Will the U.S. dollar remain strong?*,**

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Abstract

This paper consists of two main parts. In the first part, I will describe the historical background of how the U.S. dollar has acquired and maintained its monopoly status as an international currency. In the second half, we will consider whether China, which has emerged as a challenger to the United States, may threaten the hegemony of the United States, and explore the future course of the international currency system.

Keywords: International Currency, Foreign Exchange Reserves, Currency Hegemony, Housing Bubbles

JEL Classification: F33, F45, F51

I. International Currencies and a Strong U.S. Dollar

When we call a good "money" or "currency," it has the following three functions. The first is a function of "unit of account" that evaluates the value of goods as a common unit. The second is a function of "medium of exchange" that smoothly deals with the exchange of goods. The third is a function of "store of value" which maintains the value of safe and liquid assets.

By analogy with the above discussion, functions of international currencies consist of the functions of an international unit of account, an international medium of exchange, and an international store of value. If a car exported from Japan to the United States is contracted for 1 million yen (that is, if it is denominated in yen), the Japanese yen is fulfilling the function of an international unit of account. If it is contracted in units of 10,000 dollars (that is, if it is denominated in the U.S. dollars), the U.S. dollar is fulfilling the function of an international unit of account. When a currency is used to settle the actual trade, it functions as a medium of exchange. In trade between Japan and the United States, the Japanese yen or U.S. dollar is used as the settlement currency. Furthermore, you would incur a loss if you hoard money earned from trade as it is. Until it is used to settle the next trade, it will be managed in financial assets to earn profits. If you invest in yen-denominated assets such as government bonds and stocks, it means that the Japanese yen is used as a store of value. If

* This article is based on a study first published in the Financial Review No. 153, pp. 123-147, Masaya Sakuragawa, 2023, "Will the U.S. Dollar Continue to Dominate?" written in Japanese.

** I am very thankful for many valuable comments from the participants at the paper review meeting held on August 2022. In addition, Mr. Hideaki Matsuoka contributed to the construction of the data.

you invest in U.S. dollar-denominated assets such as U.S. Treasuries, it means that the U.S. dollar is used as a store of value.

If any one of the three functions is missing, that good cannot be called a currency. Each function is complementary to each other. The enhancement of the value of a medium of exchange increases the value of a store of value, and the value of a store of value increases the value of a medium of exchange. Even if it has values of a unit of account and a medium of exchange, it cannot be called a currency unless it is attractive as a store of value. This property is particularly important when we talk about international currencies.

The line of "International Payments" in Table 1 shows the share of each currency used in financial institution transactions using foreign exchange. This is an index that focuses on international medium of exchange. The U.S. dollar has a highest share, with the euro in second place and the Japanese yen in third. For reference, when comparing the share of GDP in the global economy (in terms of the U.S. dollars), it can be seen that the share of currencies exceeds the share of GDP in the four developed countries, and this trend is remarkable in the United States.

Table 1: Composition of International Currencies

	U.S. dollar	**euro**	**yen**	**pound**	**yuan**
International Payments	44.2	16.1	8.4	6.4	2.5
Foreign Exchange Reserves	59.5	20.6	5.9	4.7	2.4
GDP	24.7	15.4	6.0	3.3	17.4

Source: IMF, BIS. "International payments" use data in 2019, and "foreign exchange reserves" and "GDP" use data in 2020.

In today's global economy, supply chains are becoming more complex. Companies tend to make the settlement currency of the final goods the same as that of intermediate goods. Companies tend to choose the same currency as rival companies in the same industry because they dislike losses from price competition with their rivals. For these reasons, it is natural that the U.S. dollar is chosen, because the United States has the largest markets for final and intermediate goods. In addition, many developing and emerging economies peg their currencies to the U.S. dollar. Furthermore, "network externalities" work; a currency that has been used as a settlement currency for a long time increases the likelihood that it will be used as a settlement currency in the future. A complex combination of various factors has made the U.S. dollar the dominant settlement currency. Since the Lehman crisis, the share of GDP of advanced economies in the global economy are declining and that of emerging economies are increasing, but the impact of this trend has not yet been seen in the balance of power of international currencies.

The line of "Foreign Exchange Reserves" represents the share of foreign exchange reserves held by governments by currency. This is an indicator that focuses on international

store of value. The share of the U.S. dollar is further dominant, reflecting the fact that U.S. Treasuries are the safest international assets. The share of the renminbi, which became a component of the Special Drawing Rights (SDR) in 2015, is only a small number. Despite the fact that China has already surpassed the United States as the largest trade exporter in the world, the renminbi is still not recognized as a reserve currency in the world.

This table suggests that the U.S. dollar is still dominant. The experience of global imbalances and global financial crises seemed to shift to an era in which it would be difficult for the United States to have a monopoly supply of reserve currencies, but the U.S. dollar's dominant position is solid.

This paper consists of two main parts. In the first part, I will describe the historical background of how the U.S. dollar has gained and maintained its dominant position as an international currency. In the second half, I will discuss China, which has emerged as a challenger to the hegemony of the U.S. currency.

II. History of International Currencies

In history, one of the important goals of economic diplomacy was to elevate their own currencies to international currencies. Britain promoted the use of the British pound sterling as a means of maintaining the hegemony of the British Empire in the region. As the United States used the Bretton Woods system with the U.S. dollar being the key currency as the cornerstone of the postwar world order, the rise and fall of hegemony was also a battle over currency. Its consequences have not been limited to its own country, but also have affected economic and political interdependence with other countries. Economic hegemony did not automatically lead to currency hegemony. Not only economic reasons, but also historical and political reasons have played roles in getting there. Let's take a look back at history.

Collapse of the gold standard

From the late 19th century until the start of World War I, the adoption of the gold standard stimulated international capital flows, and the hegemony of the British Empire made the British pound the international currency. Britain acquired vast foreign wealth from colonial economies, and the City of London played a role as an international financial center.

The European economy suffered serious damages from the devastation of World War I, and Britain's economic position began to deteriorate. At the end of the war, GDP was overtaken by the United States, and the center of gravity of international financial markets was gradually shifting from the City of London to Wall Street. In 1925, Britain returned to the gold standard at the old parity of 1 ounce = 5 pounds. Winston Churchill was the Chancellor of the Exchequer at the time, but his decision was costly to the British economy. This exchange rate was overvalued relative to the strength of the British economy at the time, and the current account became deficits, and gold flowed out of the United Kingdom.

The Bank of England had no choice but to tighten monetary policy due to the need to adjust the quantity of money to its gold holdings. Prices fall when the central bank tightens

monetary policy. If deflation occurs, export prices are lower and import prices are higher, and the current account deficit will shrink. This is the automatic adjustment mechanism of the balance of payments that should work if the gold standard is adopted.

With the rise of the socialist campaign, however, workers began to unite against the capitalists, and even as the economy was in recession and unemployment increased, nominal wages and prices did not fall. The automatic adjustment mechanism of the gold standard did not work well. This is exactly the world that Keynes described in "The General Theory of Employment, Interest, and Money." The British economy was gradually eroded by the downward rigidity of nominal wages and involuntary unemployment.

The final blow was the Great Depression in the United States in 1929. In the wake of the Great Depression, Europe also fell into deep recession. Financial panic quickly spread as German and Austrian banks experienced runs. Britain was asked to provide financial support as a reserve currency country, but not only was it unable to fulfill its role, but the outflow of gold from its own country did not stop. In 1931 Britain gave up the gold standard. In just one week before and after Brexit, the British pound depreciated by about 25 percent against the U.S. dollar. The gold moved from Europe to the United States, and 70 percent of the world's gold was concentrated in the United States. However, the transition from the British pound to the U.S. dollar was not smooth. The United States, which raked in all the world's gold, has left the gold standard.

The international financial system has completely collapsed. Subsequently, the mechanism for stabilizing international financial markets disappeared, and competition for exchange rate devaluation, competition to raise tariff rates, and economic blocs occurred. The world trade has shrunk, the world economy has come to a standstill, and history has plunged into the tragedy of World War II.

What is a Reserve Currency Country?

Kindleberger (1973) attributed the economic turmoil of the interwar period to the lack of global leadership. He believed that the international financial system would be stable only when the key currency country, which possessed enormous wealth, would provide funds and bail out as an international "lender of last resort" in the event of a financial crisis.

"The 1929 depression was so wide, so deep and so long because the international economic system was rendered unstable by British inability and United States unwillingness to assume responsibility for stabilizing it in three particulars: (a) maintaining a relatively open market for distress goods; (b) providing counter-cyclical long-term lending; and (c) discounting in crisis… The world economic system was unstable unless some country stabilized it, as Britain had done in the 19th century and up to 1913. In 1929, the British couldn't and the United States wouldn't."[1]

Kindleberger described the chaos of the absence of hegemony in his own way: "Britain lacked the capacity of the lender of last resort, and the United States lacked the will of the

[1] Kindleberger (1973), pp. 291-292.

lender of last resort." The notion that the international system is stable when a nation is the dominant hegemon was established as the "hegemonic stability theory" in the fields of international relations and international politics.

Nurkse (1944) argued that a situation in which multiple currencies compete as foreign exchange reserve currencies makes the international currency system unstable. According to this argument, the antagonistic situation between the two currencies, as were the U.S. dollar and the British pound in the 1920s, meant that there was a currency that could be easily replaced from the standpoint of a third-country central bank, and that provided an environment that could easily trigger the collapse of the international currency system.

According to historical facts, it is hasty to conclude that the multi-currency system is unstable. Looking at the currency composition of the foreign exchange reserves of major European countries from 1898 to 1913, the British pound accounted for 48 percent, the French franc 31 percent, and the Deutsche mark 15 percent (and the others 6 percent). During this period, several currencies were stable and functioned as international currencies.

The Bretton Woods System and the Gold-Dollar Standard

In 1944, the leaders of the Allied powers gathered in Bretton Woods, a resort near Washington, D.C., to discuss the restructuring of the international financial system.

The United States took the place of Britain, which declined after two world wars, as economic hegemony. The United States held more than 70 percent of the world's gold, and the Bretton Woods system was established with the U.S. dollar as the de facto reserve currency.

However, the new framework has not been decided easily. There was criticism of whether a country's currency such as the U.S. dollar could be used as an international currency, Keynes criticized this system. More than 70 percent of the world's gold was concentrated in the United States, and the U.S. dollar held sufficient "international collateral" as an international currency immediately after the end of the war, but Keynes expressed a strong concern about the sustainability of this system. Keynes described the negative effects of making one country's currency an international currency, and proposed the "Bancor Proposal," which argued that all major countries should invest in the currency and create a new international currency using it as collateral. However, due to the power balance between the United States and the United Kingdom at the time, the Keynes plan was not adopted, and the proposal to make the U.S. dollar the de facto reserve currency was adopted.

At the Bretton Woods conference, the framework of the gold-dollar standard, with the U.S. dollar as the de facto reserve currency, was established, but it did not work immediately. The European economy was war-torn, and the U.S. dollar and gold were concentrated in the United States, making it impossible for the U.S. dollar to circulate internationally. In order for a country's currency to be supplied to the world as liquidity, the reserve currency country has to become a trade deficit country or, if it is a surplus country, has to provide capital through external loans. Britain, which succeeded in the Industrial Revolution ahead of the rest of the world, expanded trade by having comparative advantage in manufacturing

industries. Britain has run current account surpluses, and the funds earned from trade were directly invested in Commonwealth countries and the British pound was circulated internationally.

The United States could not use this method. The Bretton Woods system employed a fixed exchange rate, and capital transactions were internationally regulated to maintain it. Japan and Europe did not possess the U.S. dollar at the time, which was moribund by the blow of the war even if they tried to import from the United States.

The turning point came in February 1947, when Harry Truman expressed his stance against rising communism in his State of the Union address to Congress. Known as the "Truman Doctrine," the Declaration clearly defined the structure of the Cold War with the communist camp centered on the Soviet Union and was a turning point for the United States to abandon isolationism since the Monroe Declaration. The United States became actively involved in European politics and economics. The Marshall Plan and the Dodge Plan were implemented. Loans were made in the U.S. dollars, and Japan and Europe were able to procure imports from the United States using the U.S. dollar funds. Economic recovery began there, and eventually the trade between the United States and those countries expanded. It was not until this time when the U.S. dollar began to circulate as an international currency.

II-1. Nixon Shock

The Bretton Woods system, which aimed to build an international financial market after World War II, is called the "gold-dollar standard." The U.S. dollar was permitted to be converted into gold at a certain exchange rate (1 ounce of gold = 35 dollars), and the U.S. dollar was positioned as the reserve currency.

Triffin (1961), however, criticized the Bretton Woods system on the grounds that the system of positioning the U.S. dollar, the currency of a country, as the reserve currency was not sustainable. According to the famous "Triffin's Dilemma," if the United States refuses to supply the U.S. dollars to other countries from the concern about the credibility of its currency, there will be a shortage of liquidity in the settlement currency and global trade will stagnate. Conversely, if the U.S. dollars are supplied unlimitedly to facilitate trade, the increasing current account deficit of the United States will reduce the confidence of the U.S. dollar.

This concern realized in the late 1960s, when the U.S. current account surplus declined, and gross external debt (not net debt) exceeded gold reserves. Immediately after the end of the war, the United States held more than two-thirds of the world's gold, but in the 1960s, European countries perceived that the official rate between the U.S. dollar and gold did not reflect the real exchange rate and demanded gold more than the U.S. dollar. After that, the outflow of gold from the United States became unstoppable, and in August 1971, Richard Nixon unilaterally suspended the exchange of gold for the U.S. dollar. The Bretton Woods system came to an end. This is the so-called "Nixon shock," which was a historic turning point because the link between money and gold was broken for the first time in the history of money.

In the era of the gold standard and the Bretton Woods system, the international currency was linked to gold. A country with a large amount of net foreign assets would hold a large amount of gold, and gold would function as international collateral to support the value of its currency. In other words, the currency of a country with the world's largest net foreign assets was automatically used as international reserve currency. The situation changed dramatically in the wake of the Nixon shock. The U.S. dollar, which lost its linkage with gold, seemed to be buried in the system of multi-currency coexistence.

II-2. Plaza Accords

In retrospect, the U.S. dollar was lacking gold backing, but remained the de facto reserve currency on the back of deep and liquid financial markets. However, things did not go smoothly as the United States liked. In the 1980s, the U.S. external balance was worsened further.

In the first half of the 1980s, trade surpluses in Japan and West Germany expanded, and trade deficits in the United States increased. Trade imbalances became a political issue. The notion of "international coordination of economic policies" has emerged on the grounds that a widening U.S. current account imbalance slows down global economic growth. It was a pervasive idea convenient for the United States, but there was an opinion against it. Ryutaro Komiya, Professor of Tokyo University, criticized this aide on the grounds that current account imbalance is a consequence of savings-investment imbalance, and should not be a policy target.

In September 1985, the Plaza Accord was established. Five major countries decided to intervene in foreign exchange markets in order to increase the exchange rates of Japan and West Germany relative to the United States. The exchange rate of Japanese yen against the U.S. dollar appreciated from 250 yen to 150 yen per dollar in just one year.

The rapid appreciation of the Japanese yen itself did not lead to a severe recession, but it created other problems. The political pressure from the United States to expand domestic demand has constrained Japan's economic policies, and monetary easing has gone too far although asset bubbles had occurred since around 1986. In February 1987, the Louvre Accord called for policies to expand more domestic demand. Japan was forced to take a priority to international cooperation over suppressing domestic asset bubbles, and lowered the official discount rate even though the asset markets were booming. The asset bubbles eventually burst, marking the beginning of a long period of stagnation.

Since the end of World War II, the biggest policy challenge for European countries has been how to lock in Germany. Also toward the U.S. dollar, Europe has had a different approach from Japan. Unlike Japan, Europe did not like the fact that the U.S. dollar was the reserve currency, but rather held the view that the United States had "exorbitant privileges" from being a country of the key currency. In the latter half of the 1960s, the U.S. current account surplus shrank, and gross external debt exceeded its gold reserves. In response, some European countries sold the U.S. dollar to withdraw gold, destabilizing the Bretton Woods system.

While the distrust to the U.S. dollar was growing, the first concrete move toward monetary union took shape with the Werner Commission in 1970. Werner, who was the prime minister of Luxembourg, took the lead in publishing a report stating that the exchange rate would be fixed in Europe within 10 years and a unified central bank system would be established.

In 1979, the European monetary system was established. The member countries decided to intervene in the foreign exchange markets to stabilize the exchange rate within a certain range, but this attempt resulted in failure. Germany was forced to devalue the German mark many times, and France repeatedly devalued the French franc.

Throughout the 1980s, Europe's attempts to realize a single market and a single currency were patiently pursued under the leadership of Jacques Delors, President of the European Commission. France continued to have ambitions to create a currency in Europe that could compete with the U.S. dollar. West Germany was positive to a single market, but not to a single currency. West Germany was reluctant to antagonize the United States because of its military protection by NATO. In addition, there was a difference in opinions on the independence of the central bank between France and West Germany. France had a flexible attitude on the independence of the central bank, but Germany did not concede to maintaining the independence. The experience of hyperinflation in the 1920s made Germany sensitive to this issue.

West Germany's stance has changed just after the Louvre Accord. West Germany tightened its monetary stance and broke away from policy coordination with the United States. In retrospect, the difference in policy responses between West Germany and Japan was a turning point of the history of international currency. Japan continued to support the post-Bretton Woods system, permitted the yen to appreciate, and used the U.S. dollar as the de facto reserve currency. Germany, on the other hand, became a core member of the European Union (EU), which was established in the wake of the fall of the Berlin Wall soon after, and the EU created a common currency, the euro, which would later compete with the U.S. dollar.

II-3. From Global Imbalances to the Lehman Crisis

In the 1990s, financial globalization progressed, capital flows became more active, and foreign assets and liabilities began increasing across countries. From the beginning of the 21st century, the United States and the United Kingdom increased current account deficits. Japan and Germany continued to run current account surpluses, and China joined as a new surplus country.

Financial globalization has widened current account imbalances in major economies. In 2006, the U.S. current account deficit (as a percentage of GDP) reached 6 percent, and China's current account surplus as a percentage of GDP reached 9 percent. The widening multilateral imbalance, known as a "global imbalance," became a concern as a signal of global economic turmoil, from debt defaults to the depreciation of the U.S. dollar.

Some have compared this global imbalance to the Bretton Woods system and tried to justify it under the name of the "new Bretton Woods system." The United States has the privilege of issuing international currency, has a comparative advantage in the financial industry, and attracts funds from all over the world by having a currency that is overvalued. Asian countries, on the other hand, have a comparative advantage in manufacturing, and want export-led growth by maintaining an undervaluation of their currencies. They accumulate large amounts of foreign exchange reserves denominated in the U.S. dollars and support the "strong dollar."

The international financial system, with the U.S. dollar as the reserve currency, was under attack from the "21st century version of the Triffin dilemma." With the rise of China and other emerging economies, the share of the U.S. GDP in the world fell to nearly 20 percent in the 21st century (in the U.S. dollar terms). The United States had to run larger current account deficits to meet the growing demand for foreign exchange reserves by emerging market economies, but there was a limit to how much international liquidity the United States could provide. Global imbalances were an event that have signaled that the international currency system with the U.S. dollar as its main currency was at a turning point.

Global imbalances ultimately resulted in financial crises. As the global economy continued to grow, the U.S. government alone was unable to provide sufficient international liquidity, and in reaction, private financial institutions began to provide securitized products to compensate for this shortage. Securitized products were private liquidity created using mortgages as collateral, but the collapse of their value eventually triggered a global financial crisis. Securitized products could not be safe assets unlike government bonds.

The story of safe assets circulated internationally can be read as the story of international currencies. The implication of the shortage of safe assets is that the United States has revealed its limited ability to supply the reserve currency. However, it is questionable if multiple currencies solve the shortage of safe assets.

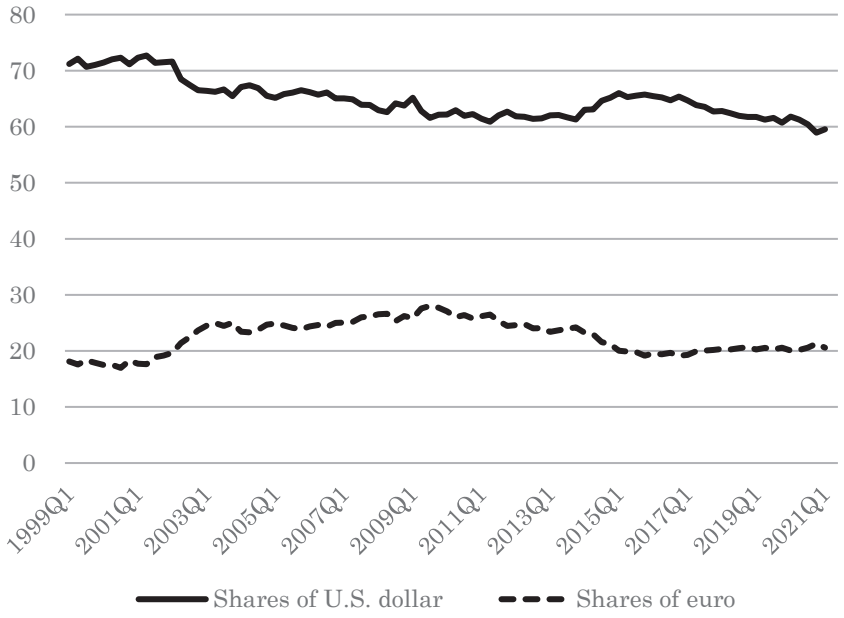
One of the features of the global economy in the 21st century is that emerging economies have achieved fast economic growth, but many of these countries have not realized financial development, the condition that is supposed to be necessary for economic development. Many emerging economies do not have liquid and deep financial markets, and have not yet reached the stage where they can supply safe assets internationally.

According to Caballero and Farhi (2014), "emerging economies do not have the capacity to create safe assets internationally." At first glance, the supply of safe assets may seem simple, but when it comes to international circulation, it is necessary to design a system that respects market disciplines and realizes the high quality of the whole financial market, such as the guarantee for free capital mobility, a highly transparent exchange rate system, thick and highly liquid financial markets, an organized government bond market, and an independent monetary policy.

The United States, Japan, the United Kingdom, and several European countries only have the potential to supply safe assets internationally.

Figure 1 shows the share of major currencies in the world's foreign reserves (Source:

Figure 1: Foreign Exchange Reserve Share of Major Currencies



Source: IMF

IMF). Throughout almost all periods, the U.S. dollar has shown outstanding strength, maintaining a share of more than 60 percent. In the first decade of the 21st century, the euro steadily increased its share and was almost reaching 30 percent, but in the wake of the European fiscal crisis that followed the Lehman crisis, a significant part of euro-denominated government bonds lost the status of safe assets. Even after the fiscal crisis ended, the governments in the euro zone have reduced the supply of government bonds, reducing its market share. For reference, the Japanese yen has been under fiscal reform throughout the 2010s and has not been able to adequately fulfill its role in supplying safe assets.

The share of foreign exchange reserves is expressed as the share of government bonds held by foreigners multiplied by the growth rate of the outstanding government bonds. Looking at the share of foreign government ownership from 2010 to 2019, the United States declined from 22.8 percent to 19.2 percent. Conversely, Germany increased its share from 31.8 percent to 42.4 percent. Japan also increased its share from 2.2 percent to 5.0 percent. Judging from these figures, it appears that the demand for German government bonds as foreign reserves is growing. On the other hand, the average growth rate of the outstanding government bonds over the decade from 2010-2019 was the highest in the United States at 6.7 percent, followed by Japan at 3.5 percent, and the lowest in Germany at 1.8 percent. The limited supply of German government bonds is the primary reason for the stagnation of the euro.

III. China's Challenge

Looking at the balance of power in currencies, it seems that the U.S. dollar will remain strong. China has grown rapidly and attempted to take the position of the United States. China is competing with the United States in the fields of military, diplomacy, trade, and advanced technology, but it is the currency that lags behind. The history of the U.S. dollar reveals that the holding of the international currency is to gain an advantage in international power games. If China wants to overturn the dominance of the U.S. dollar in the international currency system, it needs to make the Chinese yuan an international currency.

I would like to explore the possibility that the Chinese yuan will become an international currency that can rival the U.S. dollar. If China seeks to expand its currency hegemony, there are several problems that need to be overcome. Here, I would like to examine various elements, such as the concern about housing bubbles, the consequences of the Shanghai stock market crash, the possibility of a growing digital yuan, the U.S.-China competition and decoupling, and implications of the Ukraine crisis on the choice of international currencies.

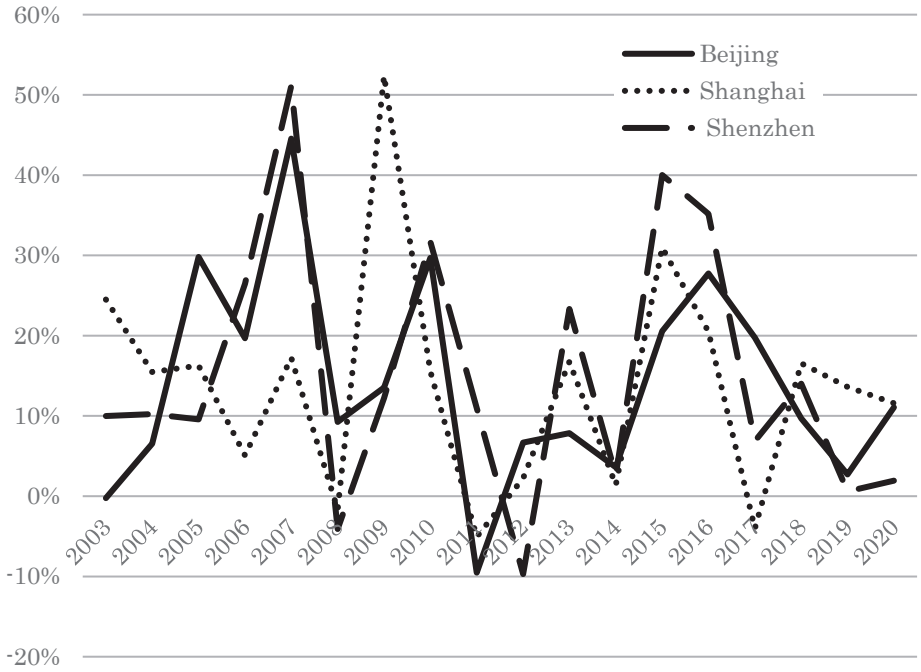
III-1. China's Housing Bubbles

In communist China, real estate such as houses and land is nationalized. It's a mystery why asset bubbles happen in China. While keeping the principles of communism, China has steadily constructed the appearance of a market economy. Even today, the ownership of land ultimately belongs to the government, but after several reforms, it is now possible to purchase land control rights for 70 years for residential use, 50 years for industrial use, and 40 years for commercial use. As for residential housing, real estate developers lease land parcels from local governments, build houses on top of them, and sell them to individuals. Individuals can live in the houses they have bought, and also rent them out to others or sell them. However, nothing is decided about what will happen to the ownership of land and housing assets after 70 years of the lease period.

In 2004, market transactions were put in place and land was traded through an open auction process. Real estate prices in China's urban areas began to soar at a high rate. There was an opinion that bubbles in the Chinese economy started in the early 2000s, but bubbles did not accelerate until after the Lehman crisis plunged the world economy into a major recession. Figure 2 shows the movement of housing price growth in Beijing, Shanghai, and Shenzhen.

Appreciations in housing prices have experienced three peaks from 2007 to 2020. First, housing prices rose significantly in the 2007-2008 period. In response to the global asset price boom, domestic high savings fueled the housing market. Subsequently, when the Lehman crisis plunged advanced countries into a deep recession, excess savings flowed from developed countries to emerging countries, causing asset prices to soar, especially in emerging countries. China implemented large-scale government spending and experienced the

Figure 2: Housing Price Growth in Major Cities in China



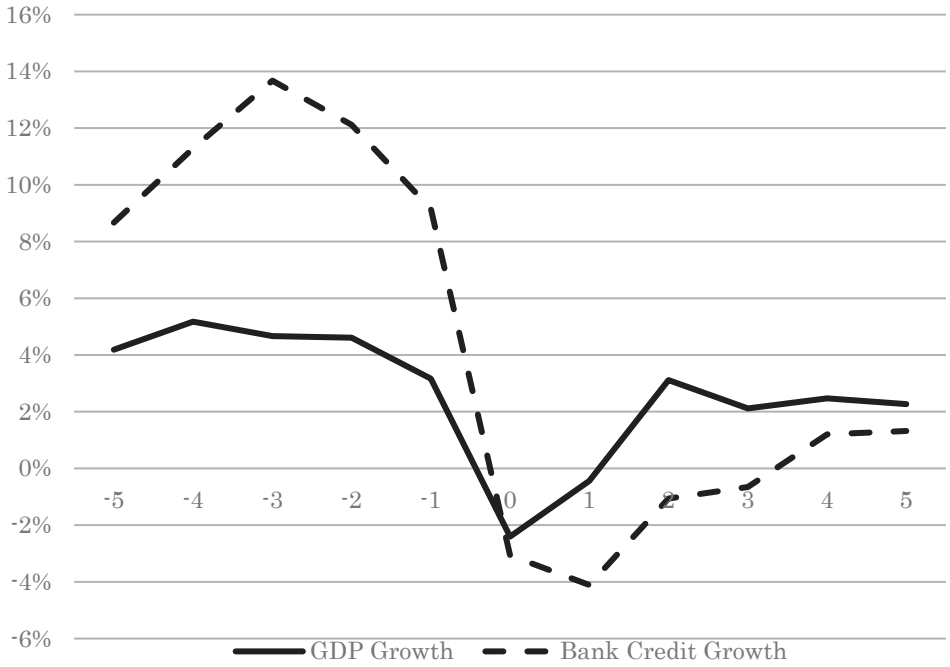
Source: "Chinese Quality-Controlled Housing Price (newly built commercial housing)" Hang Lung Center for Real Estate, Tsinghua University

second surge in housing prices from 2009 to 2011. Policies such as restrictions on housing purchases prevented the price hike temporarily, but from around 2015, China experienced a third price surge. For the third time, the price movement of Shenzhen is remarkable. Interestingly, the period of price decline is relatively short, and housing prices have continued to rise for almost 10 years. Referring to the evidence that land bubbles in Japan and housing bubbles in the United States burst in almost five or six years, it is surprising that the Chinese bubble has lasted for more than 10 years.

As Kindleberger (1978) stresses in his famous book, "Manias, Panics, and Crashes: A History of Financial Crises," the driving force of the rise in real estate prices is credit growth, which often exceeds the growth of the real economy. When the credit growth rate exceeds the GDP growth rate over a certain period of time, this credit growth is called "credit expansion." Credit expansion is supposed to be a signal from the bursting of bubbles to a financial crisis and a prolonged recession.

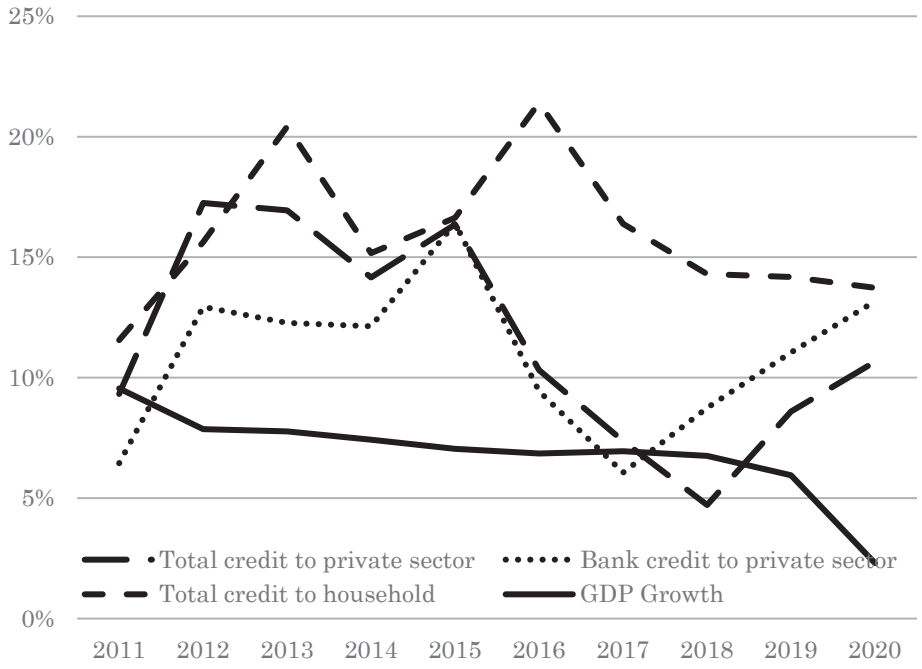
Figure 3 shows the growth rates of bank lending and GDP before and after the bursting of the bubble, covering 21 bubble episodes (19 countries) that occurred since the 1980s (source: IMF, BIS). "Point 0" on the horizontal axis represents the year of the bursting of the bubble. The period from "time - 5" to "time - 1" reflects the period of expansion when asset prices soared, and the period from "time 1" to "time 5" reflects the period of recession when the bubble burst. During the period when the bubble was inflated, bank lending in-

Figure 3: From Credit Expansion to Contraction



Source: IMF, BIS

Figure 4: China's Credit Expansion



Source: BIS

creased at a pace that exceeded GDP, and once the bubble burst, bank lending contracted sharply for several years, as the growth rate showed a negative value. In other words, this figure clearly shows that credit expansion does not last long, but rather eventually causes the bursting of bubbles, credit crunch, and the slowdown in economic growth.

So, how is the credit growth in China?

Figure 4 depicts a typical pattern of credit expansion, with various lending growth rates significantly exceeding GDP growth in most of the periods (source: BIS). In particular, relative to the recent slowdown in GDP growth, the growth rate of lending to households remains at a high level, suggesting that the lending to households supports the housing price bubbles.

Several studies have examined how bank lending is a driver of rising housing prices in China. Huang et al. (2015) used panel data from 35 major cities to demonstrate that bank lending is driving the house price growth. Sakuragawa et al. (2021) found that bank lending was a major driver of housing price growth over the period 2000-2015, using a sample panel of 31 administrative divisions (22 provinces, 5 autonomous regions, and 4 directly controlled cities (Beijing, Tianjin, Shanghai, and Chongqing)). The empirical results show that China's credit expansion is driving up housing prices, not just in large cities, but in the entire country, including medium-sized cities.

Sakuragawa (2021) summarizes the features of relationships among macroeconomic variables such as economic growth, bank lending, current account balance, and exchange rates before and after the bursting of bubbles, focusing on episodes of bubbles in 23 events (21 countries), such as housing bubbles in the Nordic countries in the 1980s, land bubbles in Japan, the Asian currency crisis, and the housing bubbles in Europe and the United States. "Average" in Table 2 represents a simple average of the 23 events (Source: World Bank, IMF).

"GDP growth" is the GDP growth rate averaged for the three years during the bubbly boom. The choice of the third year as part of the "peak" of the bubble cycle requires some caution. Specifically, I chose the three-year interval as the one starting from four to two years before the period of "trough" in which the bursting of bubbles occurred.[2] On average, the GDP growth rate of the bubbly boom is 4.4 percent.

Table 2: The General Pattern of Bubble Cycle

	GDP growth	Credit growth	Current account/GDP	Cumulative decline in GDP	Cumulative change in current account	Decline in exchange rate
Average	**4.4**	**12.6**	**-1.6**	**5.1**	**3.6**	**22.7**
Japan	**4.8**	**8.2**	**1.8**	**-0.2**	**1.1**	**-6.1**
China	**6.7**	**16.6**	**1.6**	**?**	**?**	**?**

Source: World Bank, IMF

"Credit growth" is the average growth rate of bank lending during the three years of the bubbly boom. The average credit growth rate is 12.6 percent, almost three times higher than the GDP growth rate, suggesting that there was a credit expansion. The data shows exactly how credit expansion led to the bubbly economy.

Once bubbles burst, financial institutions fall in a malfunction from the shortage of liquidity supply and the deterioration of balance sheets, and the economy falls into a deep recession. As an indicator of the severity of the economic downturn, we consider the "Cumulative change in GDP." This index is based on the level of GDP at the time of the bursting of bubbles and represents the maximum fall measured in terms of GDP growth rate. For example, Finland's growth rate fell to -6.0 percent in 1992, the year just after the bursting of bubbles, to -3.5 percent in the following year, and then to -0.8 percent two years later, before finally recovering to a positive growth. In this case, the cumulative decline in GDP was 10.3 percent in total. The average cumulative decline in GDP was 5.1 percent. The average of economic losses caused by the bursting of bubbles is about 5 percent in terms of economic growth rate.

"Current account/GDP" is the current account balance (as a percentage of GDP) averaged over the three years of the bubbly boom. A positive value indicates a current account surplus and an outflow of funds overseas. A negative value indicates that the current account is in deficit and that capital is flowing in from abroad. The average current account balance is -1.6 percent of GDP. "On average," bubbles occurred in a deficit country.

"Cumulative decline in current account" shows how much the current account balance has changed at maximum since the bursting of bubbles. The average value of 3.6 percent reflects that the current account balance has "improved" from a deficit of 1.6 percent to a surplus of 2.0 percent by the onset of the bursting. Hong Kong, South Korea, Malaysia, Thailand, and Iceland realized the large cumulative rate of change of more than 8 percent. All the countries are those with current account deficits. In the case of deficit countries, spending exceeds income as a whole and its difference must be made up by borrowing from abroad or by selling external assets. When the bursting of bubbles occurs, the uncertainty at home increases, the borrowing from abroad is refused, and the only way to adjust is to reduce domestic demand. The improvement in the balance of payments means the country rapidly shifted from a deficit country to a surplus country as a result of cutting consumption and investment.

When a crisis occurs and capital flows out, the national currency is sold, and the exchange rate depreciates. As the episode of "Twin Crises" tells us, a banking crisis causes a currency crisis, and at the same time a currency crisis causes a banking crisis. "Decline in exchange rate" shows the maximum amount of exchange rate depreciation in the first year since the onset of crisis. On average, the exchange rate declines by 22.7 percent.[3]

If bubbles burst in China, what path will China take? In fact, the story is not as simple as

[2] The reason for excluding the previous year of the "trough" is that there are many cases where the previous year of the trough was already affected by the signs of the bursting of the bubbles. In the case of the United States, for example, in 2008, the year before the trough, GDP growth was already recorded at -0.3 percent in the aftermath of the subprime mortgage problem.

the prediction of the global average.[4] This is because countries, that have experienced the bubble cycle, have different attributes, such as the size of their economies, the balance of current accounts, the stage of economic development, and the developing stage of financial markets. These differences are supposed to affect the bubble cycle in each country.

First, let's separate the countries into those with current account surpluses and those with deficits. Overall, among the 23 events, 15 countries are in deficit and 8 countries are in surplus. Table 3 summarizes "deficit bubbles" and "surplus bubbles."

One of the important features is that the cumulative decline in GDP of surplus bubbles is low. Deficit bubbles have a fairly high rate of 6.3 percent, while surplus bubbles have a low rate of 2.7 percent. We know that the bursting of bubbles often causes financial panics and currency crises. This pattern of crises is typically seen in deficit countries.

Next, there is also a large difference in the cumulative rate of change in the current account balance. The current account balance of deficit bubbles has improved significantly by 6.1 percent, which bears the feature of a sudden stop in capital inflows. In fact, surplus bubbles have increased their deficits only by 1.2 percent, indicating that there has been no significant change in capital flows before and after the crisis. Correspondingly, there is also a difference in the depreciation of the exchange rate. Deficit bubbles experienced depreciation by 26.2 percent, while surplus bubbles experienced depreciation by as low as 16.3 percent. This difference reflects that investors do not sell their domestic assets in crisis but sell their overseas assets. In other words, foreign investors trigger capital outflows, but not domestic investors.

Next, to see the impact of the size of a country, let us separate countries into large and small economies. A "small country" is a country whose trade volume and the size of capital

Table 3: Deficit Bubbles and Surplus Bubbles

	GDP growth	Credit growth	Current account/GDP	Cumulative decline in GDP	Cumulative change in current account	Decline in exchange rate
Deficits	4.6	14.7	-5.5	6.3	6.1	26.2
Surpluses	4.0	8.5	5.8	2.7	-1.2	16.3

Source: World Bank, IMF

[3] For 22 events, excluding the United States, exchange rates are evaluated against the U.S. dollar. The exchange rate of the United States is evaluated against the euro.

[4] For reference, the figures for the bubble period in Japan are listed in Table 2. Compared to the 23-event average, there are similarities and differences. First of all, if we look at the similarities, the "GDP growth rate" during the boom is almost the same. The "credit growth rate" is much higher than the GDP growth rate, and similar in that credit expansion is observed. However, the pattern of the bubble cycle has been explained on the premise that the country is a country with a current account deficit, but during the bubble period of Japan, the current account balance was in surplus. Rather, the expansion of the surplus due to the trade friction between Japan and the United States led to the Plaza Accord, which was one of the factors that triggered the asset bubble. This difference is related to the fact that the values of "cumulative decline in GDP," "cumulative rate of change in current account balance," and "exchange rate depreciation" differ significantly from the average values.

flows are negligible compared to the magnitude of world markets, and the impacts of its economic activities on the price of tradable goods and interest rates are negligible. On the other hand, a large country that can have an influence on the price of tradable goods and interest rates is called a "large country" in the terminology of economics.

Japan, the United States, the United Kingdom, and France, whose share in the global GDP exceeded 3 percent at the time of crisis, are defined as large countries, and the remaining 17 countries are defined as small countries. Table 4 compares the averages for large and small countries.

There is not much difference in GDP growth and current account balance during the boom, but the credit growth of small countries is about twice as high as that of large countries. When a crisis occurs, the difference between small and large countries becomes clearer. Looking at the cumulative decline in GDP, the cumulative change in the current account balance, or the decline in the exchange rate, any of the three numbers is higher for small countries. Smaller countries tend to experience a larger decline in GDP, a larger deprecation in exchange rates, and a greater fluctuation in their current account balance.

When faced with the bursting of bubbles, limited are the policy options available to small countries. There is little freedom in monetary policy. A reduction in the policy rate cannot be used as the tool to bail out banks or to recover from recessions. In the 1980s, Sweden and Finland experienced the economic boom driven by capital inflows from overseas. In reaction to the bursting of bubbles, governments of those countries had to choose between maintaining exchange rates to prevent currency crises and lowering the policy rate to prepare for domestic banking crises. Both countries ultimately opted for the former, raising the policy rate and stabilizing exchange rates.

As the "Trilemma of International Finance" indicates, it is impossible to coexist with the liberalization of capital flows, a fixed exchange rate system, and an independent monetary policy. If a fixed exchange rate system is adopted to regulate capital flows, the central bank can lower the policy rate. In contrast, if capital flows are liberalized, a reduction in domestic interest rates will cause an outflow of capital overseas, so there is no choice but to shift to a floating exchange rate system or to keep domestic interest rates at a level consistent with foreign interest rates. If that country tries to maintain a fixed exchange rate system, it loses the freedom of monetary policy. The policy constraints posed by the trilemma are one of the reasons why the financial crises in the Nordic countries have been serious.[5]

Table 4: Large Country bubbles and Small Country Bubbles

	GDP growth	Credit growth	Current account/GDP	Cumulative decline in GDP	Cumulative change in current account	Decline in exchange rate
Large country	3.3	7.9	-1.6	2.8	0.8	6.9
Small country	4.5	13.1	-1.4	5.4	4.1	26.7

Source: World Bank, IMF

Let us guess the scenario after the bursting of the bubbles in China. The lower part of Table 2 shows three indicators during China's bubbly boom. The five-year average for 2015-2019 is used. The credit growth rate is larger than twice the GDP growth rate, showing the sign of credit expansion, as is like the average of other bubbles. China, on the other hand, runs current account surpluses, which is in contrast with the average. As of September 2022, China's bubbles have not yet burst at the national level, so the last three figures are blank.

Table 2 shows that the average economy enjoyed economic growth of 4.4 percent during the boom, and when faced with the bust, turned into negative growth rates for several years, as indicated by the cumulative decline in GDP.

This suggests that China could also suffer a growth decline of at least 4 percent. Moreover, the credit expansion strongly suggests that after the bursting of bubbles, the credit crunch and the slowdown in economic growth are inevitable. However, China is the world's second-largest economy in terms of GDP. From this point of view, China's economic losses may be mitigated to some extent. In addition, China is a country with current account surpluses, so the risk of a financial crisis seems small. In fact, unlike the case of the Asian currency crisis, domestic banks have not collected short-term funds from foreign financial institutions, and it is unlikely that financial institutions will fall into a panic of liquidity shortage. This will also be a factor in mitigating the economic losses to some extent.

According to the IMF's forecasts, China's economic growth rate is expected to be around 5 percent, but this figure does not take into account the impact of the bursting of housing bubbles. If the housing bubbles burst, China is anticipated to experience the reaction to excessive credit expansion and suffer a considerable decline in the growth rate. On the other hand, a large decline may be avoided because China is a large country and runs current account surpluses.

One consideration that is noteworthy is that China is not yet a developed country, but an emerging country that is still growing. Finally, I consider a scenario from this point of view.

Table 5 compares "Emerging market bubbles" and the "Developed country bubbles."

Table 5: Developed Economy Bubbles and Emerging Economy Bubbles

	GDP growth	Credit growth	Current account/GDP	Cumulative decline in GDP	Cumulative change in current account	Decline in exchange rate
Developed	3.5	11.4	-1.6	4.4	1.2	16.0
Emerging	7.4	15.3	-1.5	6.7	9.1	38.1

Source: World Bank, IMF

[5] Thailand has chosen a different policy response. When it became difficult to maintain the fixed rate due to the short sale of the Thai baht by hedge funds, the Thai government was forced to choose between raising the policy rate and maintaining the fixed exchange rate, or devaluing the Thai baht. The bet came to an end. If the latter was chosen and the fixed exchange rate system was abandoned, the distrust in the foreign exchange market was amplified, and the currency crisis would spill over into a financial crisis.

Emerging market bubbles consist of the 7 countries that experienced the Asian currency crisis, and developed country bubbles consist of the rest. Comparing the GDP growth rate during the boom, emerging market bubbles enjoyed a growth rate of 7.4 percent, which is considerably higher than the other, reflecting the fact that Asian countries were in the stage of catching up with developed countries. On the other hand, the cumulative decline in GDP was 6.7 percent, higher than the other. As the saying goes, "the higher the mountain, the deeper the valley," the swing of the economy from peak to trough was large. The magnitude of the amplitude is also reflected in the movement of the current account balance. The size of the current account deficit during the boom is almost the same in both, but there is a significant difference in the cumulative rate of the current account decline. Emerging market bubbles show an unusually high figure of 9.1 percent, clearly indicating that the crisis was a currency crisis with a reverse flow of capital flows. In addition, the difference in the depreciation of the exchange rate also clearly shows the magnitude of capital outflows. The impact of the crisis was severe by the fact that the crisis took the form of a typical pattern of sudden stops in capital flows, and that those countries still lacked the capacity to manage the economy autonomously, such as the country's immature banking system and weak governance structure seen in crony management. If the poor policy response to the bursting of bubbles leads to a currency crisis, China may suffer huge losses.

III-2. Shanghai Stock Crash as a Turning Point

Weaknesses of the Chinese economy are underdeveloped financial markets and the lack of transparency of exchange rate policies. China has adopted a currency basket system, which is a loose floating exchange rate system, since the 2005 reform of the Chinese yuan, but it is a well-known fact that the Chinese yuan is still pegged to the U.S. dollar.

As long as China realizes fast economic growth and maintains its interest rate differential with the United States, many would criticize the undervaluation of the Chinese yuan, but few would be concerned about the overvaluation. What changed the situation was the end of quantitative easing in the United States. The Fed raised the federal funds rate from zero to 0.25 percent in December 2015 and announced the stance of raising the policy rate. On the other hand, in reacting to the slowdown of the GDP growth, the People's Bank of China has decided to cut the policy rate. The larger nominal interest rate differential between the two countries naturally exerted pressure on the foreign exchange rate. Investors have begun to wonder if the Chinese yuan is overvalued.

This coincided with the stock market crash that occurred in the Shanghai market in June 2015. When the Shanghai stock market crashed, the Chinese government tried to respond to this event with stock market reforms and fiscal and monetary policies. However, policy tools such as the ban on short selling and the forced increase in dividends by state-owned enterprises have resulted in the loss of confidence from foreign investors. The Chinese government's poor handling of the crisis disappointed global financial markets.

Let's take a look at China's balance of payments in Table 6 (Source: State Administra-

Table 6: China's Balance of Payments

Unit: 100 million of U.S. dollars

year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
current account	2,378	1,361	2,154	1,482	2,360	2,930	1,913	1,887	241	1,029	2,740
Surplus/GDP	3.9	1.8	2.5	1.5	2.3	2.6	1.7	1.5	0.2	0.7	1.9
Capital account	-1,849	-1,223	-1,283	-853	-1,692	-912	272	179	1,532	263	-1,058
Direct investment	**1,857**	**2,317**	**1,763**	**2,180**	**1,450**	**681**	**-417**	**278**	**923**	**503**	**1,026**
Assets	-580	-484	-650	-730	-1,231	-1,744	-2,164	-1,383	-1,430	-1,369	-1,099
Liabilities	2,437	2,801	2,412	2,909	2,681	2,425	1,747	1,661	2,354	1,872	2,125
Securities investment	**240**	**196**	**478**	**529**	**824**	**-665**	**-523**	**295**	**1,069**	**579**	**873**
Assets	-76	62	-64	-54	-108	-732	-1,028	-948	-535	-894	-1,673
Liabilities	317	134	542	582	932	67	505	1,243	1,604	1,474	2,547
Other investment	**724**	**87**	**-2,601**	**722**	**-2,788**	**-4,340**	**-3,167**	**519**	**-204**	**-985**	**-2,562**
Assets	-1,163	-1,836	-2,317	-1,420	-3,289	-825	-3,499	-1,008	-1,418	-549	-3,142
Liabilities	1,887	1,923	-284	2,142	502	-3,515	332	1,527	1,214	-437	579
Foreign exchange reserves	**-4,696**	**-3,848**	**-987**	**-4,327**	**-1,188**	**3,423**	**4,487**	**-930**	**-182**	**198**	**-262**
Net errors and omissions	-529	-138	-871	-629	-669	-2,018	-2,186	-2,066	-1,774	-1,292	-1,681

Source: State Administration of Foreign Exchange of China

tion of Foreign Exchange of China). It is noteworthy that in 2015 and 2016, the increase in foreign exchange reserves was significantly positive. This represents a net decline in foreign exchange reserves that amounted to $0.79 trillion in the two years. Furthermore, if we look at the data back from 2014, the current account surplus has increased the stock of foreign exchange reserves every year. On average for 2010-2014, foreign exchange reserves have been accumulated at a pace of $0.3 trillion per year. Assuming that there was the building up of reserves at this pace for 2015 and 2016, there would have been depletion of $1.39 trillion (0.79 + 0.3 + 0.3) of foreign exchange reserves in gross terms. The net decline was $0.79 trillion, but the gross decline was up to $1.39 trillion, which is consistent with the suggestion that the Chinese government depleted about $1 trillion in foreign exchange reserves to prevent the depreciation of the Chinese yuan. Foreign exchange reserves peaked at $3.97 trillion in July 2014, and have fallen by almost $1 trillion to $2.99 trillion in just two and a half years.

The substantial decline in foreign exchange reserves is the result of authorities' selling the U.S. dollars to buy back the Chinese yuan. That policy was the response to domestic investors' purchases of foreign assets and foreign investors' sales of Chinese assets. Looking at the debt item of "other investments" in 2015, it is listed as about minus 0.35 trillion dol-

lars ($351.5 billion). It indicates that foreign financial institutions have withdrawn their lending from China. Looking at the asset item in 2016, we see an increase in lending abroad of about $0.35 trillion ($349.9 billion). This indicates that domestic financial institutions have increased their lending to foreign countries.

We see changes also in the movement of direct investment and securities investment. As for direct investment, inward investment (liabilities) has exceeded outward investment (assets) until 2014, but since 2015, foreign investment has been rising as a trend, and net inflows of direct investment has decreased as a whole. Securities investments have maintained a trend of net inflows on average throughout the 2010s, but experienced net outflows in 2015-2016.

Broner et al. (2013) investigate the movement of capital flows before and after economic crises. According to their paper, immediately at the end of the crisis, not only was there an outflow of funds by domestic investors, but foreign investors also withdrew funds on a substantial scale. China has received a substantial amount of foreign direct investment, and if a crisis occurs, China will also inevitably see an outflow of foreign direct investment.

The People's Bank of China used its foreign exchange reserves of dollar funds to prop up the Chinese yuan, and the government tightened controls on capital outflows. Partly due to the repeated interventions in the foreign exchange market, foreign exchange reserves, which boasted almost $4 trillion, fell by $1 trillion to $3 trillion in 2015-2016. According to the balance of payments table, net declines in foreign exchange reserves of $0.34 trillion in 2015 and $0.45 trillion in 2016 were recorded. Assuming that the equivalent of the current account balance had been allocated to the new foreign exchange reserves, a maximum of $1.39 trillion in foreign exchange reserves was withdrawn. We may guess that this was primarily the result of the selling of the Chinese yuan in response to the withdrawal of funds from China by foreign investors. In other words, at least $1 trillion was spent to prevent a currency crisis. If China had not had ample foreign exchange reserves, it was likely that the currency crisis might have occurred.

The Chinese government was faced with a dilemma. The restrictions on capital outflows caused the "excess supply" of domestic financial markets, and housing prices to appreciate in 2015-2016. If China would have liked to prevent the depreciation of the Chinese yuan, China had to allow housing prices to soar, while if China would have liked to promote the liberalization of capital markets, China could have succeeded in repressing bubbles, but at the risk of a Chinese yuan collapsing. The Chinese authorities were forced to walk a tightrope in the face of two risks: a currency crisis and a risk of an accelerating bubble.

Anyway, China was able to prevent a contagion from the stock market crash to a currency crisis by using the large foreign exchange reserves. The currency depreciation was like the Asian currency crisis in that it was triggered by the U.S. interest rate hike, but the consequences were different. As the episodes of the sudden stop of capital inflows indicate, countries of current account deficits with almost no foreign exchange reserves will suffer from fleeing of foreign funds due to external shocks. In contrast, surplus countries can repatriate capital into the country by tightening capital controls.

If a crisis should occur, the country in question has to deplete overseas assets. If China's housing bubbles burst, how much will China have to deplete foreign exchange reserves? Will China lose about $1 trillion again? Jordà et al. (2015) investigate economic losses after the bursting of asset bubbles covering 17 major countries for 140 years of long-term data. According to their paper, the bursting of real estate bubbles lead to serious economic losses, and then the credit expansion by banks is often involved. In contrast, stock bubbles are not accompanied by credit expansion, and the economic losses are not large. Then, if China's housing bubbles, that are driven by credit expansion, burst, $1 trillion will not be enough. It may be necessary to double it to about 2 trillion. If the outflow reaches $3 trillion, foreign exchange reserves will be depleted, and the advantage of a country with current account surpluses may disappear. If capital flight from China intensifies, the Chinese authorities will try to tighten capital controls to prevent the outflow of funds overseas, but even if it can prevent the outflow of domestic funds, it will not be easy to prevent the outflow of funds from foreigners.

Whether or not a domestic financial crisis will cause contagion and turn into a currency crisis will depend on the extent to which China can repurchase the Chinese yuan using foreign exchange reserves. It is clear that this depends largely on the magnitude of the bursting of bubbles.

III-3. The Future of the Digital Yuan

China intends to overturn the dominance of the U.S. dollar by promoting the internationalization of the Chinese yuan. To this end, it is necessary to abolish capital controls and increase the transparency of foreign exchange policy, but China finds it difficult to progress on financial liberalization. The experience of the Shanghai stock market crash deterred the pace of liberalization. China's strategy to boost the renminbi's international position was to increase its dominance in payments.

Digital currency refers to a currency that is managed, stored, and exchanged on an electronic system. The crucial difference from cash is that there is no physical substance. For this reason, it is important to ensure safety. In order to make payments through electronic procedures, a mechanism is required to grasp whether the settlement has been made reliably and who owns how much digital currency. It is a challenge to build a payment system that makes it possible. Central banks in major economies are considering what steps to take in order to promote the digitalization of their currencies.

The digital yuan is developing. China is a top runner in the world as far as the technology of the micropayment system is concerned. However, it has not yet changed the balance of power of currencies. One reason is that the digital yuan is still used only in the domestic market and has not yet been integrated among the central banks of other countries. It is still uncertain whether the system integration will go ahead. In particular, system integration will be difficult when the telecommunication networks used by central banks are not integrated. Currently, there is a fierce technology competition between the United States and China over

the fifth-generation mobile communication system (5G). 5G has the advantages of ultra-fast communication, low latency (low communication lag), and increased diversity of device connections. Currently, Chinese company Huawei is leading the industry, but the United States has banned Huawei from the domestic 5G markets for fraudulent transactions and has asked other countries not to use Chinese products. If communication systems of the new generation are disrupted internationally, the international strategy of the digital yuan will be affected.

Another reason is that yuan-denominated assets are not internationally credible. In order for a country's currency to become an international currency, it is necessary to design a system that realizes the high quality of financial markets as a whole and respects market discipline. It includes guaranteeing free capital mobility, a highly transparent exchange rate system, deep and highly liquid financial markets, an organized government bond market, and an independent monetary policy. It is no doubt that China has tightened capital controls since the Shanghai stock market crash in fear of capital flight abroad, and that the Chinese yuan exchange rate is still under the control of the People's Bank of China. Unless the Chinese government implements extensive financial reforms and take policies that respects market principles, foreign investors will not be willing to own yuan-denominated assets. If the Chinese yuan is not attractive as a store of value, it is difficult to become an international currency.

Looking at China's challenge against U.S. currency hegemony from an economic perspective, it seems that it will not be easy to overturn the U.S. dollar-dominant system. In particular, if the crisis of the Evergrande Group, a major real estate group, triggers the complete bursting of housing bubbles, it will be clear that the economy will stall, domestic politics will become unstable, and the policy of advocating currency hegemony using the digital yuan will have to be revised. At the same time, it is also true that it is not only the economic aspects that influence the rise and fall of international currencies. Just as the reserve currency moved from Britain to the United States after two world wars, geopolitical aspects can also influence the rise and fall of currencies.

III-4. U.S.-China Trade War and Decoupling

In the 1930s, Britain's exit from the gold standard led to the collapse of the international currency system. The mechanism for stabilizing international financial markets disappeared, and the competition for exchange rate devaluation and tariff hikes contracted the world trade. Many countries fell in recessions, bloc economies and colonialism arose, and history plunged into the tragedy of World War II. History tells us that the fragmentation of the global economy leads to tragic consequences.

When Donald Trump became president of the United States, he criticized the free trade principle and overly supported protectionism. The United States withdrew from the Trans-Pacific Partnership (TPP), a multilateral trade agreement, and shifted to FTAs, which are bilateral agreements.

In 2018, he turned his attention to China. He criticized the trade imbalance with China on the ground that imports from China were depriving the United States of jobs.[6] Criticism to China first targeted the conflict of economic interests, such as the trade imbalance, unfair trade fueled by subsidies to state-owned enterprises, and infringement of intellectual property rights. The trade friction escalated into a struggle for leadership in advanced technology and human rights issues. Behind the seemingly excessive criticism to China is the growing tension over hegemony between the chasing and the chased, as suggested by "Thucydides' Trap."[7]

If China challenges the hegemony of the United States, China will have to lift the dependence on the United States. In other words, the U.S.-China conflict has forced a shift from coupling to "decoupling" in a wide range of areas, including the economy, technology, and currency.

First, let's look at how the trade imbalance has been changing. Figure 5 shows the mag-

Figure 5: Trade Decoupling

Source: Bureau of Economic Analysis, U.S. Department of Commerce

[6] Autor et al. (2013) analyzes the impact of imports from China on the U.S. employment.

[7] The "Thucydides Trap" is a historical rule of thumb that "when an emerging power rises and becomes antagonistic to the previous dominant power, the risk of war increases." It is based on the case of the emerging power Athens challenging Sparta, which was the dominant power in the ancient Greek world. Graham Allison's research team at Harvard University's Belfer Institute for Science and International Relations has found 16 cases of antagonism between dominant and emerging powers over the past 500 years, and reports that 12 of those cases have resulted in war. He warned that there was a possibility of a war between the United States and China would break out within a few decades.

nitude of the trade imbalance divided by the GDP (Source: Bureau of Economic Analysis, U.S. Department of Commerce). Imports, exports, and GDP are denominated in the U.S. dollars not to include changes in exchange rates. China's trade surplus (as a proportion of GDP) peaked at 9 percent in 2005 and since then has been declining. On the other hand, the U.S. trade deficit (as a proportion of GDP) has remained stable at just 2 percent for almost a decade since 2007. Despite the fact that the numerator size is the same (China's trade surplus = U.S. trade deficit), the different movements of the two graphs indicates the fact that China's GDP has been catching up with the U.S. GDP.

Since 2018, both the U.S. deficit and China's surplus have declined, reflecting how trade tensions have curtailed U.S.-China trade. In particular, China's surplus has been declining, falling below 2 percent in 2020. As far as trade is concerned, China is increasingly decoupling from the United States.

Does this change in trade affect the currency? As for the trade of goods, the importing country has an advantage over the exporting country because the buyer is stronger than the seller. As for lending and borrowing, the creditor country is stronger than the debtor country. From the perspective of trade, the United States, an importer, appears to be in a strong position, while from the perspective of finance, China, a creditor country, appears to have an advantage.

Which occupies a stronger position between the United States and China? The key to solving the puzzle lies in the fact that both trade and financial transactions use the U.S. dollar. China exports in the U.S. dollars and invests the income earned from exports in the U.S. dollar-denominated assets. China has accumulated a large amount of the U.S. dollar bonds as foreign exchange reserves, supported a "strong dollar," and driven the Chinese yuan to be undervalued, achieving export-led growth.

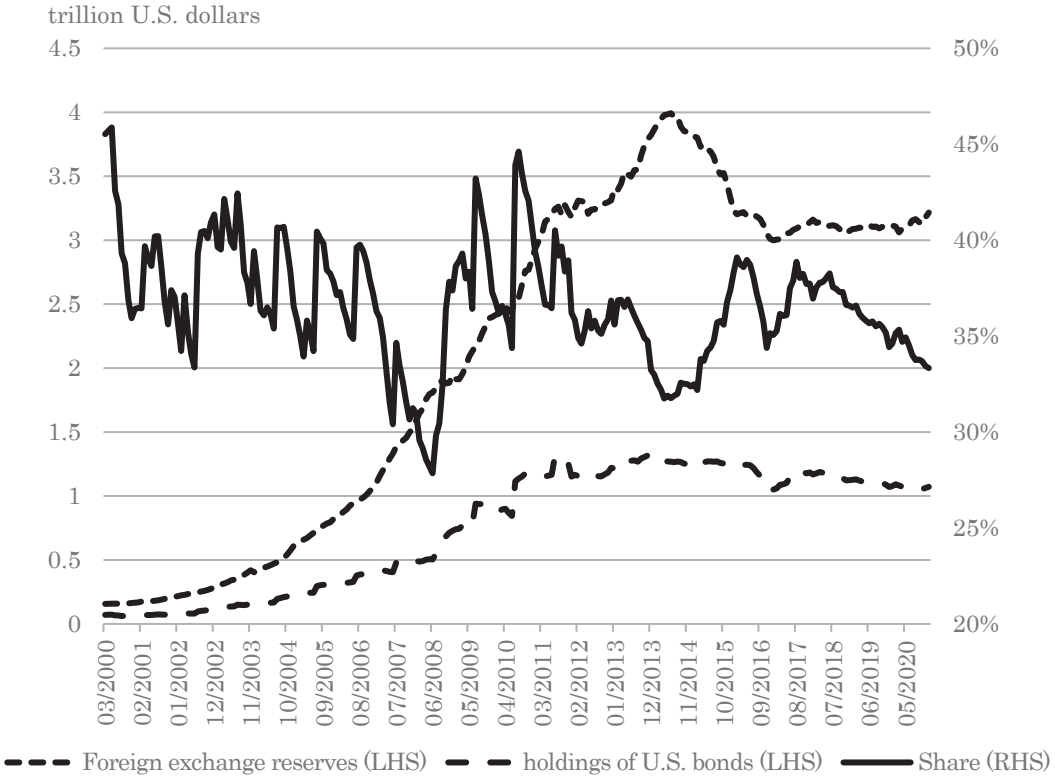
The Chinese economy is fully integrated into the U.S. dollar currency system. When China attains the export-led growth and becomes a creditor to the United States, the United States can decrease the real value of debt by depreciating the U.S. dollar, as was the case with the U.S.-Japan conflict under the Plaza Accord in the past. Currency is not a veil, but a power.

It is possible to suppose a strategy to gain an advantage in negotiations of the trade war by using the option of holding large U.S. bonds. If China sells U.S. bonds, the United States will suffer losses from the depreciation of the U.S. dollar, but China will also suffer losses from the appreciation of the Chinese yuan. China, which is embedded in the U.S. dollar system, cannot use the advantage of the creditor country as a trump card.

The question is how China will proceed with currency decoupling.

Figure 6 shows China's foreign exchange reserves and U.S. bond holdings (Source: IMF). This figure is intended to provide a rough picture of the progress on China's currency decoupling. Since Trump took office in 2017, foreign exchange reserves have remained stable at just over $3 trillion and have not increased so much. This is the result of a decline in the ratio of current account surplus to GDP since 2016. U.S. bond holdings have also remained unchanged at just over $1 trillion. On the stock basis, it does not appear that China

Figure 6: Currency Decoupling



Source: IMF

is taking any significant action to withdraw U.S. bonds. However, the share of U.S. bonds in foreign exchange reserves has been declining from 38 percent to 33 percent for 2017-2020.[8] If U.S. bond holdings are assumed to be exactly public holdings, and the ratio of dollar bonds to foreign exchange reserves continues to decline, it gives us a glimpse of the government's will to decouple currencies. China is progressing the withdrawal from the U.S. dollar bloc, albeit gradually.

III-5. Post-War Resolution of the Ukraine Crisis and Currency Hegemony

From an economic perspective, the balance of power in international currencies does not appear to change rapidly. However, history shows that the rise and fall of international currencies has been affected by discontinuous events such as wars and crises.

Let us recall the Marshall Plan, which aimed at the economic revival of Europe after the war. At the Bretton Woods conference, the framework of the gold-dollar standard was decid-

[8] The sharp rise in market share in 2015-2016 reflects a significant decline in foreign exchange reserves, reflecting the crash in the Shanghai stock market.

ed, but it did not work immediately. The European economy was war-torn and the U.S. dollar and gold were concentrated in the United States, making it impossible for the U.S. dollar to circulate internationally. The United States provided reconstruction assistance to European countries, created the purchasing power for those countries to import goods from the United States, and recirculated the U.S. dollars. Finally, the U.S. dollar began to circulate between the United States and Europe. The dollar system got on track.

The United States have exerted financial sanctions to Russia. As a result of the sanctions, the U.S. dollar in Russia's foreign exchange reserves has already fallen, and instead the Chinese yuan has risen. Russia appears to be switching its international payments from the U.S. dollar to the Chinese yuan. The financial sanctions may affect the balance of power in international currencies, which will depend on the form of a ceasefire and an end to the war.

To better perspective, let's start with a scenario in which the U.S. dollar remains strong. Kindleberger points out that the function of a lender of last resort is an important job of the reserve currency country. If Russia suffers devastating military and economic damages and ends the war with almost no national sovereignty, the West, led by the United States, may bear the initiative for restoring Russia. It is highly likely that the IMF will take the lead in reviving Russia's economy by imposing reparations on Russia and encouraging Russia to fulfill its payments. Russian energy will continue to be settled in the U.S. dollars, keeping the Russian economy in the U.S. dollar bloc. A strong U.S. dollar is maintained.

However, it may not turn out to be a favorable scenario for the West. If a ceasefire is reached in such a way that Putin's power remains, or if an undemocratic dictatorship is established even if Putin is ousted, the leadership of the West will not revive the Russian economy. Russia will not accept the Western-led reconstruction and move closer to China instead. The interest then is whether China will accept the reconstruction. China is trying to establish its hegemony in the Eurasian bloc under the slogan of One Belt, One Road, and will find it beneficial to support Russia. China may see usury loans as an opportunity to force Russia into a "debt trap" and, at best, force economic subordination.

On the other hand, does the Chinese economy have the resources to provide assistance? The economic growth rate in 2022 will be 3.0 percent, which is below the government's target of 5.5 percent. With the failure of the zero-COVID policy, it is expected that it will be difficult to achieve 5 percent in the future. In addition, if the non-performing loan problem revealed by the default of the Evergrande Group, a major real estate company, becomes widespread, the Chinese government may be forced to deal with the financial crisis and may not be able to afford to devote domestic resources to supporting Russia, both in terms of funds and human resources.

Which of the United States or China takes the initiative in dealing with the postwar Russia may affect the balance of power in the international currency. If China were to fulfill its function as a lender of last resort with support for Russia, countries that lag behind in democratization and are hostile to the United States may increase, and the international status of the Chinese yuan will increase.

U.S.-led financial sanctions have exerted unintended implications. Emerging and devel-

oping economies have witnessed the United States use of the U.S. dollar as a tool for diplomatic and political bargaining, and they are worrying about the excessive dependence on the U.S. dollar. In March 2023, Brazil and China agreed to use their national currencies, the real and the renminbi, as settlement currencies for bilateral trade. In January 2023, Saudi Arabia expressed its intention to consider the possibility of settling oil exports in a currency other than the U.S. dollar. The history of "Pedro Dollar," that is, the history of the U.S. dollar's monopoly on oil settlements, has been one of the pillars of the U.S. dollar system. Saudi Arabia's remark has had a nonnegligible impact.

The United States is trying to exclude China from the access to advanced semiconductor technology and trying to enclose the semiconductor supply chain for the sake of economic security. The international enclosure of supply chains contradicts the principle of free trade. If the United States is highly sensitive to the rise of China, it may finally destabilize the U.S. dollar's foundations.

In the 1930s, Britain's exit from the gold standard led to the absence of the lender of last resort in the international financial markets, the collapse of international cooperation, and the rise of bloc economies and colonialism. Past experience tells us that the collapse of the international currency system led to a reduction in free trade and a fragmentation of the world economy. What is about to happen now is that the challenge to the principle of free trade creates the division of the international currency system. Our concern is where the U.S.-China conflict and the consequences of Russia's invasion to Ukraine will take us.

IV. Conclusion

The U.S. dollar appears to be strong. I have considered China's challenge with the hegemony of the United States from various directions. It seems difficult to overturn the current U.S. dollar system. China may fall into a slowdown of GDP growth due to the bursting of the housing bubbles, and the policy of currency hegemony itself may be revised. The future of the euro will depend on Germany's willingness to take on the international supply of safe assets. Germany has faced the loss of a stable energy supply due to the Ukraine crisis, and it will be difficult to actively lead the internationalization of the euro.

In order for a country's currency to become an international currency, it is necessary to design a system that realizes the high quality of financial markets and respects market disciplines, such as guaranteeing free capital mobility, a highly transparent exchange rate system, deep and highly liquid financial markets, an organized government bond market, and a highly independent monetary policy. The view that international credibility pushes a country's currency to the status of an international currency will continue to be supported for some time. If the United States loses the currency hegemon, it will be when the U.S. dollar's credibility is eroded by internal factors rather than external shocks.[9] If the inflation of around 5 percent persists, or if the debt ceiling issue arises again and the default on U.S. Treasuries is discussed, the credibility of U.S. Treasuries may decline internationally and the U.S. dollar's reserve currency status may not be maintained.

Finally, I have to add one comment. This view is based on the assumption that international financial markets are not divided.

References

Sakuragawa, M. (2021), *An Economic Theory of Bubbles: Low Interest Rates, Secular Stagnation, and Financial Deterioration*, Nihon Keizai Shinbun Syuppan (Japanese) .

Sakuragawa, M. (2023), "Will the U.S. Dollar Continue to Dominate?", *Financial Review,* 153, pp. 123-147 (Japanese) .

Autor, D.H., Dorn, D., and Hanson, G.H. (2013), "The China Syndrome: Local Labor Market Effects of Import Competition in the United States", *American Economic Review,* Vol. 103, No. 6, 2121-2168.

Broner, F., Didier, T., Erce, A., and Schmukler, S.L. (2013), "Gross capital flows: Dynamics and crises", *Journal of Monetary Economics*, Vol. 60, Issue 1, pp. 113-133.

Caballero, R.J., and Farhi, E., (2014), "On the role of safe asset shortages in secular stagnation", In: Cohen, T., Baldwin, R., (Eds.). *Secular Stagnation: Facts, Causes, and Cures*, CEPR Press, pp. 111-122.

Huang, D.J., Leung, C.K., and Qu, B. (2015), "Do bank loans and local amenities explain Chinese urban house prices?" *China Economic Review*, Vol. 34, pp.19-38.

Mukhin, D. (2022), "An Equilibrium Model of the International Price System", *American Economic Review* , Vol. 12, pp. 650-688.

Nurkse, R. (1944), "International Currency Experience: Lessons of the Inter-War Period", Geneva: League of Nations.

Jordà, Ò., Schularick, M., and Taylor, A.M. (2015), "Leveraged bubbles", *Journal of Monetary Economics*, Vol. 76, Supplement, S1-S20.

Kindleberger, C.P. (1973), *The World in Depression 1929-1939*, Allem Lane the Penguin Press.

Kindleberger, C.P. (1978), *Manias, Panics, and Crashes, A History of Financial Crises,* London, Macmillan.

Sakuragawa, M., Tobe, S., and Zhou, M. (2021), "Chinese housing market and bank credit", *Journal of Asian Economics*, Vol. 76, 101361.

Triffin, R. (1961), *Gold and the Dollar Crisis: The Future of Convertibility*, Yale University Press, New Haven.

[9] Mukhin (2022) argues that the U.S. dollar has become the dominant currency due to its dominance as a settlement currency, and that the U.S. dollar's dominance over the Chinese yuan will not be changed even if China shifts its currency system to a floating exchange rate system and emerging and developing economies that pegged their currencies to the U.S. dollar change their pegs to the Chinese yuan.