

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

by

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

Lawrence J. Lau¹

August 2020

Abstract: The China-U.S. trade war, which began in mid-2018 and is still ongoing despite an interim “Phase 1” truce, and the COVID-19 epidemic, have impacted the rates of growth of both the Chinese and the U.S. economies. The trade war lowered the Chinese rate of growth from 6.7% in 2018 to 6.1% in 2019, but the COVID-19 epidemic has lowered the rate further to a projected 3.4% in 2020. The trade war caused only a very slight decline in the rate of growth of the U.S. economy in 2019 but the COVID-19 epidemic has resulted in a projected contraction of the U.S. economy in 2020 of more than 5%.

As of 31 July 2020, the U.S. had more than 4.7 million cumulative COVID-19 confirmed cases and 156 thousand cumulative deaths, compared to less than 85,000 cumulative cases and less than 4,650 cumulative deaths for the Mainland of China. The total loss of Chinese GDP due to the COVID-19 epidemic in 2020 may be estimated as US\$0.5 trillion, or 3.5% of the 2019 Chinese GDP. The total loss of U.S. GDP due to the epidemic may be estimated as US\$1.8 trillion, or 8.5% of the 2019 U.S. GDP.

The China-U.S. trade war and the COVID-19 pandemic have also brought to the forefront the possibility and desirability of a “de-coupling” of the two economies. In this paper, we address specifically the de-coupling of the capital markets and higher education between China and the U.S.

We present both short- and long-term projections of the Chinese and U.S. economies. We project that the Chinese economy will grow 3.4% in 2020 and 8% in 2021 and that the U.S. economy will contract by 5.7% in 2020 but will recover quickly to grow 4% in 2021. Our long-term projections suggest that the Chinese real GDP is likely to just barely edge out the

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U.S. GDP in 2030. However, the projected then U.S. GDP per capita of will still be more than four times the projected then Chinese GDP per capita.

The economic, technological and geo-political competition between China and the U.S. can be assumed to be an ongoing and long-term one. It is the “new normal” for the next decade or two. However, the China-U.S. competition is non-existential, unlike the rivalry between the former Soviet Union and the U.S., which was existential, so there is no reason why China and the U.S. cannot avoid a war between them as the U.S. and the former Soviet Union did.

Executive Summary

The China-U.S. trade war, which began in mid-2018 and is still ongoing despite an interim “Phase 1” truce, and the COVID-19 epidemic, have not only reduced Chinese growth rates (down to 6.1% for 2019 and 1.8% for the first half of 2020), but also led to the deterioration of China-U.S. relations to arguably the lowest point since 1971. The trade war lowered the Chinese rate of growth from 6.7% in 2018 to 6.1% in 2019, but the COVID-19 epidemic has lowered the rate further to a projected 3.4% in 2020. The trade war per se caused only a very slight decline in the rate of growth of the U.S. economy in 2019 but the COVID-19 epidemic has resulted in a projected contraction of the U.S. economy in 2020 of more than 5%.

The mutual imposition of tariffs by both the United States and China on each other’s imports, implemented in 2019, definitely had adverse impacts on both economies. In 2019, the ratio of Chinese exports of goods to the U.S. to Chinese GDP was 3.0%, compared to the ratio of U.S. exports of goods to China to U.S. GDP of 0.5%. Thus, the impacts of the tariffs were expected to be larger on the Chinese economy. However, the total (direct and indirect) domestic value-added content of U.S. exports was 89% compared to the 66% of Chinese exports. On the assumption that half of the Chinese exports to the U.S. was halted, it would imply a total loss of Chinese GDP of almost 1%, or approximately US\$135 billion (in 2019 prices, similarly for all other US\$ values). On the assumption that half of U.S. exports of goods to China was halted, it would amount to a loss of U.S. GDP of 0.22%, or approximately US\$47 billion, which is not that significant for the U.S. economy. If all Chinese exports to the U.S. cease, the maximum damage to the Chinese economy may be estimated to be approximately 1.9% of Chinese GDP. If all U.S. exports of goods to China cease, the loss of U.S. GDP may be estimated to be approximately 0.44%. Thus, in both absolute and relative terms, the potential costs of the trade war are higher for China than for 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	-1.90%
U.S.	-47	-0.22%	-94	-0.44%

As of 31 July 2020, the U.S. had more than 4.7 million cumulative COVID-19 confirmed cases and 156 thousand cumulative deaths, the highest such numbers of any country in the world, compared to less than 85,000 cumulative cases and less than 4,650 cumulative deaths for the Mainland of China, which has four times the population of the U.S. On 31 July 2020, the U.S. population infection and population mortality rates were 14,301 and 476 per million persons respectively, compared to China’s 60.2 and 3.3. The total loss of Chinese GDP due to the COVID-19 epidemic in 2020 may be estimated as US\$0.5 trillion, or 3.5% of the 2019 Chinese GDP of US\$14.2 trillion. The total loss of U.S. GDP due to the epidemic may be estimated as US\$1.8 trillion, or 8.5% of the 2019 U.S. GDP of US\$21.4 trillion. The costs of the COVID-19 epidemic in terms of human lives are much lower in China than in the U.S. in both absolute and relative terms. The losses in terms of foregone GDP are also lower for China than for the U.S. in both absolute numbers and percentages.

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

	Loss of GDP (2020)		Loss of Lives (up to 31 July 2020)	
	US\$ Trillion	Percent of GDP	Number (thousands)	Percent of Population
China	0.5	3.5%	4.7	0.0003%
U.S.	1.8	8.5%	156	0.0480%

The China-U.S. trade war and the COVID-19 pandemic have also brought to the forefront the possibility and desirability of a “de-coupling” of the two economies. Any major country will want to avoid being overly dependent on another country for the supply of a critical raw material, component, part or technology because of the potential disruption of the economy that an interruption of such supply may cause. Economic de-coupling per se can be costly, but may also bring benefits. The availability of an alternate second source can prevent monopolisation, reduce monopoly power, and lead to a more stable and more competitive world economy for the benefit of all consumers.

In this paper, we address specifically the de-coupling of the capital markets and higher education between China and the U.S. First, we consider capital markets. 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 corresponding percentages were 7%, 12% and 81%. The Chinese domestic capital market has already become the most

important funding source for Chinese enterprises. 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. The importance of New York as a source of equity capital to Chinese enterprises has greatly diminished. De-coupling of the capital markets will not have a large impact on the Chinese economy.

Second, we consider higher education. There are currently approximately 360,000 Chinese students enrolled in various institutions of higher learning in the U.S. Their annual expenditures may be conservatively estimated to be US\$18 billion. Moreover, the leading U.S. universities have had first choices on the best eighteen-year-olds from China. A de-coupling will put an end to the educational exchange. 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.

We present both short- and long-term projections of the Chinese and U.S. economies. We project that the Chinese economy will grow 3.4% in 2020 as a whole and 8% in 2021. We project that the U.S. economy will contract by 5.7% in 2020 but will recover quickly to grow 4% in 2021. Our long-term projections suggest that the Chinese real GDP (US\$27.70 trillion) is likely to just barely edge out the U.S. GDP (US\$27.69 trillion) in 2030. However, the projected then U.S. GDP per capita of US\$80,400 will still be more than four times the projected then 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.

China-U.S. relations chilled further with the recent closure of the Chinese Consulate-General in Houston, ordered by the U.S., and the subsequent closure of the U.S. Consulate-General in Chengdu by China in retaliation. The economic, technological and geo-political competition between China and the U.S., whether friendly or unfriendly, can be assumed to be an ongoing and long-term one. It is the “new normal” for the next decade or two. The trade dispute and the dispute on the origin of the COVID-19 virus are only manifestations of the underlying potential competition between the two countries for dominance in the world.

Will the competition between China and the U.S. lead to a war? China has no intention of proselytising its ideology or system of government to other countries, least of all the U.S. Hence the China-U.S. competition is essentially non-existential, unlike the rivalry between the former Soviet Union and the U.S., which was existential. If even the former Soviet Union and the U.S. could avoid going to war in the last century, there is no reason why China and the U.S. cannot avoid a war between them. However, the relations between the two countries must be carefully managed going forward.

1. Introduction

The China-U.S. trade war,² which began in mid-2018 and is still ongoing despite an interim “Phase 1” truce, and the COVID-19 epidemic,³ have not only reduced Chinese growth rates (down to 6.1% for 2019 and 1.8% for the first half of 2020), but also led to the deterioration of China-U.S. relations to arguably the lowest point since 1971. The trade war lowered the Chinese rate of growth from 6.7% in 2018 to 6.1% in 2019, but the COVID-19 epidemic has lowered the rate further to a projected 3.4% in 2020. The trade war per se caused only a very slight decline in the rate of growth of the U.S. economy in 2019 but the COVID-19 epidemic has resulted in a projected contraction of the U.S. economy in 2020 of more than 5% (see Section 7 below).

China-U.S. relations chilled further with the recent closure of the Chinese Consulate-General in Houston, ordered by the U.S., and the subsequent closure of the U.S. Consulate-General in Chengdu by China in retaliation. The economic, technological and geo-political competition between China and the U.S., whether friendly or unfriendly, can be assumed to be an ongoing and long-term one. It is the “new normal” for the next decade or two. The trade dispute and the dispute on the origin of the COVID-19 virus are only manifestations of the underlying potential competition between the two countries for dominance in the world.

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

The strategy of engagement with China, initiated by the late U.S. President Richard Nixon and Dr. Henry Kissinger in 1971, has brought benefits to both China and the U.S. The China-U.S. rapprochement hastened the dissolution of the former Soviet Union, the major adversary of the U.S. from the end of World War II to its dissolution in 1991. Chinese entry into the World Trade Organisation (WTO) in 2001 has greatly benefitted China, enabling a couple hundreds of millions of its rural residents to become urban industrial workers in export-oriented industries. This has resulted in more than 800 millions of Chinese people being lifted out of poverty (according to current Chinese standards). The U.S. has also benefitted

² For a discussion of the early phases of the China-U.S. trade war, see Lawrence J. Lau, The China-U.S. Trade War and Future Economic Relations, Hong Kong: The Chinese University of Hong Kong Press, 2019.

³ For an analysis of the COVID-19 epidemic in China, see Lawrence J. Lau and Yanyan Xiong, The COVID-19 Epidemic in China, Singapore: The World Scientific Publishing Company, 2020, forthcoming.

enormously—China has become one of the largest markets, if not the largest market, for U.S. firms such as Apple, General Motors, Intel, McDonald's, Qualcomm, Starbucks and Walmart.⁴ U.S. imports from China has helped to keep U.S. consumer prices and hence U.S. inflation low for twenty years.⁵ It is true that China did run a large trade surplus vis-a-vis the U.S., which resulted in a huge increase in China's foreign exchange reserves (to over US\$4 trillion at one time).⁶ However, much of the Chinese foreign exchange reserves has been used to purchase U.S. government securities, which may be interpreted as credit extended by China to the U.S. for its payment of Chinese imports. Thus, the U.S. has been able to use its government bonds, which it can print at will, to exchange for real Chinese goods, which is undoubtedly a benefit to the U.S.

If the U.S. has also benefitted significantly from the engagement strategy, why has it changed the strategy to one of containment? We should note that the containment strategy did not originate with U.S. President Donald Trump. The “pivot to Asia” policy and the “Trans-Pacific Partnership (TPP)”⁷, both intended at least in part to contain and perhaps to isolate China, were proposed by the administration of former U.S. President Barack Obama, but were abandoned by President Trump. However, it should be clear that the containment strategy, at least conceptually, commands bi-partisan support in the U.S. today.

First of all, the influence of the military-industrial complex in the U.S., which was first identified by the late U.S. President Dwight Eisenhower in his farewell address to the nation in 1961, has always been very strong. This is an informal alliance of the national defense establishment, the military, and the producers and suppliers of armaments and military equipment in the U.S. 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. They like armed conflicts and wars so that the weapons and materiel that they produce can be

⁴ Apple manufactured its iPhones and General Motors its Buick automobiles in China, Qualcomm collected its royalties from China through offshore tax-havens such as Ireland and the Netherlands, and Walmart both sourced and sold its goods in China. None of their revenues from China show up in China-U.S. trade statistics as U.S. exports.

⁵ See Lawrence J. Lau and Junjie Tang, “The Impact of U.S. Imports from China on U.S. Consumer Prices and Expenditures,” Working Paper No. 66, Lau Chor Tak Institute of Global Economics and Finance, The Chinese University of Hong Kong, April, 2018.

⁶ Official Chinese foreign exchange reserves currently stands at approximately US\$3 trillion, of which approximately US\$1 trillion is held in the form of U.S. Treasury and Agency securities.

⁷ After the withdrawal of the U.S. from the TPP, it became the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) led by Japan and signed by all the original participants except the U.S.

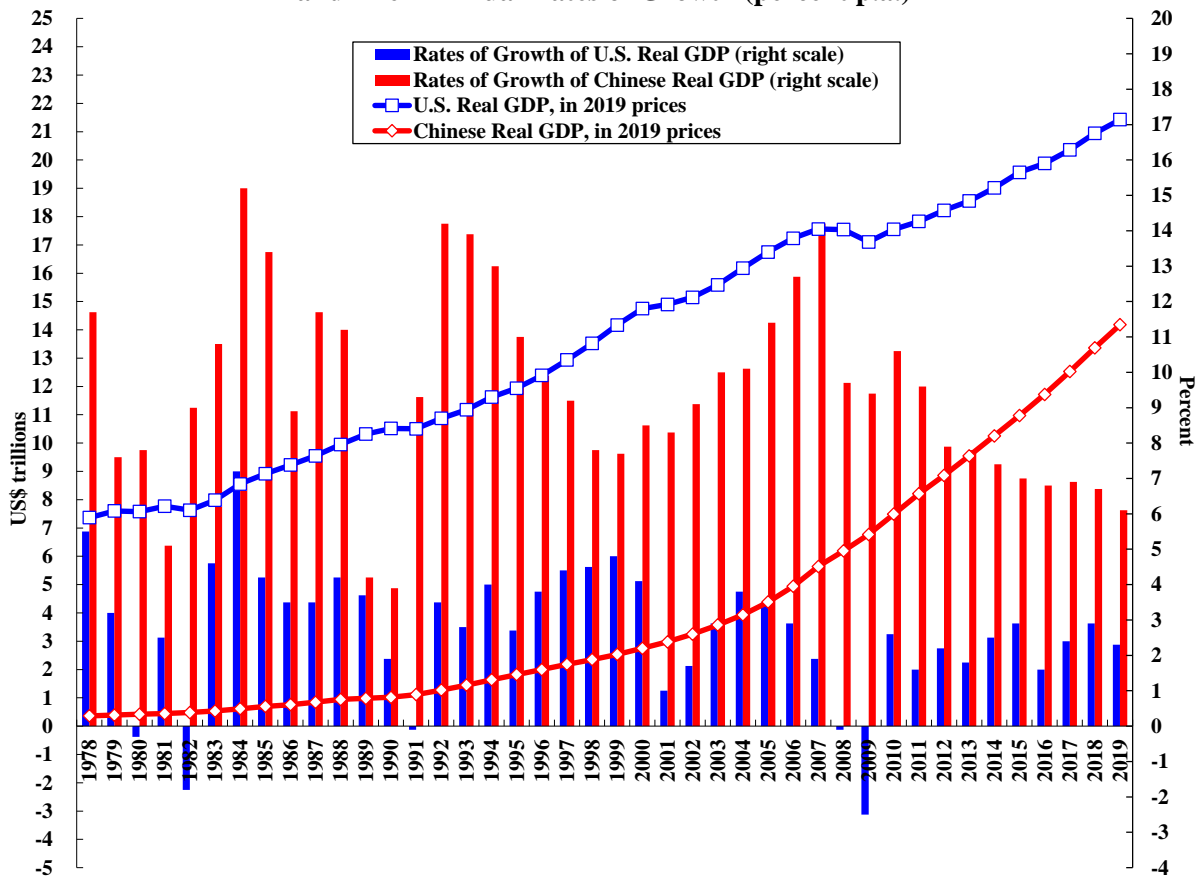
sold, consumed and then replenished. They also want to sell more weapons and military hardware to other countries around the world. The enemy used to be the former Soviet Union between 1946 and 1991 and now it is China.

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. Moreover, the rise of China as a potential economic competitor has been extraordinarily and unexpectedly rapid. In 2000, Chinese GDP was only 18.7% of U.S. GDP; by 2019, Chinese GDP was 66.2% of U.S. GDP. During the same period, the Chinese economy grew at an average annual real rate of 9.0% compared to the U.S.'s 2.1% (see Chart 2-1). If the current trend continues, the aggregate Chinese GDP would reach parity with the aggregate U.S. GDP around 2030, even though the then Chinese GDP per capita would still be less than one quarter of the then U.S. GDP per capita (see Section 7). With this expected relative decline of U.S. economic influence and power in the world, the benefits of seigniorage to the U.S., as the provider of the international medium of exchange to the world, will also be gradually eroded.⁸ 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, quantum communication and satellite navigation.⁹

⁸ The U.S. has also been able to exploit the predominance of the U.S. Dollar for international settlement purposes as a weapon of unilateral control and enforcement, by threatening to cut off foreign firms and even countries from the use of the U.S. Dollars for settlement.

⁹ China's own Beidou Navigation Satellite System, an alternative to the U.S.'s Global Positioning System (GPS), has been in full operation since late June 2020.

Chart 2-1: The Real GDPs of China and the U.S. (trillion 2019 US\$) and Their Annual Rates of Growth (percent p.a.)



Some people in the U.S. perceive these developments as a potential threat to U. S. hegemony going forward and would therefore like to slow down or even prevent China’s rise if possible. In any case, the engagement strategy has now been turned into a containment strategy, and this change has substantial support among both Democrats and Republicans in the U.S. at this time. Regardless of the outcome of the U.S. presidential election in November 2020, this situation is unlikely to change in the near future.

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. They have been disappointed by the removal of the term limit for the presidency in the Chinese Constitution.¹⁰ They are not inclined to support the current Chinese administration.

¹⁰ Even though the presidency itself has very little real power, which is resided in the General Secretary of the Chinese Communist Party.

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 been considerably strengthened since 2014). They have mostly remained passive in the trade war and in the COVID-19 disputes between the two countries.

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 also 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 may also conveniently boost support for the re-election of the Commander-in-Chief. It is hoped that both China and the U.S. will exercise appropriate restraint during this period.

3. The Underlying Trends in the Chinese Economy

First, let us note an important global trend, economic de-globalisation, which affects every country, large and small. The world, driven by nationalism, populism, and protectionism, and also by the COVID-19 pandemic, has been undergoing a round of economic de-globalisation. Global trade has been contracting instead of growing. This is likely to be the new normal for the world over the next few years.

Since the 1960s, economic globalisation has brought huge benefits to the world, and to every country which participates in it, including both China and the U.S. However, the benefits have accrued to each country as a whole; but unfortunately, within each country, economic globalisation has also created both winners and losers. The winners are, for example, the export industries and their owners and workers, the international traders, and the consumers and users of imports; and the losers are the domestic industries which face competition from the imports, and their owners and workers. Economic globalisation actually generates sufficient gains in each country so that everyone in every country can in principle be made better off. But the free market can and will only reward the winners but cannot compensate the losers. It is the responsibility of each government to compensate the losers in its own country through transfer payments and re-training and re-employment programmes.

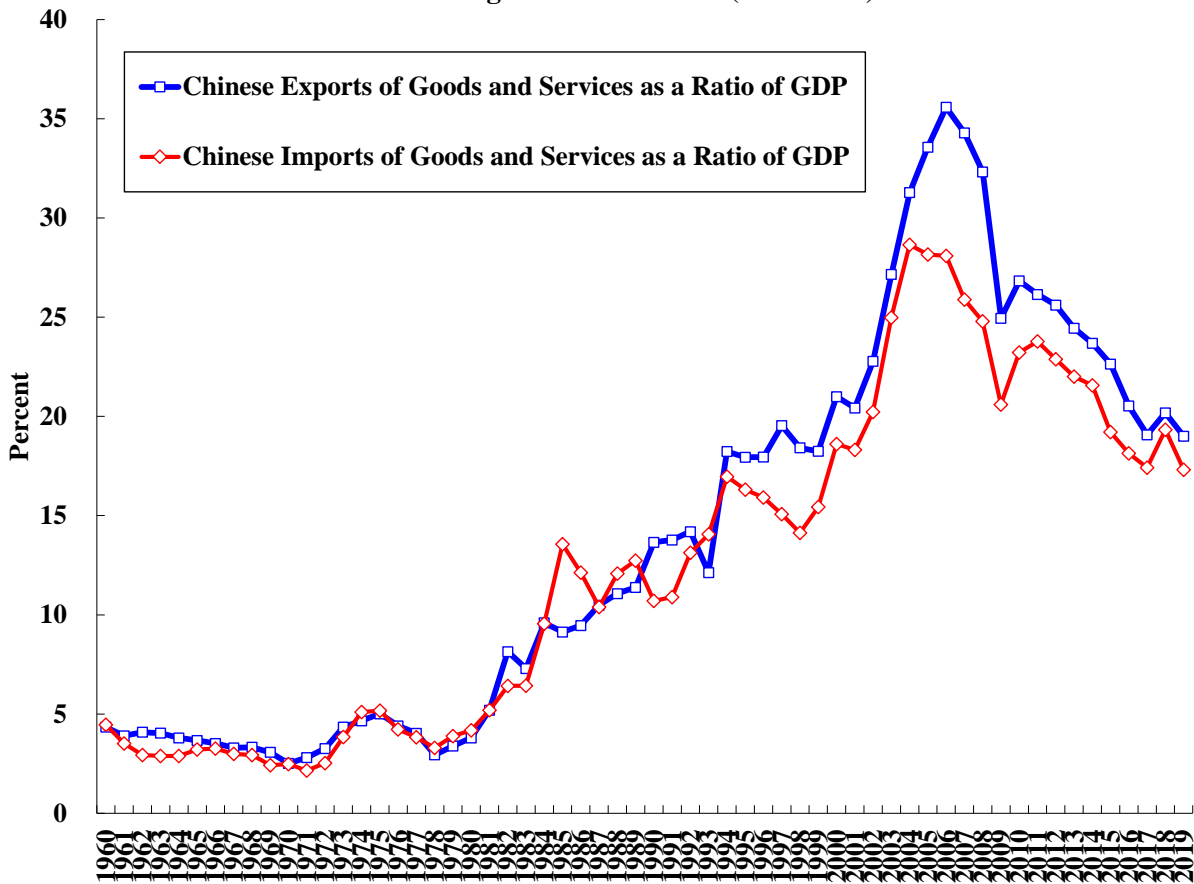
But very few governments have done so adequately.¹¹ It is the failure, over a long period of time, of governments to compensate the losers from economic globalisation that has led to the rise of populism, protectionism and isolationism worldwide. Today, the losers—the people who have been left behind by economic globalisation all these years—want to reverse economic globalisation, put up trade barriers and bring the lost jobs back. These sentiments have been manifested almost everywhere around the world, and recently especially in the U.K. and the U.S. This is also why a trade war enjoys domestic popular support. Instead of blaming themselves for failing to compensate the losers, for example, through subsidies or retraining, most governments try to blame the countries from which the imports have come. The COVID-19 pandemic, which caused major disruptions of global supply chains, has further reinforced the call for isolation and economic de-globalisation.

The Declining Importance of International Trade and Investment for China

In the 1950s and continuing through the 1960s, there was an international trade embargo against China by the United States and the West. International trade and investment did not become important for the Chinese economy until 1978, when China began its economic reform and opened to the world. Since then, Chinese international trade has grown rapidly (see Chart 3-1). China also applied to join the WTO in the mid-1980s as part of its export-promotion development strategy. It finally acceded to the WTO in 2001, after prolonged negotiations with the United States and other countries. The growth of Chinese international trade further accelerated after its accession to the WTO. However, since 2012, the rate of growth of its international trade has declined significantly. At the same time, the Chinese trade surplus as a share of its GDP has also fallen from a peak of 8.4% in 2007 to less than 1.2% in 2019.

¹¹ China may be considered one of the few exceptions.

Chart 3-1: Chinese Exports and Imports of Goods and Services as a Percentage of Chinese GDP (1960-2019)

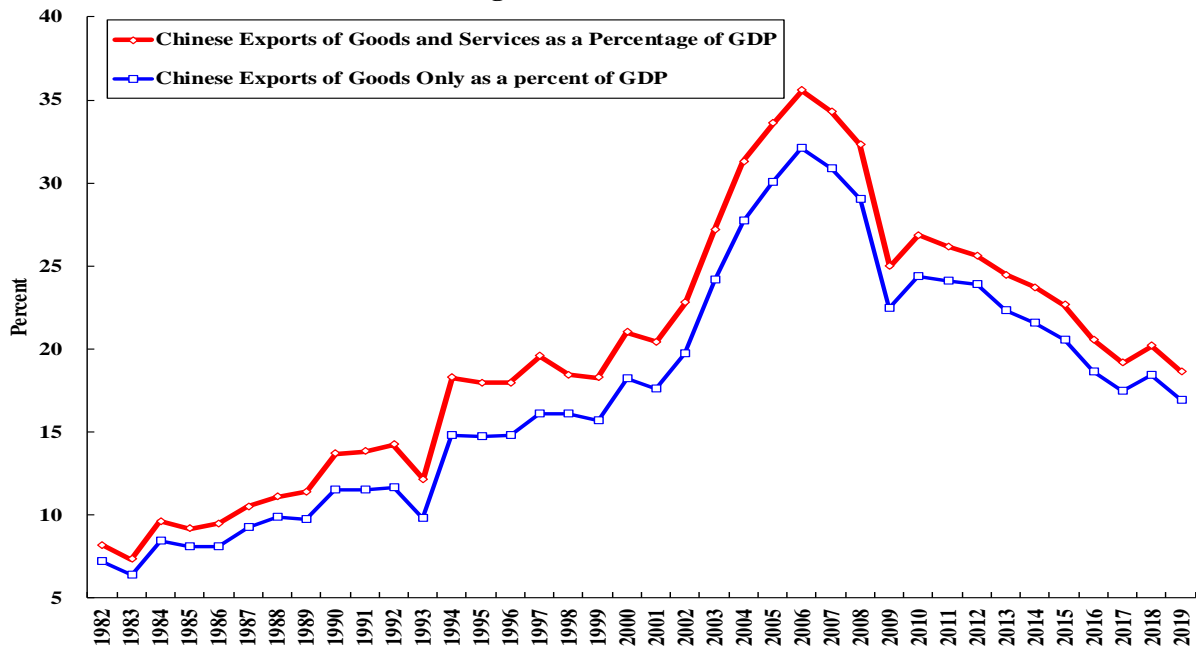


Source: The National Bureau of Statistics, People's Republic of China.

With the economic de-globalisation as a back-drop, China is relatively fortunate that the importance of international trade and investment to its economy has been declining over time. The highly successful Chinese economic development of the past four decades has created a large and growing middle class in China, with huge latent demands for all sorts of consumer goods and services. As a result, the Chinese economy has been undergoing a rapid transformation from being exports-driven to domestic-demand-driven, and from being the world's factory to also the world's market. Moreover, the Chinese economy has been moving up the value chain. The manufacturing of products such as garments, shoes and stuffed toys has begun to migrate to Vietnam, Bangladesh and other Southeast Asian countries. The shares of exports in its GDP and inbound foreign direct investment (FDI) in its gross domestic investment have all been falling for quite a while. In 2019, the ratio of Chinese exports of goods and services to Chinese GDP was 18.6%, and that of goods only was 16.9%, about half of their respective peak values of 35.6% and 32.1% in 2006 (see Chart 3-2). And since the total (direct plus indirect) value-added content of Chinese exports of goods is approximately

66%, the contribution of exports of goods to Chinese GDP may be estimated to be approximately 11.2%, significant, but not overwhelmingly important.

Chart 3-2: Chinese Exports of Goods and Services and Goods Only to the World as a Percentage of Chinese GDP (1982-2019)

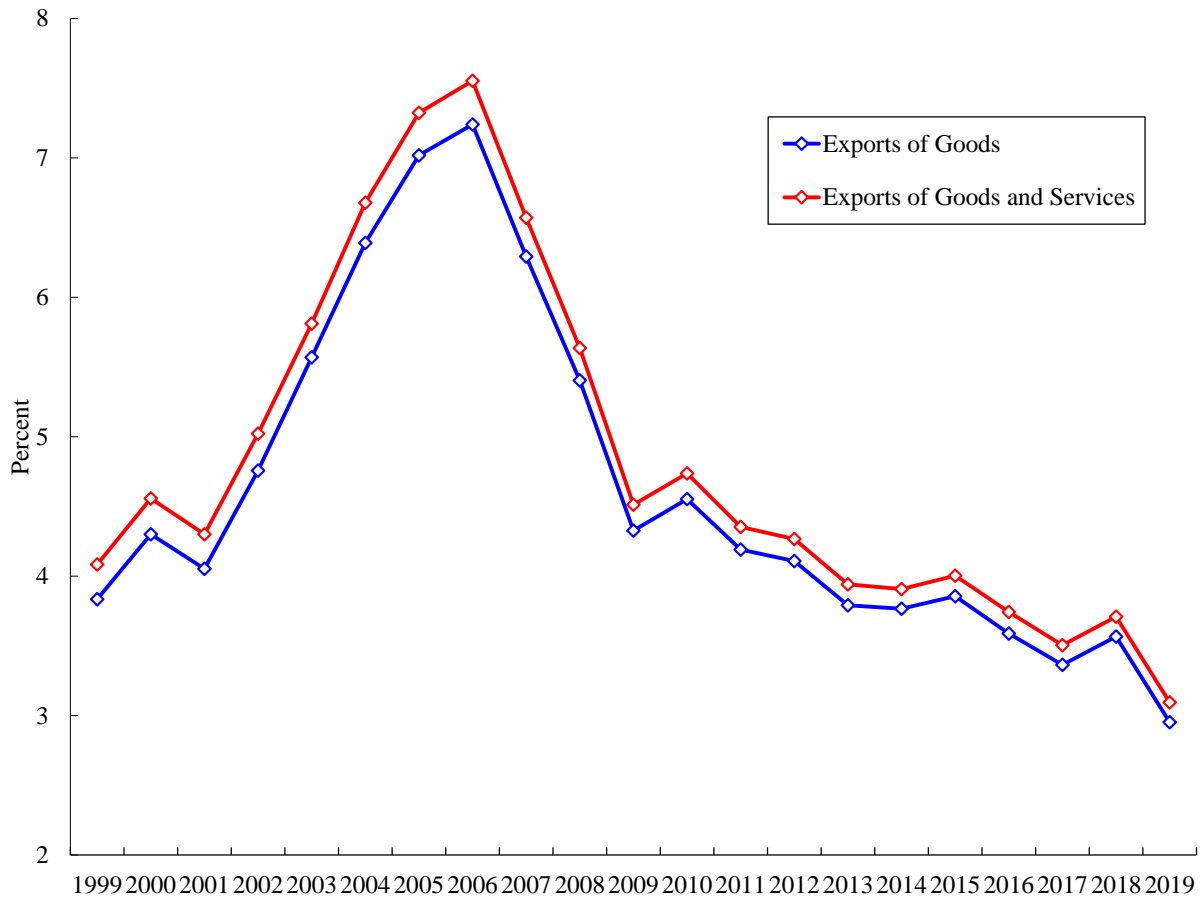


Source: The State Administration of Foreign Exchange, People's Republic of China.

Similarly, in 2019, the ratio of Chinese exports of goods and services and goods only to the U.S. to Chinese GDP were respectively 3.1% and 3.0%, less than half of their respective peak values of 7.6% and 7.2% in 2006 (see Chart 3-3).¹² And since the total (direct plus indirect) value-added content of Chinese exports of goods to the U.S. is approximately 66%, the contribution of Chinese exports of goods to the U.S. to Chinese GDP may be estimated to be approximately 1.9%. This is the maximum damage to the Chinese economy if all Chinese exports to the U.S. cease.

¹² Of course, in 2019, Chinese exports of goods to the U.S. were already adversely impacted by the newly imposed U.S. tariffs.

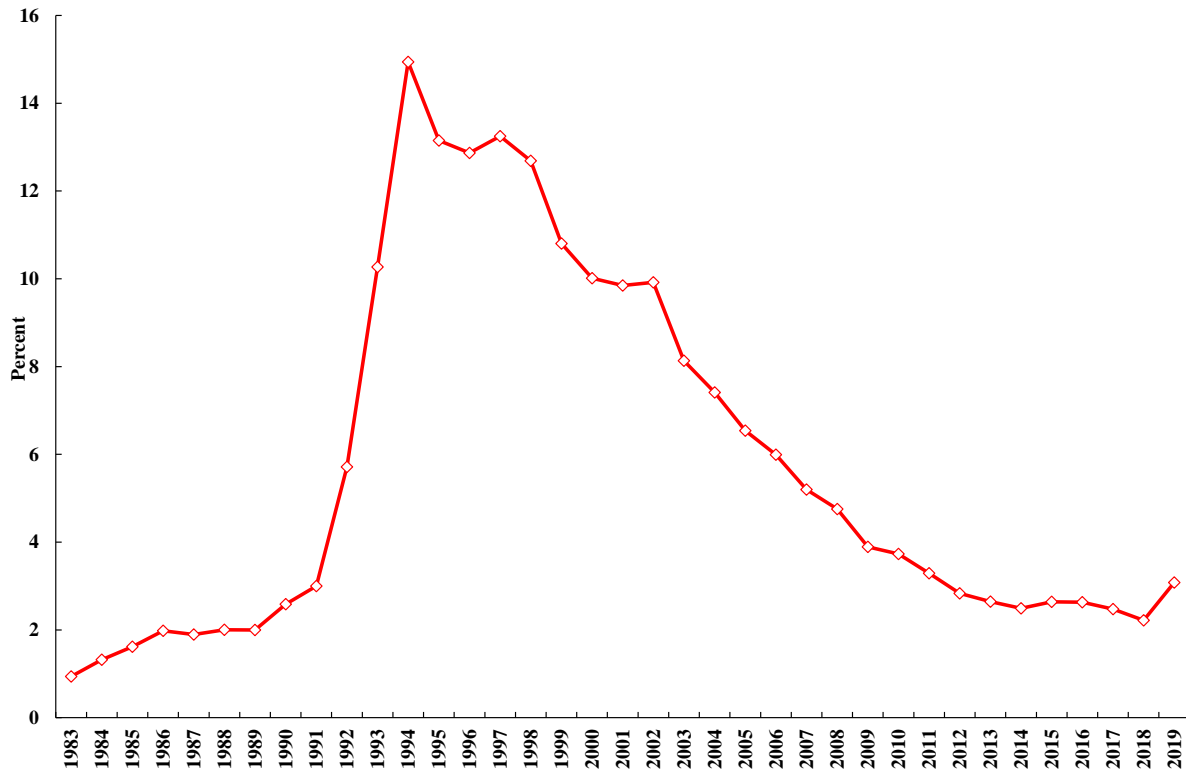
Chart 3-3: Chinese Exports of Goods and Services and Goods Only to the U.S. as a Percentage of Chinese GDP (1999-2019)



Source: The State Administration of Foreign Exchange, People’s Republic of China.

The share of inbound foreign direct investment (FDI) in total gross domestic investment has also undergone significant changes. It rose rapidly from 2.6% in 1990 to a peak of 14.9% in 1994, but has since then been falling continuously to reach 3.1% in 2019 (see Chart 3-4). This is a reflection of the high domestic savings rate of China—there is no shortage of capital in China today. Today, FDI can flourish in China only if the foreign direct investors come with their own unique and proprietary technology, business model and/or markets.

Chart 3-4: Chinese Inbound Foreign Direct Investment as a Percentage of Chinese Gross Domestic Investment



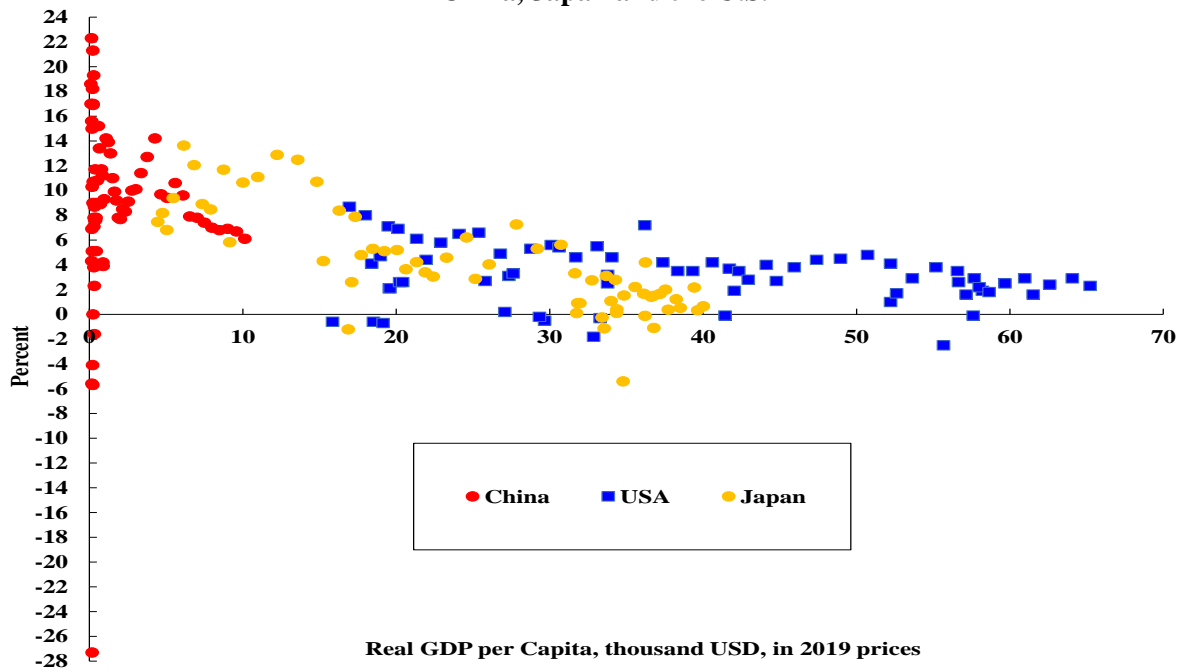
Source: The National Bureau of Statistics, People's Republic of China.

The Continuing High Rate of Chinese Economic Growth

It is an empirical regularity that as the real GDP per capita of a country rises, the rate of growth of its real GDP falls.¹³ China is no exception. In Chart 3-5, a scatter-diagram between the rates of growth of real GDP and real GDPs per capita of China, Japan and the United States are presented. It is clear that the Chinese economy, represented by red dots, is still operating within the range of GDPs per capita compatible with a relatively high rate of growth, based on the past experience of Japan and the U.S. In 2019, Chinese GDP per capita was only US\$10,130, one-sixth of the U.S. GDP per capita of US\$65,200. The Chinese economy should be able to grow at a rate of around 6% per annum until its GDP per capita approaches US\$30,000, which should take at least another decade and a half from now.

¹³ There are many different reasons but the limitation of space does not allow us to go into them in this paper.

Chart 3-5: Rate of Growth of GDP vs. Level of Real GDP per Capita (thousand 2019 US\$), China, Japan and the U.S.



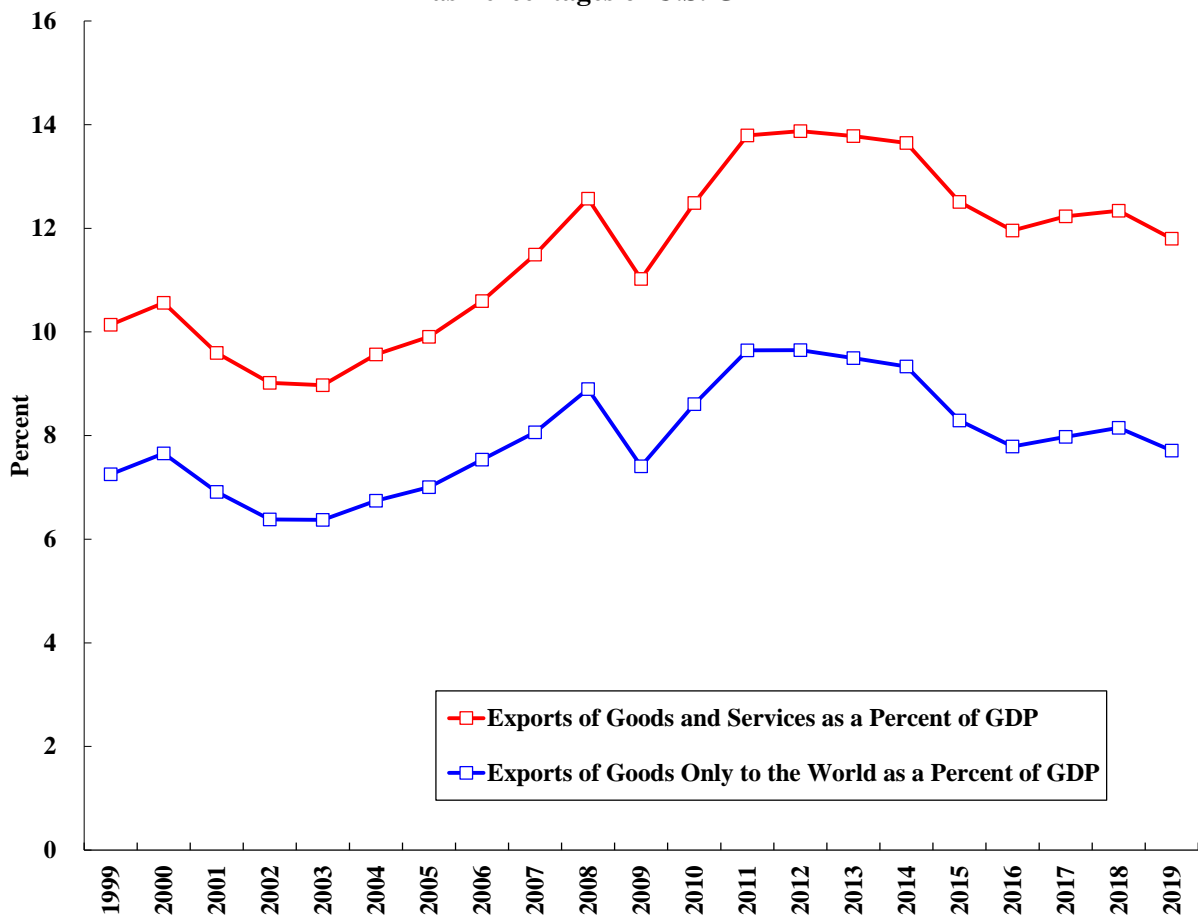
Source: The author.

4. The Impacts of the China-U.S. Trade War¹⁴

The Costs of the Trade War to China and the U.S.

The costs of a trade war to an economy depends on how much an economy relies on its export sector. For the U.S., the share of exports of goods and services and goods only to the world in GDP was 11.8% and 7.7% respectively in 2019, significantly lower than those of China (see Chart 4-1). In fact, the U.S. exports of goods as a share of GDP was less than half of that of Chinese exports. The U.S. is much less dependent than China on exports. As the total (direct plus indirect) value-added content of U.S. exports of goods is approximately 88.7%, the contribution of U.S. exports of goods to its GDP may be estimated to be approximately 6.9%, much lower than China's 11.2%.

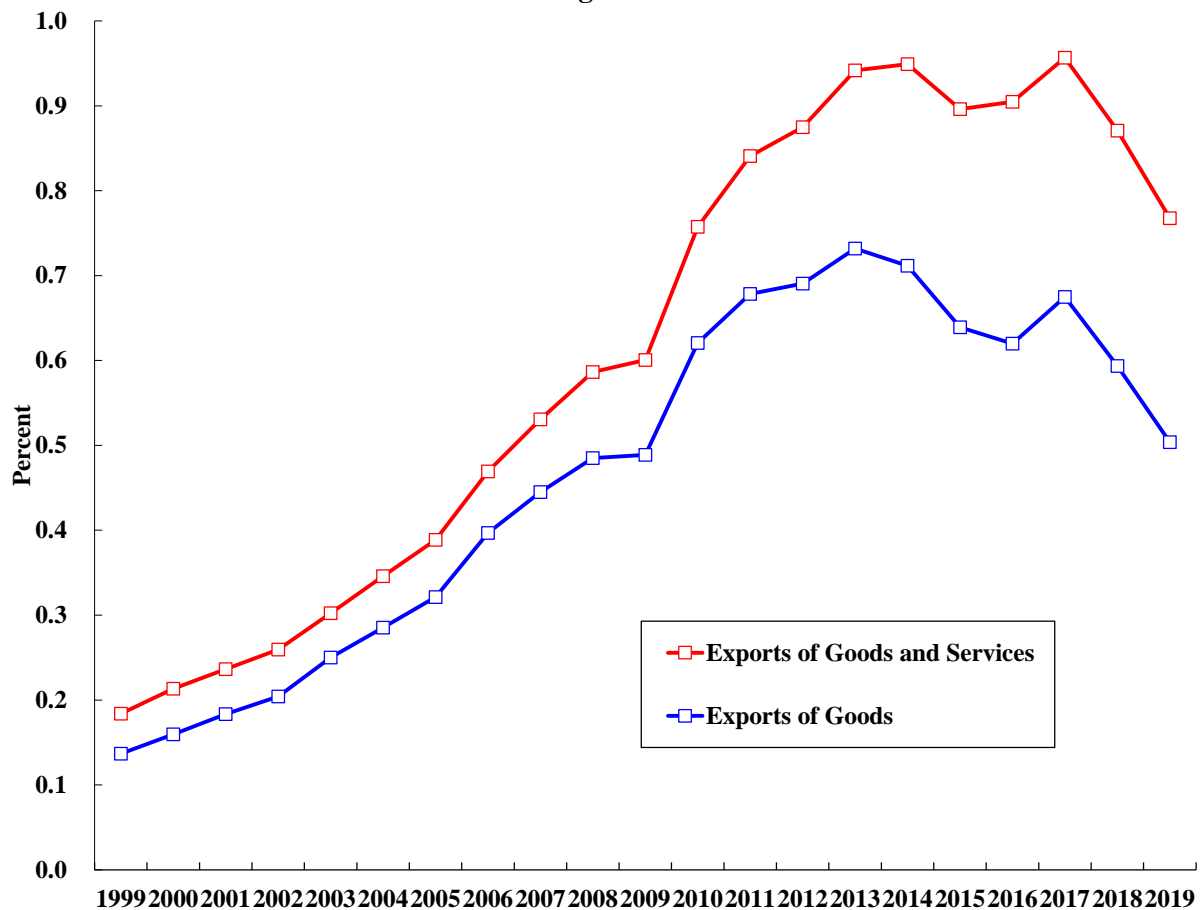
Chart 4-1: U. S. Exports of Goods and Services and Goods Only to the World as Percentages of U.S. GDP



¹⁴ For a detailed discussion of the China-U.S. trade war, see Lawrence J. Lau, *The China-U.S. Trade War and Future Economic Relations*, Hong Kong: The Chinese University of Hong Kong Press, 2019.

The U.S. shares of exports of goods and services and goods only to China in U.S. GDP have remained low at 0.77% and 0.50% respectively in 2019, even though they have both risen significantly relative to the levels of 1999. These shares are also much lower than those from China to the U.S. (see Chart 4-2). The average direct domestic value-added content of U.S. exports of goods to China may be estimated to be 50.8%. Including all the indirect effects of the reduction of U.S. exports of goods, the total domestic value-added by U.S. exports of goods to China increases to 88.7% cumulatively. Thus, if all U.S. exports of goods to China cease, the loss of U.S. GDP may be estimated to be approximately 0.44%, also much lower than the potential 1.9% loss of Chinese GDP.

Chart 4-2: U. S. Exports of Goods and Services and Goods Only to China as Percentages of U.S. GDP



One conclusion that we can draw here is that the Chinese and U.S. economies are actually becoming increasingly alike in terms of their relative independence of economic disturbances in the rest of the world. We summarise the impacts of the China-U.S. trade war on the GDPs of both countries in Table 4-1. At the present time, since the Chinese economy

is still more dependent on the U.S. than the U.S. economy is dependent on China, the economic impacts of the trade war will be much heavier on China than the U.S.

Table 4-1: 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	-1.90%
U.S.	-47	-0.22%	-94	-0.44%

5. The COVID-19 Epidemic

In Charts 5-1 and 5-2, the cumulative numbers of confirmed COVID-19 cases and deaths respectively in both China and the U.S. up to 30 June 2020 are presented. Note that the vertical axes of Charts 5-1¹⁵ and 5-2¹⁶ have been put on a logarithmic scale, because otherwise the Chinese lines will be hardly legible. The first COVID-19 case in China was found in Wuhan, the capital city of the Province of 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 testing, isolation, social distancing, and contact-tracing measures. It has also imposed a strict quarantine. It also augmented healthcare resources in Wuhan, the epicentre of the epidemic in China, very significantly. As a result, it has one of the best records in terms of population infection rate and population mortality rate among major countries.¹⁷

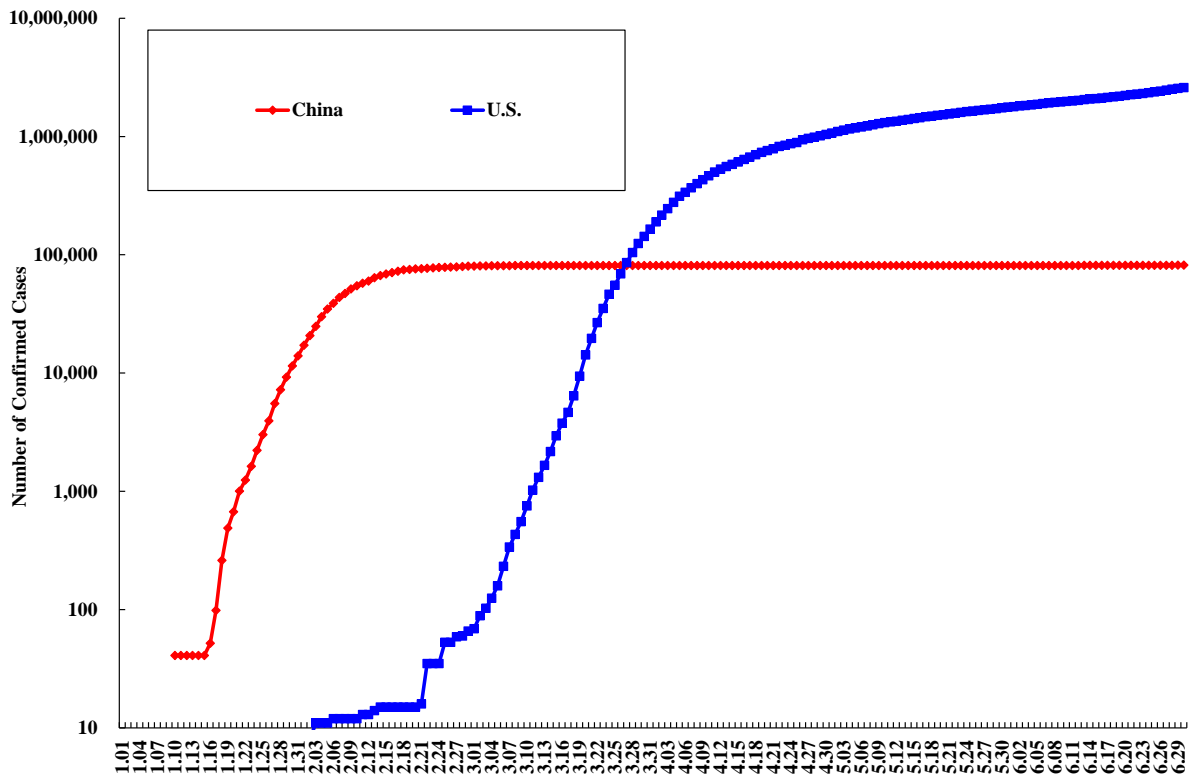
The first confirmed COVID-19 case in the U.S. was reported on 21 January 2020. Unfortunately, the U.S. did not handle the epidemic too well. The cumulative number of confirmed cases began growing quickly a month later, on 22 February. As of 31 July 2020, the U.S. had more than 4.7 million cumulative confirmed cases and 156 thousand cumulative deaths, the highest such numbers of any country in the world, compared to less than 85,000 cumulative cases and less than 4,650 cumulative deaths for the Mainland of China, which has four times the population of the U.S. The U.S. population infection and population mortality rates were 14,301 and 476 per million persons respectively, compared to China's 60.2 and 3.3 on 31 July 2020. 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 also become a major bone of contention between the two countries.

¹⁵ On 30 June 2020, the cumulative numbers of COVID-19 confirmed cases are 81,616 for the Mainland of China and 2,590,552 for the U.S.

¹⁶ On 30 June 2020, the cumulative numbers of COVID-19 deaths are 4,634 for the Mainland of China and 126,140 for the U.S.

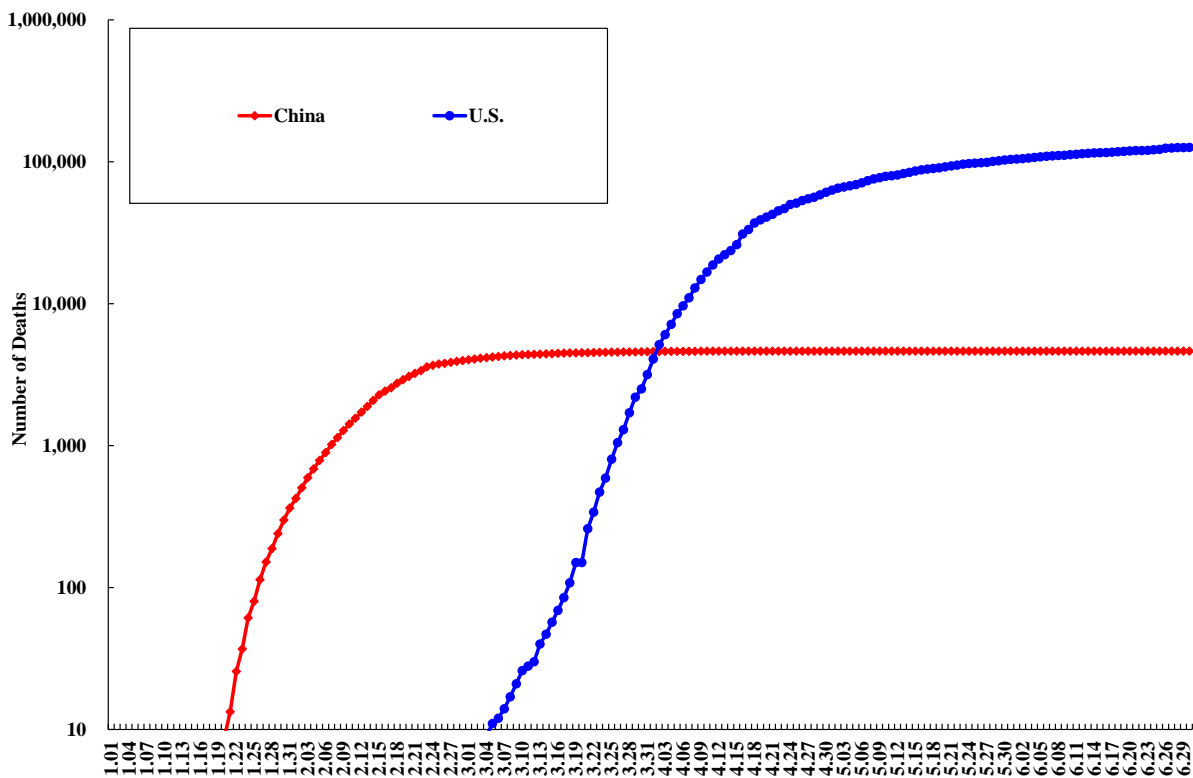
¹⁷ See Lawrence J. Lau and Yanyan Xiong, The COVID-19 Epidemic in China, Singapore: World Scientific Publishing Company, 2020, forthcoming, Chapter 8.

Chart 5-1: The Cumulative Number of Confirmed COVID-19 Cases, China and the U.S.



Source: Lau and Xiong (2020), Chapter 8.

Chart 5-2: The Cumulative Number of COVID-19 Deaths, China and the U.S.



Source: Lau and Xiong (2020), Chapter 8.

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

There are many costs to an epidemic — human, economic, healthcare, political and social costs. It is not possible to estimate all of them, and certainly not possible to compare the different types of costs quantitatively as they are valued very differently by different individuals. What we try to do here is to estimate the value of real GDP lost or foregone because of the COVID-19 epidemic.

Chinese real GDP declined by 6.8% year-over-year in 2020Q1. If there were no COVID-19 epidemic in China, the 2020Q1 GDP would probably have grown approximately 6.0% from the 2019Q1 GDP of US\$3.16 trillion to reach US\$3.35 (3.16×1.06) trillion. However, the actual 2020Q1 GDP was only US\$2.95 trillion. Thus, the loss of GDP in 2020Q1 due to the COVID-19 epidemic may be estimated as the difference, that is, US\$0.4 ($3.35 - 2.95$) trillion. In 2020Q2, Chinese real GDP grew by 3.2% year-over-year, from US\$3.52 trillion to US\$3.63 trillion. If there were no COVID-19 epidemic, the 2020Q2 GDP would have been approximately 6.0% higher than the 2019Q2 GDP, or US\$3.73 (3.52×1.06) trillion. The loss of Chinese GDP in 2020Q2 due to COVID-19 may therefore be estimated as US\$0.1 ($3.73 - 3.63$) trillion. It is expected that the Chinese economy will resume normal growth from 2020Q3 and there should be no further loss due to COVID-19. The total loss of GDP in 2020 may therefore be estimated as US\$0.5 trillion, or 3.5% of the 2019 Chinese GDP of US\$14.2 trillion.¹⁸

U.S. GDP declined year-over-year by 9.5% in 2020Q2. For 2020 as a whole, U.S. GDP is projected to decline by 5.7% (see Section 7).¹⁹ If there were no COVID-19 epidemic in the U.S., the 2020 GDP would probably have grown approximately 3.0% from the 2019 GDP of US\$21.4 trillion to reach US\$22.0 (21.4×1.03) trillion. Instead, it is projected to decline by 5.7% to US\$ 20.2 (21.4×0.943) trillion, resulting in an estimated loss of GDP of US\$1.8 trillion, or 8.5% of the 2019 U.S. GDP.

The costs of the COVID-19 epidemic in terms of foregone GDP are lower for China than for the U.S. in both absolute numbers and percentages. They are also lower in terms of

¹⁸ A more detailed discussion is available in Lau and Xiong (2020), Chapter 7.

¹⁹ This is the projection of the author.

human lives. We summarise the impacts of the COVID-19 epidemic on China and the U.S. in Table 5-1.

Table 5-1: The Costs of the COVID-19 Epidemic to China and the U.S.

	Loss of GDP (2020)		Loss of Lives (up to 31 July 2020)	
	US\$ Trillion	Percent of GDP	Number (thousands)	Percent of Population
China	0.5	3.5%	4.7	0.0003%
U.S.	1.8	8.5%	156	0.0480%

6. The De-Coupling of the Chinese and U.S. Economies

The China-U.S. trade war and the COVID-19 pandemic have also brought to the forefront the possibility and desirability of a “de-coupling” of the two economies. Any major country will want to avoid being overly dependent on another country for the supply of a critical raw material, component, part or technology because of the potential disruption of the economy that an interruption of such supply may cause. However, a pre-requisite to de-coupling is the existence of an alternate source of supply. Economic de-coupling per se can be costly, but may also bring benefits. The availability of an alternate second source can prevent monopolisation, reduce monopoly power, and lead to a more stable and more competitive world economy for the benefit of all consumers. But having a second source should not be equated as trying to achieve total self-sufficiency. A second source in another country, which is often a possibility, is in many cases good enough.

Geographical diversification of supply and second-sourcing by major countries are probably inevitable. It is simply too risky to depend solely on a single supplier, even if it is located in the friendliest allied country. Unforeseen events that can disrupt critical supplies include not only trade wars and pandemics, but also natural disasters such as earthquakes, floods, hurricanes, tornadoes and tsunamis, and also man-made disasters such as bankruptcies and fires, and nuclear disasters such as Three-Mile-Island, Chernobyl, and Fukushima, not to mention embargoes, wars and other geo-political conflicts and disputes.

Every major country must make provisions for sudden and unforeseen disruptions of critical supply. It is not in the best interests of either China or the U.S. to depend solely on

each other for the supply of critical products and technologies. Thus, it is not only the U.S. that would like to shift supply chains out of China, China would also need to shift some supply chains out of the U.S. It is the only way to insure and protect against the risks of unforeseen disruption. But de-coupling is just like buying insurance, there is a net cost. But like insurance, de-coupling also has benefits. The obvious one is to be free of dependence on a single supplier from a country with different interests. The second is the reduction of monopoly power and monopoly rents.²⁰

The Mutual Imposition of Tariffs on Imports

The mutual imposition of tariffs by both the United States and China on each other's imports, implemented in 2019, definitely had adverse impacts on both economies. Even though for some imports, the tariff rates proved to be prohibitive, they did not result in the total cessation of trade between the two countries. On the assumption that half of the Chinese exports of goods to the U.S. was halted, it would imply a maximum total loss of Chinese GDP of almost 1%, or approximately US\$135 billion (in 2019 prices, similarly for all other US\$ values unless otherwise stated). On the assumption that half of U.S. exports of goods to China was halted, it would amount to a loss of U.S. GDP of 0.22%, or approximately US\$47 billion, which is not that significant for the U.S. economy. Thus, in both absolute and relative terms, the potential costs of the trade war are higher for China than for the U.S.

De-Coupling of Supply Chains

The de-coupling of supply chains will affect not only Chinese exports to the U.S., but also Chinese production in general. As an example, consider the Apple iPhone, which is considered 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.) In this case, if the iPhone assembly operation is forced to move to another country because

²⁰ Think of a world with only Boeing but no Airbus (or vice versa). Where would we be today? Also think of a world with only MasterCard but no Visa (or vice versa).

U.S. chips cannot be exported to China, its impact on the Chinese economy will not be very significant.

However, the costs of the de-coupling of supply chains may be higher in the high-technology sector for China, certainly in the short run. If 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. Huawei has been able to launch the Harmony (Hongmeng) operating system to replace the Android operating system in its new cellphones. 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. These are “Sputnik” moments for China.²¹ Likewise, the U.S. also does not want to be put in the position to have to rely solely on Huawei for its 5G telecommunication technology, which is understandable. But there is no U.S. firm with strengths in the technology for 5G telecommunication.²² That is why it is doing all it can to try to destroy Huawei.

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. They will be hurt by the non-availability of, as well as the tariffs on, Chinese imports.

One motivation for a country to impose restrictions on exports to another country is to deprive that country from access to certain critical products, components, parts or technology. This works only if there is no alternate source. Once an alternate source is available to the other country, the restrictions against exporting to it no longer make sense, and will only hurt the country’s own firms. So, hopefully, these restrictions will then be lifted.

On a critical commodity such as oil, China is a long way from being self-sufficient and must rely on diverse sources. The U.S. can certainly become self-sufficient in oil if its world price stays at or above US\$50 a barrel, or if it can impose tariffs on oil imports to ensure that the domestic price stays at or above US\$50 a barrel. Who loses in the latter case? The Middle

²¹ In October 1957, the Soviet Union launched the first artificial Earth satellite successfully into orbit, to the great surprise of the U.S. It spurred the U.S. into a catch-up space race with the Soviet Union, culminating in the U.S. successfully landing the first man (Neil Armstrong) on the moon in July 1969.

²² The two non-Chinese firms with 5G capability are Sweden’s Ericsson and Finland’s Nokia.

Eastern producers and the American consumers. It is of course up to the American people to decide whether it is worth it.

However, second-sourcing is not the only way to ensure adequate supplies of critical commodities and products. Maintaining a stockpile is another way. 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, as the world's largest oil importer, should probably maintain a similar reserve.

Cross-Border Direct Investment

Direct investment from China to the U.S. has fallen a great deal since it reached a peak in 2016. There are several reasons for the decline that are not directly related to the COVID-19 pandemic. The COVID-19 pandemic only makes it worse. First of all, there is now much greater scrutiny of Chinese direct investment in the U.S., especially in high-technology industries, by the Committee on Foreign Investment in the United States (CFIUS), and therefore greater uncertainty as to the eventual approval of the proposed investment. This gives potential Chinese investors pause. Second, the U.S. is much less hospitable to investments from Chinese state-owned-enterprises, but they are the ones with the resources and financing. The investments from private Chinese enterprises have largely disappeared in part because of the drying up of bank financing, and in part because of the uncertainty on the political future of Chinese investment in the U.S. Given the current degree of acrimony between the two countries, Chinese investments in venture capital may also be tagged unfairly as “stealing U.S. intellectual property”. Third, there is an assessment that the U.S. under President Donald Trump is capable of doing anything, so that the past lessons of the U.S. nationalising German investments in the U.S. during the two World Wars and the confiscation of the property of Japanese Americans during the Second World War are not lost on potential Chinese investors.

According to Chinese data, new U.S. direct investment in China has been running steadily at a little more than US\$2 billion (in current prices) a year in the last few years. According to U.S. data, there were large fluctuations over the past ten years, with an average

of approximately US\$4 billion (also in current prices) a year.²³ In any case, the total foreign direct investment from all sources into China in 2019 was around US\$140 billion, or approximately 3% of total annual gross domestic investment on the Mainland. These levels of direct investments do not materially affect the quantity of aggregate demand of the Chinese economy.

Looking to the future, it is possible that U.S. direct investment in China may increase because U.S. direct investors are no longer required to have a 50/50 joint-venture partner and may even buy out their Chinese joint-venture partners completely. In addition, financial service firms such as investment banks, insurance firms and securities brokerages are also open to 100% foreign ownership. However, these investments may not occur immediately given the current political tension between the two countries and it may also take some time for the relaxation of the restrictions to be fully implemented.

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 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 corresponding percentages were 7%, 12% and 81%. The Chinese domestic capital market has become the most important funding source for Chinese enterprises. 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. The importance of New York as a source of equity capital to Chinese enterprises has greatly diminished.

Why did Chinese enterprises choose to list in New York in the first place? There were two important reasons. The first is that the initial venture-capitalist investors and the cornerstone investors in Chinese enterprises wanted to exit and take their profits eventually. And exit for them meant the ability to sell their shares in a foreign currency other than the

²³ The discrepancies between Chinese and U.S. data may be due to the different treatments of reinvestments of earnings in China by U.S. direct investors.

Renminbi, which was and still is not fully convertible. This implied that the IPO would have to be made in either Hong Kong or New York. The second reason is the need for some private Chinese enterprises to be able to maintain more than one class of shares. The founders of many private Chinese enterprises would like to continue controlling the enterprises they founded, which would typically require a weighted-voting-rights structure. This was not possible in Hong Kong until it changed its rules to allow multiple classes of shares in 2018. That was why Alibaba IPOed in New York in 2014. But with the change of rules in Hong Kong, an important reason for a Chinese enterprise to favour a listing in New York has disappeared.

Moreover, the Chinese stock market has grown rapidly and the wealth of Chinese private investors has become a major source of the buying power on the Chinese and Hong Kong stock exchanges. And as most of the funds raised by Chinese enterprises are to be used for domestic expansion in China, funds raised in Renminbi are much more convenient because it is not necessary to apply for permission to remit the foreign currency raised into the Mainland to be used there.

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 by the Chinese enterprises, many of which will be planning a replacement listing in either Hong Kong or Shanghai. As the A-share market has actually out-performed the ADRs significantly and the P/E ratios there have been much higher, they should be the preferred market for secondary IPOs for Chinese enterprises listed in New York.²⁴ De-coupling of the capital markets will not have a large impact on the Chinese economy. In the longer term, given that China has become a major source of savings and wealth, there is also the potential of U.S. and other foreign companies raising capital in China by issuing China Depositary Receipts (CDRs).

²⁴ Netease and JD.com have returned to the Hong Kong Stock Exchange for their secondary listings. Yum China may follow.

Educational Exchanges

There are currently an estimated 360,000 Chinese students enrolled at U.S. tertiary educational institutions. They generate, conservatively speaking, 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. Moreover, COVID-19 related travel and teaching restrictions are deterring Chinese (and other international) students from returning to U.S. campuses in the short term. This is not only a loss to Chinese students, but also to the U.S. as well. The top universities in the U.S. have had the advantage of the first choice on all the best eighteen-year-olds in the world, without the cost of having to raise them, but perhaps not any more with respect to China. 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.

The U.S. has a significant trade surplus in services with China, estimated to be US\$38.8 billion and US\$36.4 billion respectively in 2018 and 2019.²⁵ The surplus from educational exchanges is an important component. This surplus may be in jeopardy if China-U.S. relations deteriorate further.

De-Coupling of the International Clearing and Settlement System

The de-coupling of the Chinese and U.S. economies may diminish the use of the U.S. Dollar as an international medium of exchange by Chinese enterprises and households. Before 2010, almost all Chinese international transactions were settled in U.S. Dollars. Then China

²⁵ According to the U.S. Department of Commerce, Bureau of Economic Analysis. The Chinese estimates of the U.S. trade surpluses in services are much higher.

began to try to settle part of its international trade transactions in Renminbi in 2010. The share of Chinese international 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 22.8% by the end of 2020Q1. 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 rate risks as well as transactions costs all around. China does not aspire to replacing the U.S. Dollar as an international medium of exchange, but encourages the use of own currencies for settlement of international trade transactions by all countries, as was the case under the Bretton Woods agreement.

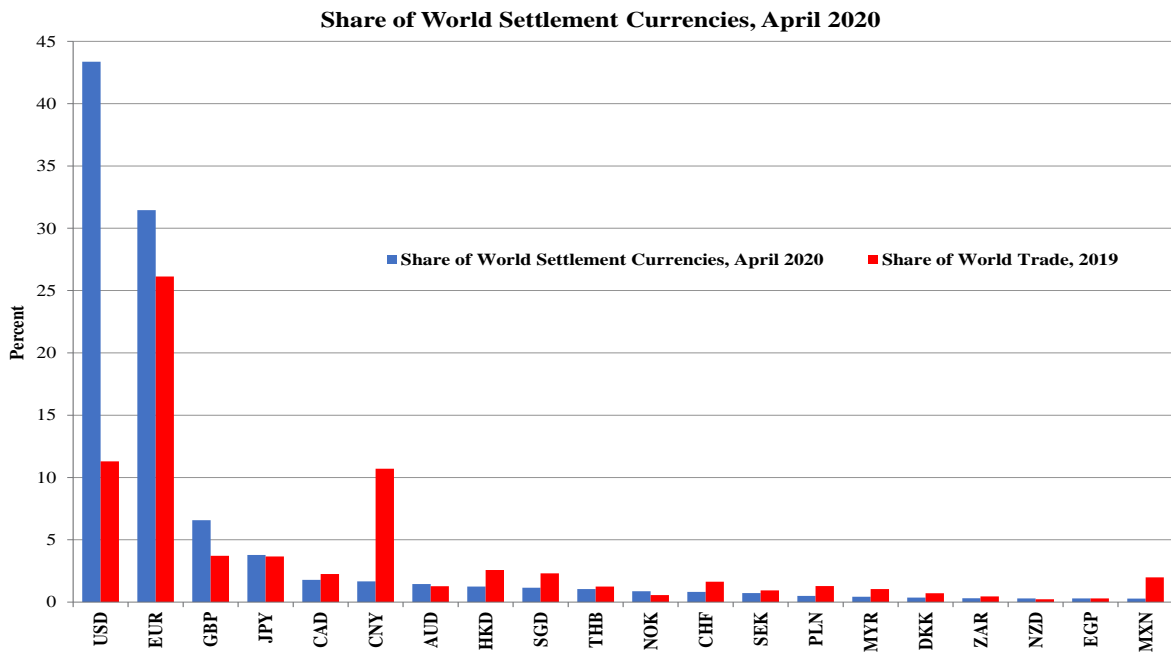
In Chart 6-1, we compare the share of world international settlement by currency in April 2020 with the share of world trade by the currency-issuing country in 2019. Even though the U.S. accounts for only 11.3% of all international trade (including both goods and services) transactions in 2019, the U.S. Dollar is used to settle 43.4% of all international transactions, which include, in addition to international trade transactions, all international capital transactions.²⁶ This is because many countries use the U.S. Dollar to settle their international transactions, including international trade transactions, between one another rather than their own respective currencies because they do not trust one another's currency.

In contrast, even though China accounts for 10.7% of all international trade in 2019, almost as much as the U.S., but only less than 1.7% 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 3.8% 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.²⁷

²⁶ 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.

²⁷ It remains to be seen whether international clearing and settlement in Renminbi can be done through the existing Society for Worldwide Interbank Financial Telecommunication (SWIFT) system or whether a new system similar to the Instrument in Support of Trade Exchanges (INSTEX) has to be developed.

Chart 6-1: The Share of World International Settlement by Currency in April 2020 and the Share of World International Trade by the Issuing Country in 2019



7. Short- and Long-term Projections of the Chinese and U.S. Economies

Short-Term Projections of the Chinese and U.S. Economies

In Table 7-1, we present the actual (2020Q1 and Q2) and our projected (2020Q3 and Q4) quarterly year-over-year rates of growth of both the Chinese and U.S. economies for 2020 as well as those of a leading U.S. investment bank. Our short-term projections for the Chinese economy are somewhat more optimistic than those of the investment bank, whereas our projection for the U.S. economy is more pessimistic for 2020Q3 and marginally more optimistic for 2020Q4.

Table 7-1: Actual and Projected Real Rates of Growth of China and the U.S.

	Source of Projections	
	Lawrence J. Lau	A US Investment Bank
	Year-over-Year Rate of Growth (percent p.a.)	
China 2020Q1 Actual	-6.8	-6.8
China 2020Q2 Actual	3.2	3.2
China 2020Q3 Projected	7.1	4.7
China 2020Q4 Projected	8.1	6.3
U.S. 2020Q1 Actual	0.3	0.3
U.S. 2020Q2 Actual	-9.5	-9.5
U.S. 2020Q3 Projected	-7.5	-5.7
U.S. 2020Q4 Projected	-6.1	-6.2

In Table 7-2, we present our projected annual rates of growth of both the Chinese and U.S. economies for 2020²⁸ and 2021 separately and combined, as well as those of a number of multilateral organisations, including the International Monetary Fund (IMF), the World Bank and the Organisation for Economic Cooperation and Development (OECD), and a leading U.S. investment bank. Our projections for both economies are more optimistic for 2020 and more pessimistic for 2021 than most of the others. We believe that the Chinese economy will be able to grow at 3.4% in 2020²⁹ as a whole and 8% in 2021. We project that the U.S. economy will contract by 5.7% in 2020 but will recover quickly to grow 4% in 2021. However, overall, the different projections do not seem to be wildly apart, especially if we look at 2020 and 2021 combined,³⁰ with the exception of those of the OECD.

²⁸ The Chinese Q1 GDP has a weight of 22% and the Q4 GDP a weight of 28% in the Chinese annual GDP.

²⁹ In early June 2020 we projected an annual rate of growth for China in 2020 of 4.65% on the assumption that there will be additional economic stimulus and 3.4% in the absence of such stimulus (see Lawrence J. Lau, “Projections of Possible Levels of Chinese GDP in 2020,” *China-U.S. Focus*, 10 June 2020). We have kept our projection at 3.4% since no additional economic stimulus has been announced.

³⁰ This is because if a low rate of growth is realised in a year, it may result in a higher rate of growth in the subsequent year and vice versa.

Table 7-2: Projected Real Rates of Growth of China and the U.S. in 2020 and 2021 (percent p.a.)

	Projections of Annual Rates of Growth (percent p.a.)				
	Source of Projections				
	Lawrence J. Lau	IMF	World Bank	OECD	A US Investment Bank
China 2020 Projected	3.4	1.2	1.0	-2.6	2.3
China 2021 Projected	8.0	9.2	6.9	6.8	8.9
China 2020-2021 combined	11.4	10.4	7.9	4.2	11.2
U.S. 2020 Projected	-5.7	-5.9	-6.1	-7.3	-5.3
U.S. 2021 Projected	4.0	4.7	4.0	4.1	3.4
U.S. 2020-2021 combined	-1.7	-1.2	-2.1	-3.2	-1.9

Sources: IMF projections from [World Economic Outlook Database](https://www.imf.org/external/pubs/ft/weo/2020/01/weodata/index.aspx) (April 2020) at <https://www.imf.org/external/pubs/ft/weo/2020/01/weodata/index.aspx>; World Bank projections from [Global Economic Prospects](https://www.worldbank.org/en/publication/global-economic-prospects) (June 2020) at <https://www.worldbank.org/en/publication/global-economic-prospects>; OECD projections from Real GDP forecast at <https://data.oecd.org/gdp/real-gdp-forecast.htm#indicator-chart>.

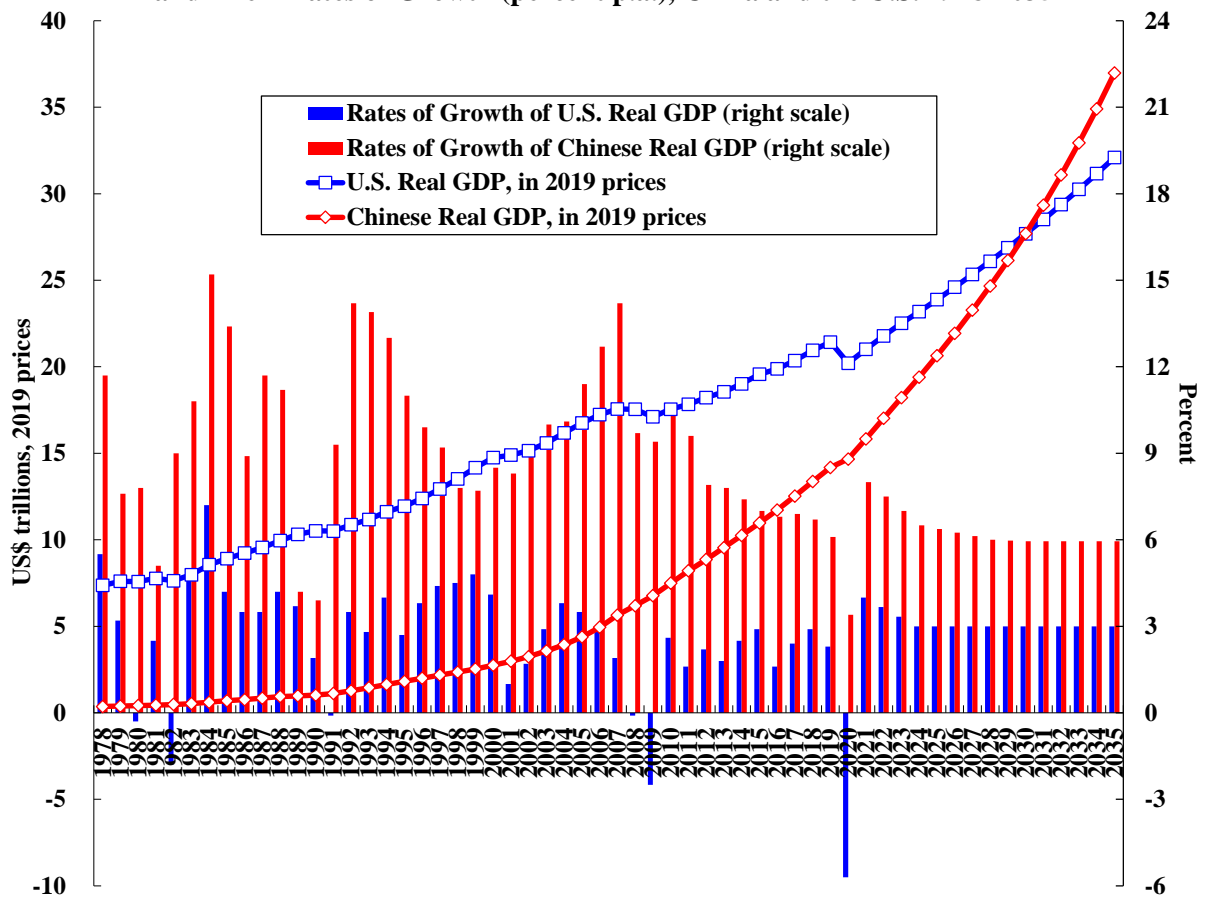
Long-Term Projections of the Chinese and U.S. Economies

We project Chinese and U.S. GDPs and GDPs per capita for the next fifteen years, up to 2035. As pointed out in Section 3, it is an empirical regularity across economies that as the real GDP per capita of an economy rises, the rate of growth of its real GDP falls. China and the U.S. are no exceptions. In 2019, Chinese GDP per capita, US\$10,130, was less than one-sixth of the U.S. GDP per capita of US\$65,200, and that is why China can continue to grow faster than the U.S., other things being equal. Regardless of the ultimate outcomes of the COVID-19 epidemic and China-U.S. trade war, the Chinese economy is poised to grow at an average annual rate of around 6% afterwards over the next fifteen years. The U.S. economy is projected to grow at 3% per annum, its average long-term rate of growth over the past several decades, during the same period. The COVID-19 pandemic may have the unintended effect of accelerating the date on which the Chinese GDP may be expected to catch up with the U.S. GDP, as China is likely to recover and return to normal much faster than the U.S. economy.

Our projections suggest that in 2030, the Chinese aggregate real GDP (US\$27.70 trillion) is likely to just barely edge out the U.S. aggregate real GDP (US\$27.69 trillion).³¹ The implied average 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.

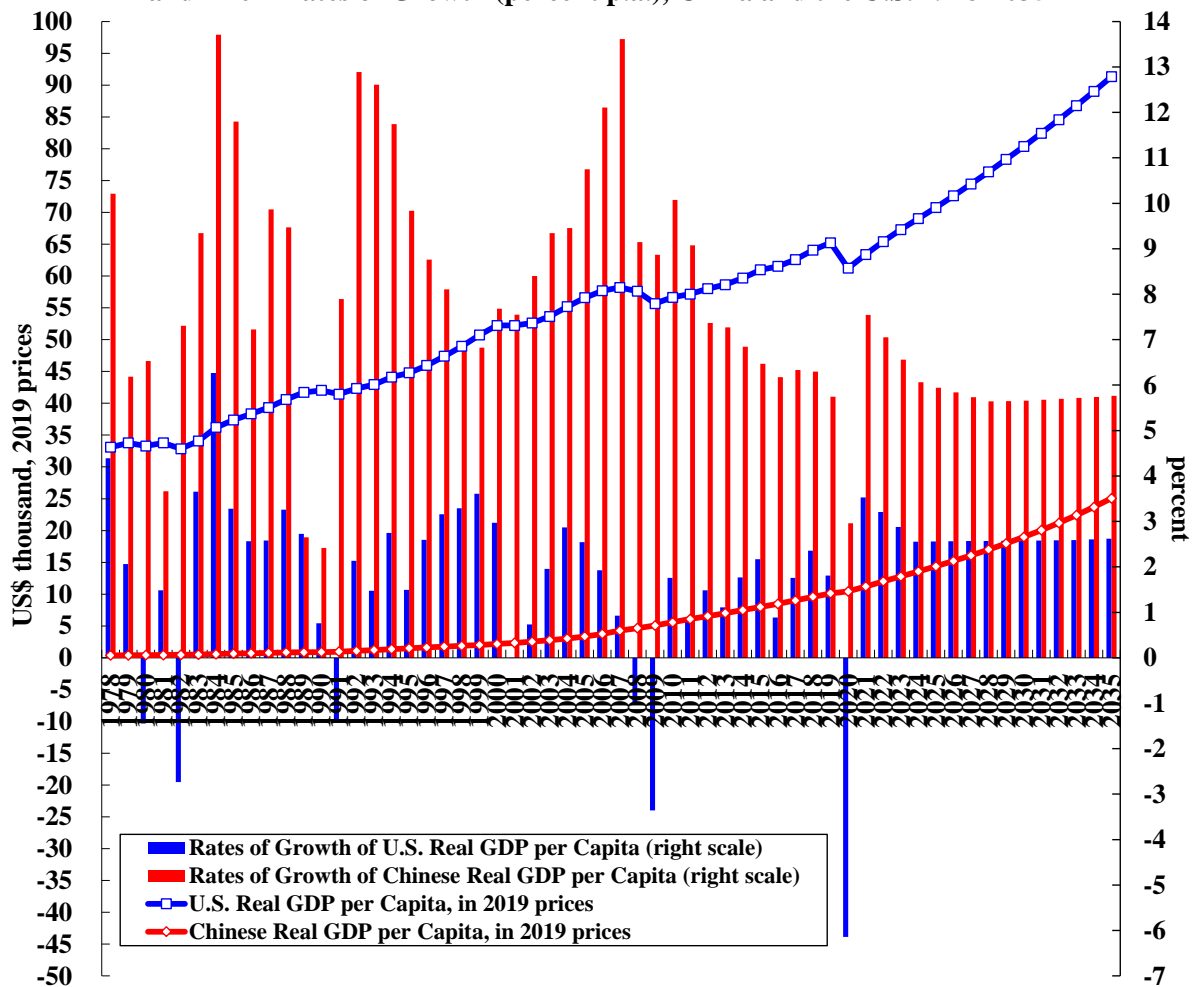
³¹ The difference between the projected Chinese and U.S. GDPs is really not significant. The precise cross-over year can be a couple of years sooner or later.

Chart 7-1: Actual and Projected Real GDPs (trillion 2019 US\$), and Their Rates of Growth (percent p.a.), China and the U.S. 1978-2035



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. It is possible that the Chinese real GDP per capita may never catch up with the level of the U.S. because of great disparities in the natural endowment of resources (arable land, water, minerals, etc.) between the two countries.

Chart 7-2: Actual and Projected Real GDPs per Capita (thousand 2019 US\$), and Their Rates of Growth (percent p.a.), China and the U.S. 1978-2035



8. Technological Competition

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 an abundance of “creation without destruction”.³² 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, which most Chinese people did not have in the first place anyway. Even today, the mobile phone is the only telephone the overwhelming majority of Chinese people have. 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 problem that some visitors to China may face today is that many establishments

³² In contrast to Joseph Schumpeter’s “Creative Destruction”.

do not accept cash or credit cards. A third example is the construction of high-speed trains and railroads. By adopting and improving the original Siemens technology, China today has the largest high-speed railroad network in the world.

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. Investment in intangible capital (human capital and Research and Development (R&D) capital) is indispensable for innovation. The U.S. has consistently invested a relatively high percentage of its GDP in R&D, averaging 2.5% since 1963. China has been trying to catch up--it is expected to reach its target of 2.5% of GDP in 2020.

Moreover, 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 not by for-profit firms.³³ However, Chinese investment in basic research has remained low relative to the other major countries (see Chart 8-1). 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, its cumulative number of Nobel Laureates in the scientific disciplines. Huawei is actually one of the very few Chinese enterprises willing to invest a significant proportion of its revenues in R&D, including basic research, for many years. It should therefore be no surprise that Huawei is a global leader in 5G telecommunication technology today.

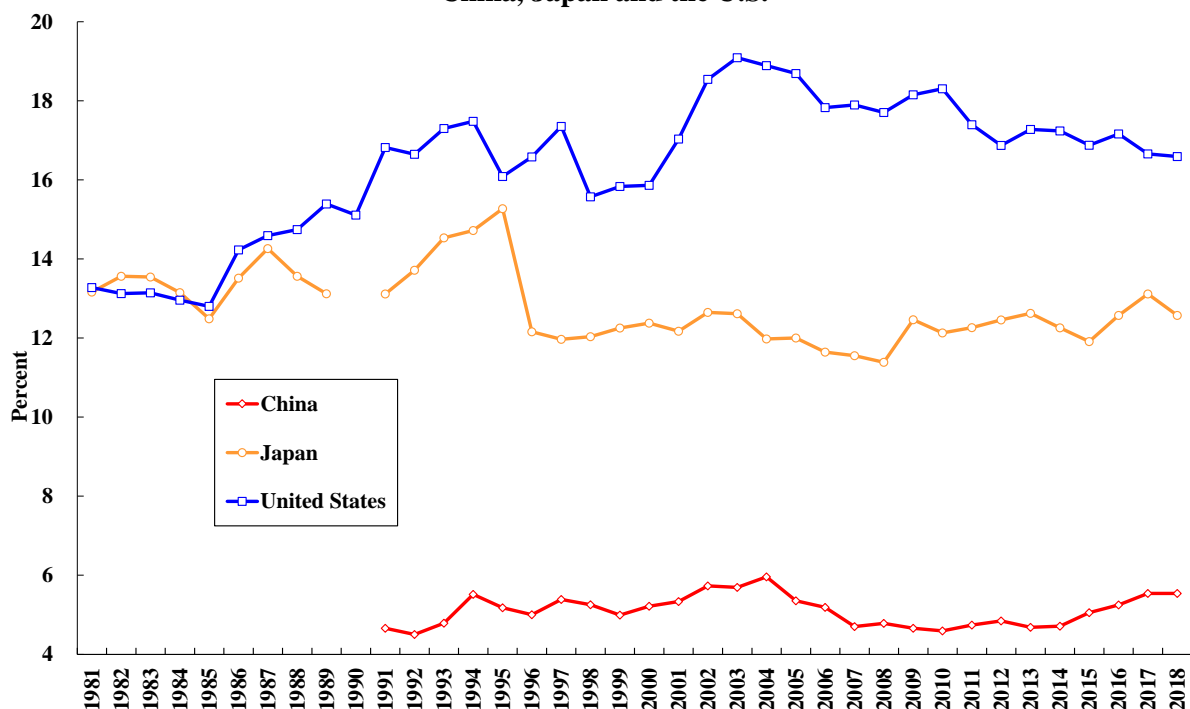
However, technological competition is not necessarily bad either. For example, it may be beneficial for the world to have a second viable 5G system, provided that the two systems are inter-operable. Such competition will bring down the price for all consumers in the world.

³³ AT&T operated the Bell Laboratories, which was responsible for many discoveries and inventions, including the transistor. Another monopolistic firm, Xerox, operated a Palo Alto Research Center (Xerox PARC), which was responsible for the invention of the Ethernet, the graphical user interface, the mouse, and other software and hardware used in computing technologies.

Moreover, some redundancy in critical systems, such as satellite navigation systems, can be a good idea because it provides a hedge against catastrophic risks, so that not everything will all fail at the same time. For the same reason, it is also a benefit for the world to have another operating system for cell phones in addition to Google’s Android and Apple’s IOS. It should also help to bring down the price of cell phones worldwide.

In the field of super-computers, competition between China and the U.S. has resulted in improvements in performance almost every year. In 2018, the U.S. had the fastest super-computer in the world, the IBM Summit. However, in 2016 and 2017, the fastest super-computer was a Chinese one, the Sunway TaihuLight.³⁴ In 2020, the fastest super-computer turned out to be a Japanese one, Fugaku, installed by the Riken Institute in Kobe, Japan. It will be good for the world if China and the U.S. compete to find an effective vaccine for COVID-19 (which they already do) and an effective cure for cancer or Alzheimer’s disease.

Chart 8-1: Basic Research Expenditure as a Percentage of Gross Expenditure on R&D, China, Japan and the U.S.



Source: Lawrence J. Lau and Yanyan Xiong, *Are There Laws of Innovation?*, 2021, forthcoming.

³⁴ It is interesting to note that the Chinese super-computer Sunway TaihuLight consisted entirely of domestically manufactured components. This shows that export restrictions are not really that effective in delaying technological advances in nationally critical projects in which cost is no object. Export restrictions have not prevented the former Soviet Union, France, China, India, Pakistan and North Korea from acquiring their nuclear capabilities. However, export restrictions may be more effective in delaying technological advances in commercial projects in which cost efficiency is pivotal.

9. 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.³⁵ He refers to this “inevitability” as the “Thucydides' Trap”, drawing on the book by Thucydides, History of the Peloponnesian War, a war in ancient Greece (431-404 B.C.) between Athens and Sparta, that as a rising power challenges the dominance of an established power, the established power is likely to respond with force.

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 to the conclusion that an established power and a rising power must go to war. The truth is that a thermonuclear war today is so devastating to the warring parties that there are effectively no real winners, only losers. It is precisely this “mutually assured destruction (MAD)” that prevented the former Soviet Union and the U.S. from going to war. Instead, they entered into a number of arms control treaties such as the Anti-Ballistic Missile (ABM) Treaty and the Strategic Arms Reduction Treaty (START I). And MAD will similarly prevent hot wars between major powers in the future.

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 essentially non-existential. China's rise does not threaten U.S.'s existence and should not lead to a hot war.

However, both China and the U.S. have to learn how to treat a friendly country as an equal. Historically, neither country has ever treated another friendly country as an equal. For China, a foreign country is either considered a vassal state when China is strong, or a master when China is weak, but never as an equal. For the U.S., it had saved the U.K. and Western Europe in the two World Wars; it had defeated and occupied Germany and Japan; it had also

³⁵ Graham T. Allison, Destined for War: Can America and China Escape Thucydides' Trap?, Boston: Houghton Mifflin Harcourt, 2017.

saved China in World War II; and it had dominated the Western Hemisphere since the mid-19th Century—none of these countries were considered equals. The only country that the U.S. ever treated as an equal was not a friend but an adversary, the former Soviet Union. Both China and the U.S. should try to adjust to treating each other with the respect for a friendly equal. We believe this is why Chinese President Xi Jinping has been calling for “a new model of major-power relations” since 2013, the basic elements of which consist of “mutual respect, coordination, cooperation, and mutual benefit”.

Putting oneself into the other person’s shoes and recognising each other’s core interests should be the guiding principle for China-U.S. relations in the future. For example, the U.S., the de facto number one power in the world, may not want to become number two; but China does not really want to become number one, even though its aggregate GDP, in time, may exceed that of the U.S. The U.S. can be the “first among true equals”.

Going forward, if the two countries can achieve greater mutual economic interdependence on a long-term basis, so as to make their economic relations win-win, a war between them would be unthinkable, just as another war between France and Germany, which fought three wars between them, in 1870, 1914 and 1939, is not possible today. Unfortunately, the de-coupling of the two economies works against this scenario in the short and medium terms.

10. Concluding Remarks

The potential competition and rivalry between China and the U.S. 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. The competition and rivalry will be on many fronts—economic, technological and geo-political. 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 go to war.

However, irrational things do happen sometimes. It is therefore important for the leaders of both countries to be both thoughtful and careful in dealing with each other, treat each other with mutual respect, and avoid taking irreversible actions unilaterally. It is also important to realise that expectations can be self-fulfilling. If both sides expect there will eventually be

a war, and proceed to act accordingly, there will indeed be a war eventually. If both sides expect that they will remain friends, or at least good neighbours, and act accordingly, they will remain friends or good neighbours. Thus, expectations have to be carefully managed on both sides.

It is probably unlikely that the two countries and their peoples will ever see eye-to-eye on everything, because they have such different cultures, histories and values. However, if both sides expect that, even with all the intermittent bickering and disagreements and all the technological competition, they can continue to be friends or even partners, there will be peace between the two countries.

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 and preventing further nuclear proliferation, and in so doing benefitting not only themselves but also all mankind.