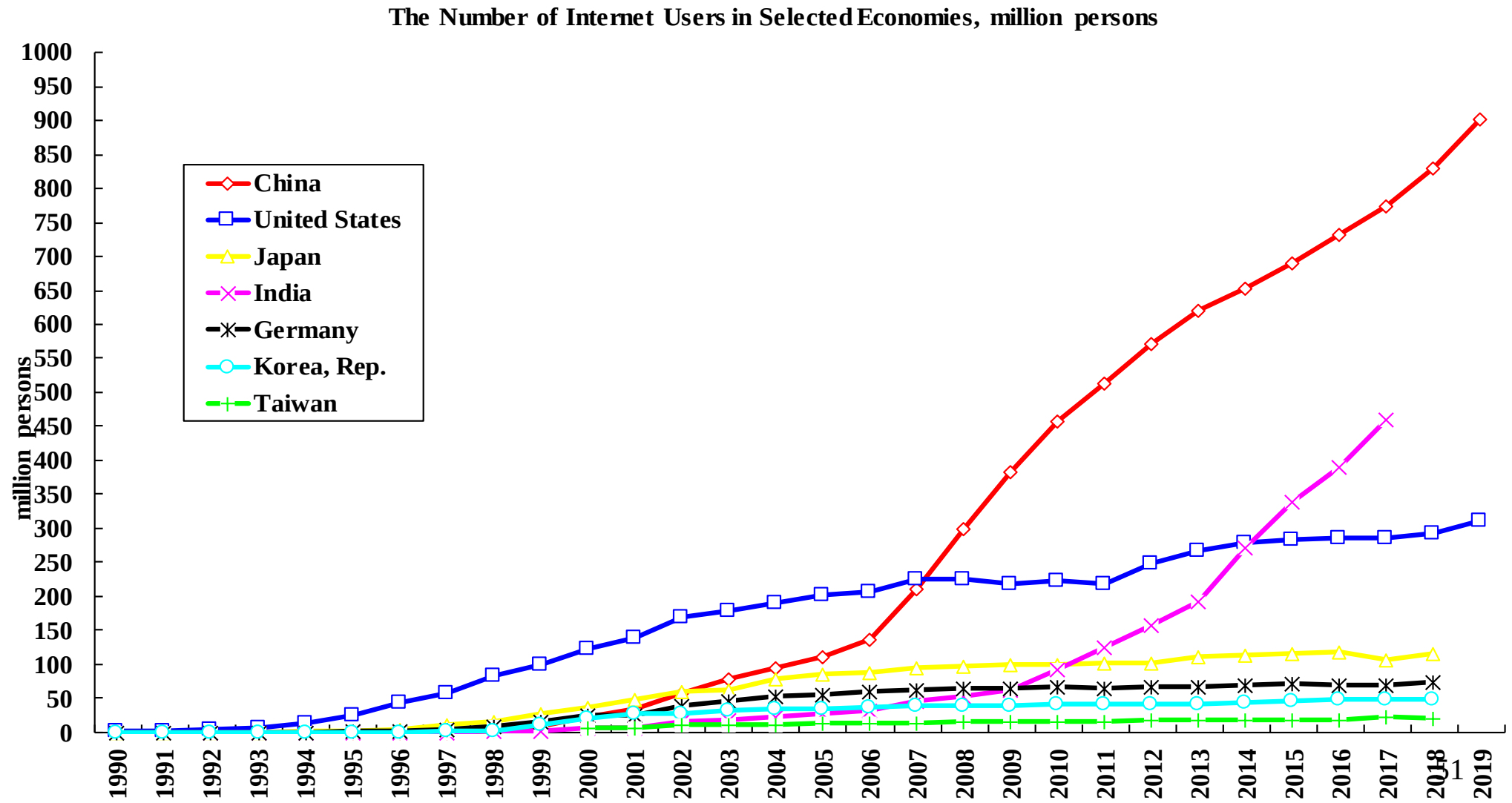
Long-Term Forecasts of the Chinese and the U.S. Economies

- Our projections suggest that in 2030, the Chinese aggregate real GDP (US$27.70 trillion in 2019 prices) is likely to just barely edge out the U.S. aggregate real GDP (US$27.69 trillion in 2019 prices). The implied average real rates of growth between 2019 and 2030 are 6.08% for China and 2.33% for the U.S., reflecting the fact that the Chinese economy will continue to grow in 2020 at a projected 3.4% whereas the U.S. economy will contract approximately 5.7% in 2020.
- However, because the Chinese population is approximately 4 times that of the U.S., by 2030, the projected U.S. GDP per capita of US$80,400 will still be more than four times the projected Chinese GDP per capita of US$19,000.
- Chinese real GDP per capita will lag behind that of the U.S. until at least the end of the 21st Century.

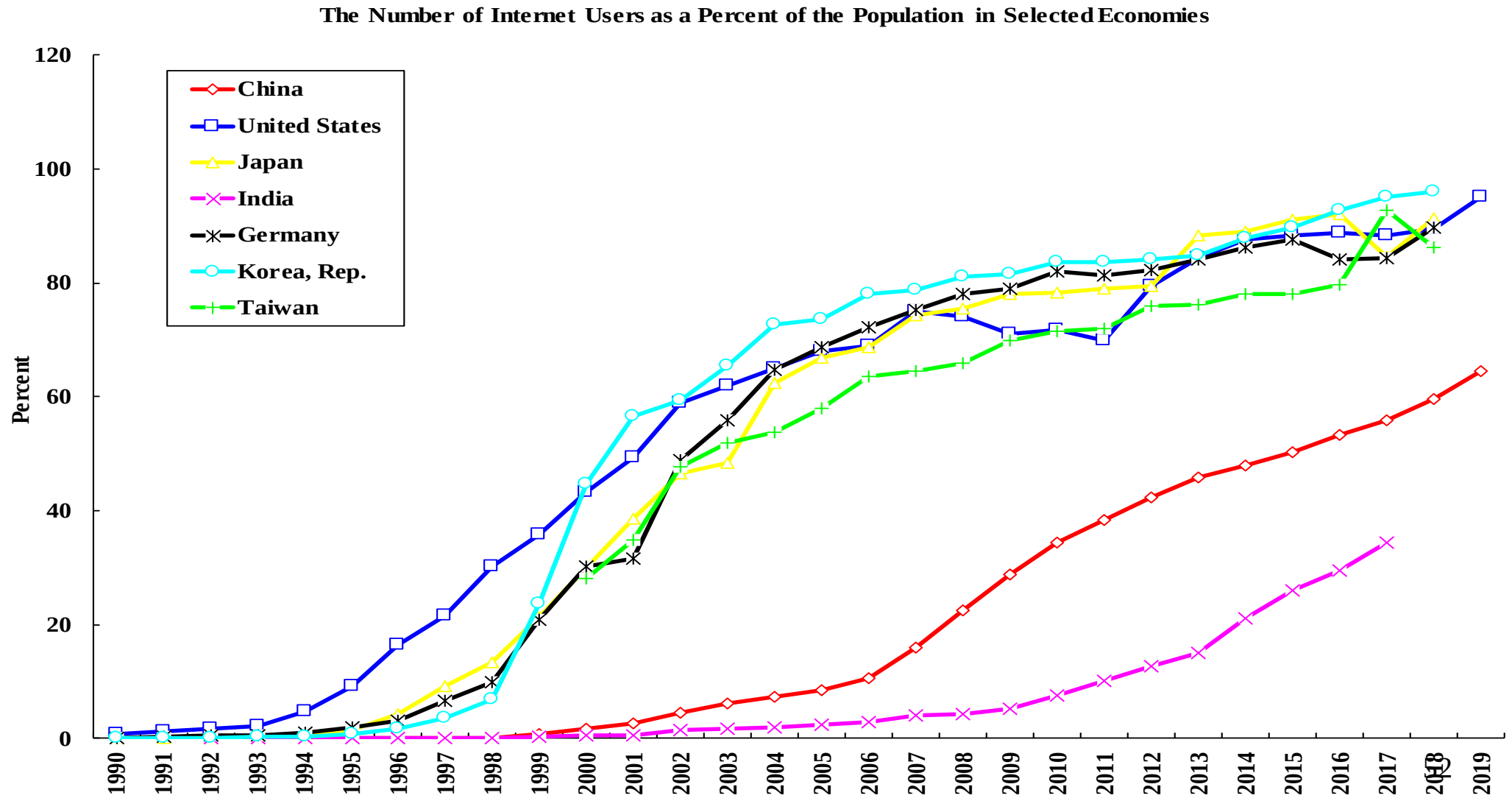
Technological Competition

- The long-term determinant of the outcome of technological competition is the capacity for innovation. China has the same advantages as the U.S. in terms of the economies of scale, opportunities for learning-by-doing, and large number of individuals in the upper tail of the ability distributions.
- China has been very successful in terms of adoption of new technologies for domestic applications, taking advantage of its initial relative backwardness and the scale of its huge domestic market. The result is "creation without destruction".
- A prime example is the almost universal use of the mobile telephone in China today, without the destruction of the enterprises that supply the fixed-line telephone service.
- A second example is the rapid implementation of the cashless direct payment systems such as Alipay and WeChat Pay, based on the cell phone, taking advantage of the fact that Chinese citizens have never had personal checking accounts.
- A third example is the construction of high-speed trains and railroads. China today has the largest high-speed railroad network in the world.

The Number of Internet Users in Selected Economies



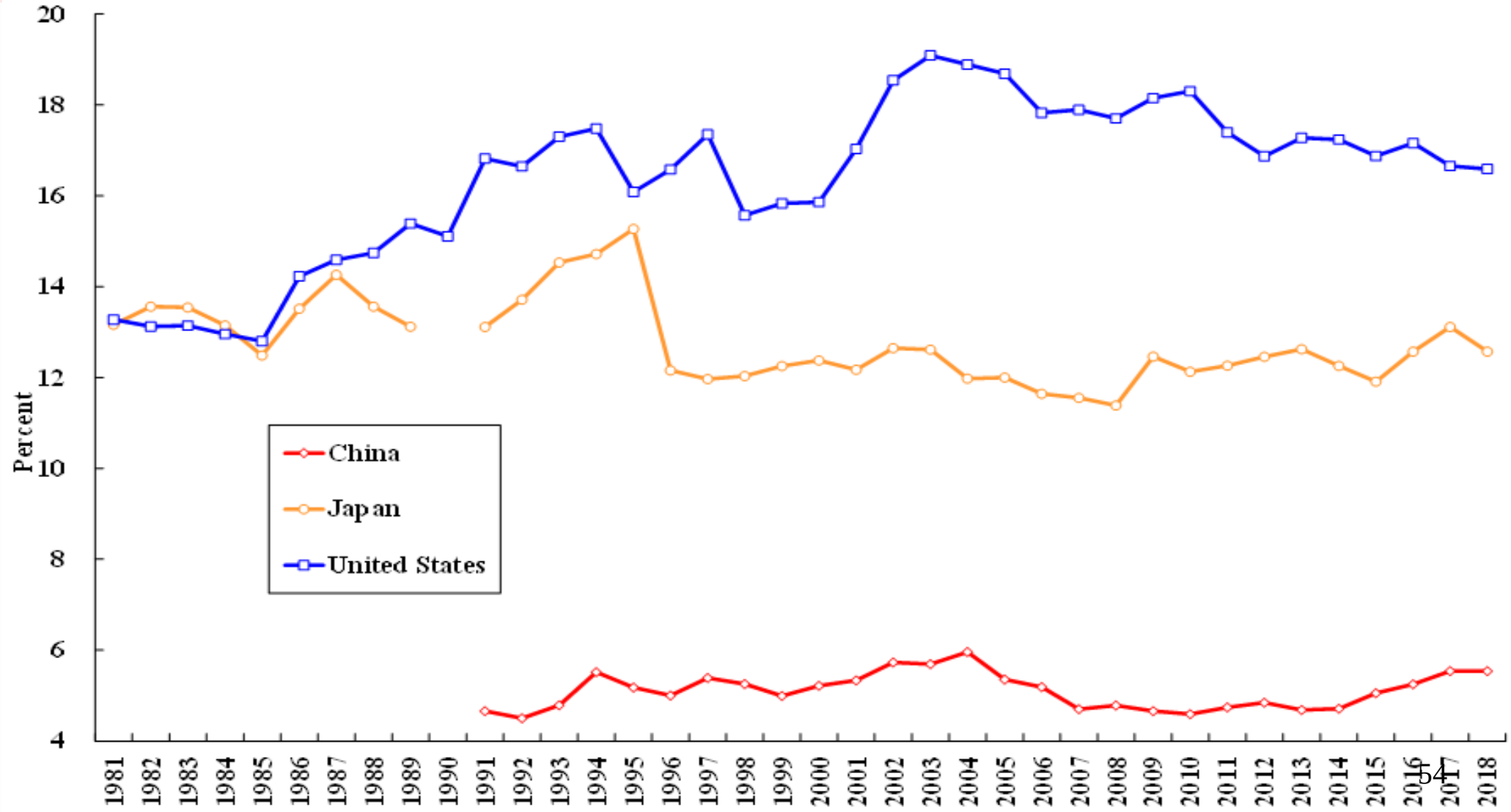
The Number of Internet Users as a Percent of the Population in Selected Economies



Technological Competition

- However, in order for break-through discoveries or inventions to be made, there must be significant investment in basic research. The atomic and hydrogen bombs, the nuclear reactors, and the internet are all outcomes of basic research done many, many years ago.
- Basic research is by definition patient and long-term research. The direct internal rate of return, at any reasonable discount rate, will be low. It must therefore be financed by either the government, or non-profit institutions, or monopolies such as AT&T in the U.S. before it was broken up and Xerox Corp. with the world's only plain-paper copier at the time, and not by for-profit firms.
- However, China devoted only about 5% of its R&D expenditures to basic research, compared to Japan's 12% and the U.S.'s more than 15%.
- The U.S. today has a commanding lead in many basic scientific disciplines, reflected in for example, the cumulative number of Nobel Laureates. Of course, China is ahead in selected fields. For example, Huawei is a global leader in 5G telecommunication technology. China has also made great progress in a few areas, including artificial intelligence (AI) applications, quantum communication and satellite navigation (Beidou Navigation Satellite System (BNSS)).

Basic Research Expenditure as a Percent of Gross Expenditure on R&D



Will the Competition between China and the U.S. Lead to a War?

- Prof. Graham Allison of Harvard University has written a book, titled Destined for War, about the inevitability of a war between China and the U.S. He refers to this "inevitability" as the "Thucydides' Trap (修昔底德陷阱)", that as a rising power challenges the dominance of an established power, the established power is likely to respond with force, drawing on the book by Thucydides, History of the Peloponnesian War, which was fought between Athens and Sparta in ancient Greece (431-404 B.C.).
- However, the rise of the former Soviet Union between the end of the Second World War and its dissolution in 1991 provides a counter-example. The truth is that a thermonuclear war today is so devastating that there are effectively no real winners, only losers. It is this "mutually assured destruction (MAD)" that prevented the former Soviet Union and the U.S. from going to war and instead induced them to enter into a number of arms control treaties such as the Anti-Ballistic Missile (ABM) Treaty. And it will similarly prevent wars between major powers in the future.

Will the Competition between China and the U.S. Lead to a War?

- It is also important to distinguish between the rivalry between the U.S. and the former Soviet Union with the competition between China and the U.S. The former was existential, as the former Soviet Union would like to impose its Communist system of government on other countries. China has no intention of proselytising its ideology or system of government to other countries. Hence the China-U.S. competition is non-existential. China's rise does not threaten U.S.'s existence.
- If even the former Soviet Union and the U.S. did not go to war, there is no reason for China and the U.S. to go to war.
- However, both China and the U.S. have to learn how to treat a friendly country as an equal. This is probably what Chinese President Xi Jinping has in mind as "a new model of major-power relations", the basic elements of which consist of "mutual respect, coordination, cooperation, and mutual benefit".

Concluding Remarks

- The potential competition and rivalry between China and the U.S. on many fronts is likely to be the "new normal" in the next decade or two. The challenges brought about by the COVID-19 epidemic have probably exacerbated the situation.
- However, a hot war between the two countries seems unlikely and unnecessary. If even the former Soviet Union and the U.S. did not go to war in the last century, there is little reason for China and the U.S. to do so. However, China-U.S. relations must be managed with care.
- China and the U.S. are complementary to each other economically. If they cooperate and coordinate with each other, they will both benefit greatly and it will be win-win.
- Moreover, with the two largest economies working together, they can solve many of the world's pressing problems, such as controlling the pandemics, ameliorating climate change, preventing further nuclear proliferation, reform of the World Trade Organisation (WTO), and the economic development of Africa, and in so doing benefitting not only themselves but also all mankind.