Is Another East Asian Currency Crisis Possible?

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Introduction

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- Is Another East Asian Currency Crisis Possible?
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What Were the Causes of the East Asian Currency Crisis in 1997?

- The root causes of the East Asian Currency Crisis in 1997 are mis-matches between the assets and liabilities of the different economies. There are two principal sources of mis-matches: currency mis-match and maturity mis-match.
- Currency mis-match means the borrower's revenue is in a different currency from the debt that it has to repay. Typically, a borrower with only domestic revenue should not borrow in a foreign currency. If it does, there is a currency mis-match.
- Maturity mis-match means borrowing short-term funds to finance long-term projects. This is problematic even if the revenue and the debt are in the same currency because it will create liquidity issues.
- Either mis-match or both can result in misery.
- With currency mis-match, the short-term (within 12 months) liabilities, both public and private, in foreign currencies can lead to a liquidity problem in foreign exchange for the country, resulting in possible capital flight and/or devaluation.

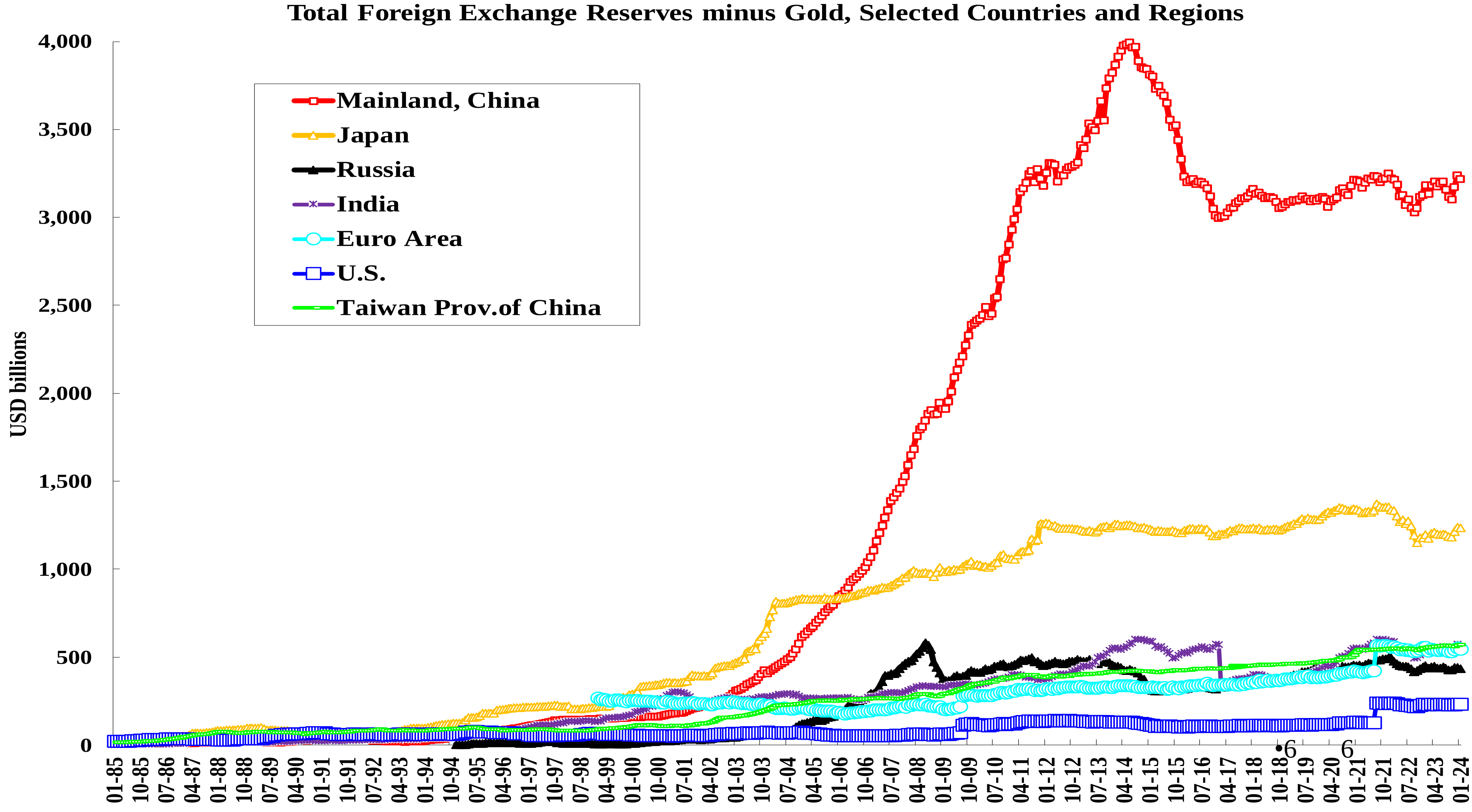
What Were the Causes of the East Asian Currency Crisis in 1997?

- What is a level of foreign exchange reserves that can be considered adequate to avert or forestall a currency crisis?
- The answer is a simple one: The level of foreign exchange reserves should be greater than the sum of the short-term public and private foreign-currency-denominated loans due, and the total interest payments due, within the next twelve months, plus at least six months of worth of imports that must be paid with foreign currencies.
- This is because at the first sign of a foreign exchange liquidity problem, new and renewed foreign-currency denominated-loans will dry up, and exporters will postpone repatriation of their foreign exchange revenue and importers will accelerate their foreign exchange payments and there may be capital flight. The net result is that the country will be unable to fulfill its foreign-currency denominated obligations, resulting in a possible reduction in its credit ratings and a possible devaluation of its currency.

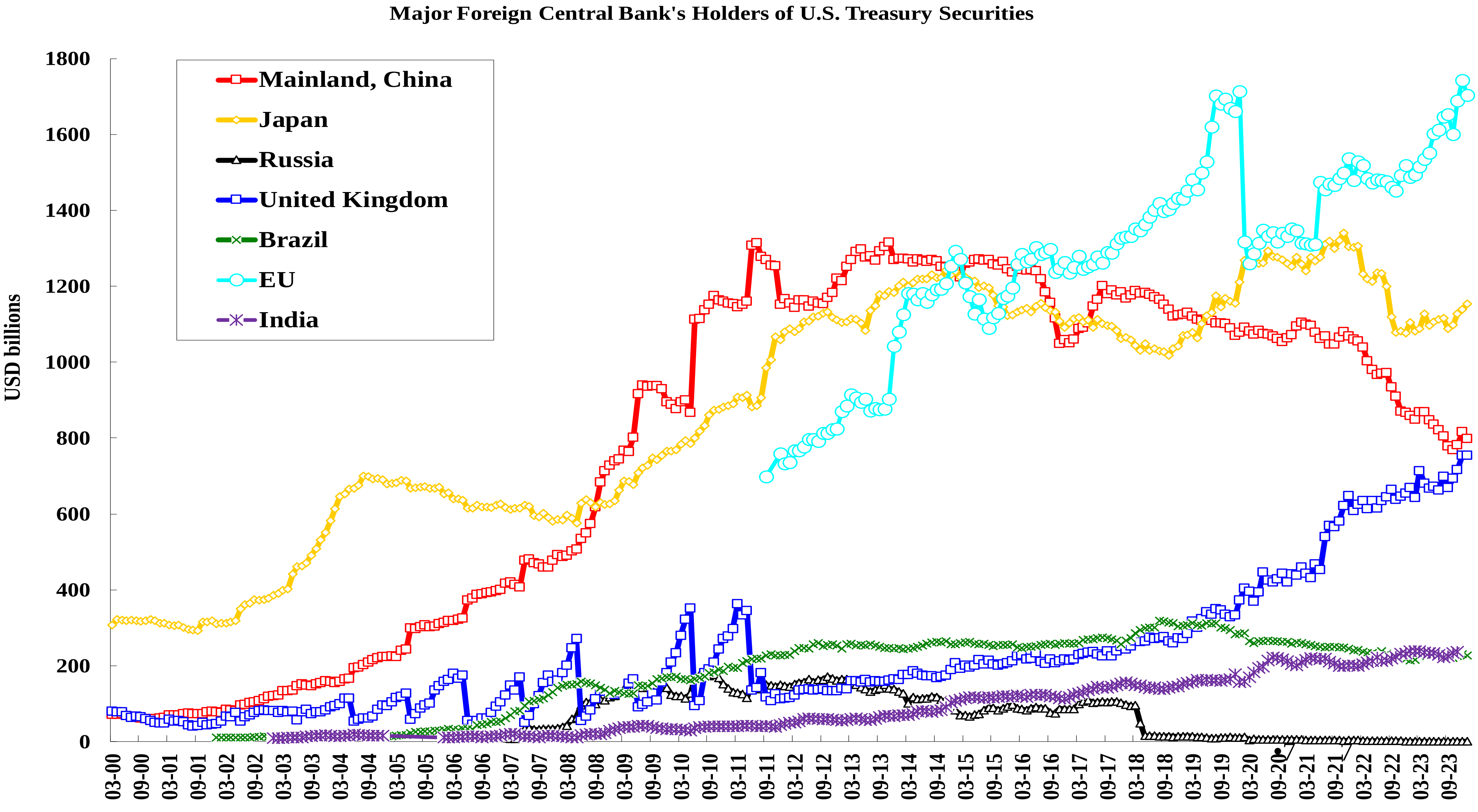
What Were the Causes of the East Asian Currency Crisis in 1997?

- The perceived inadequacy of the level of foreign exchange reserves can encourage predatory speculation by hedge funds, using, for example, the double-short strategy used by George Soros against the British pound in 1992 (that is, the simultaneous shorting of both the currency and the bonds of a country).
- The predatory speculator sells short a currency. The country's central bank raises the rate of interest to encourage investors to hold on to the currency. However, the higher interest rate will cause bonds to decline in value. If the predatory speculator has also shorted the bonds at the same time, he or she will make money on either one of the shorts, or often on both.

Total Foreign Exchange Reserves minus Gold: Selected Economies



Major Foreign Central Banks' Holdings of U.S. Treasury Securities



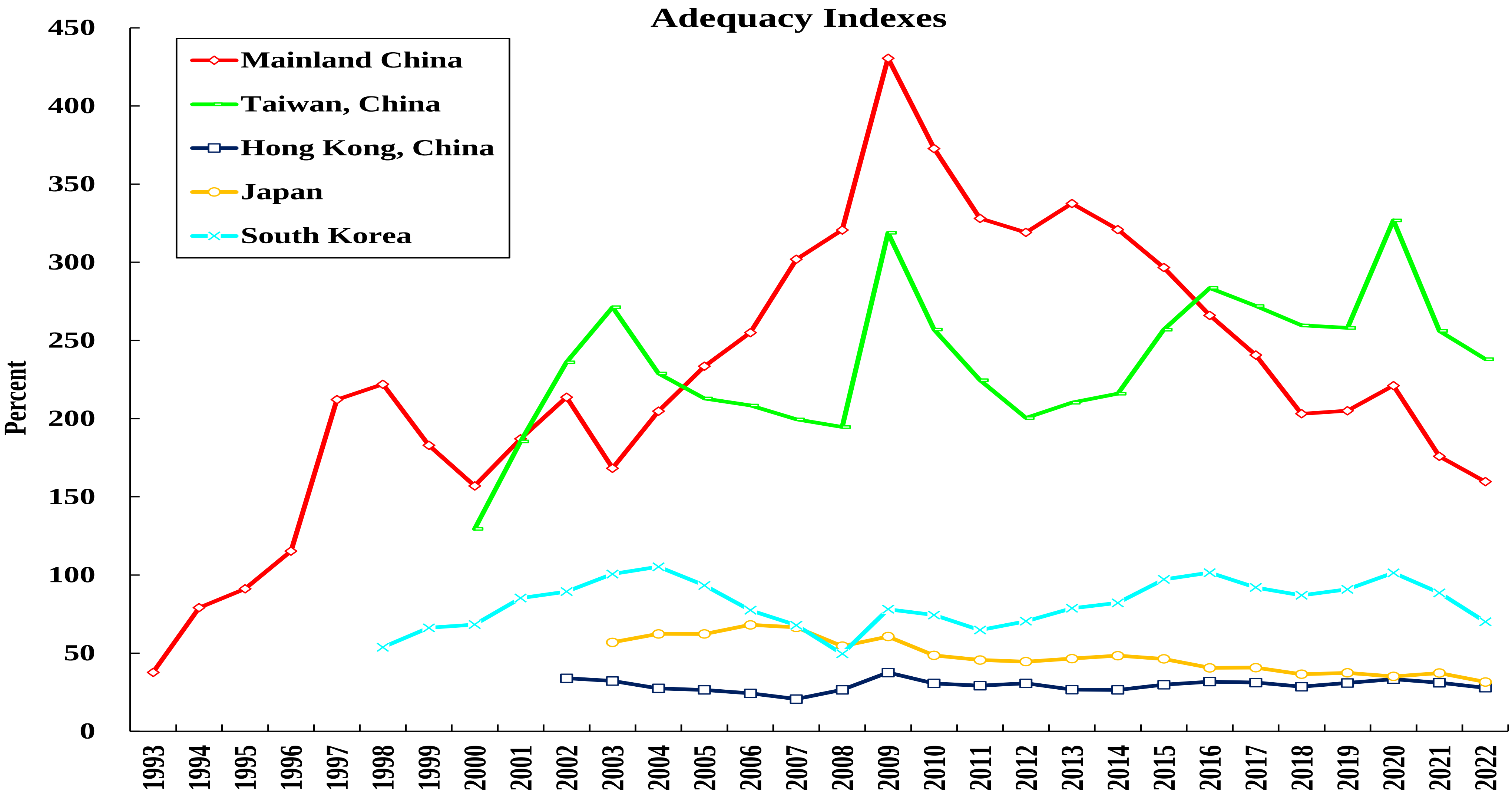
Is Another East Asian Currency Crisis Possible?

- We examine the adequacy of the foreign exchange reserves of selected economies.
- Since the 1997 East Asian Currency Crisis, most East Asian central banks have generally maintained an adequate level of foreign exchange reserves.
- Of course, if a central bank has a standby commitment from other central banks for emergency foreign-currency loans, it may be able to survive even with an inadequate level of foreign exchange reserves. This is what the Chiang Mai Initiative Multilateralisation (CMIM) Agreement is all about. Of course, this works only if not all central banks need extra foreign exchange at the same time.
- But a switch to own-currency settlement of some international transactions can also reduce the need for foreign exchange reserves. For example, the U.S. maintains an extremely low level of foreign exchange reserves because it can always pay in U.S. Dollars which it can print more or less at will.

Is Another East Asian Currency Crisis Possible?

- We first construct an "adequacy index" for every country and region as: Total Foreign Exchange Reserves minus Gold / (External Debt Repayments and Interest Payments Due in 12 months + Six Months of Imports of Goods and Services) * 100.
- This adequacy index is based on the assumption that foreign exchange is needed for settlement. If a country can use its own national currency for settlement, then the foreign exchange reserves required should be lower.
- In the following charts, we plot the adequacy indexes for China, Japan, South Korea and Hong Kong, China and for the ASEAN countries respectively from 1993 to the present.

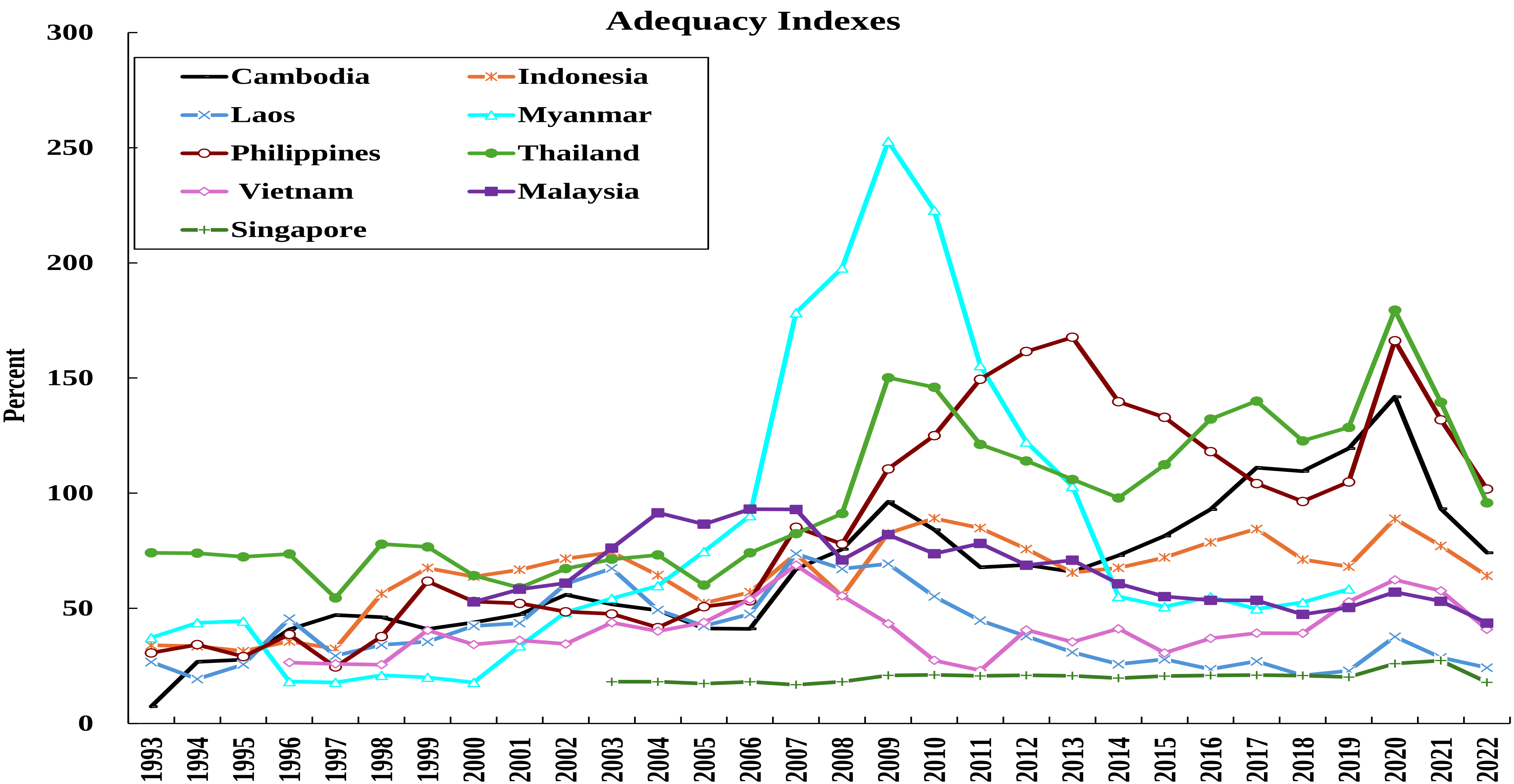
The Adequacy of Foreign Exchange Reserves: China, Japan and South Korea



Is Another East Asian Currency Crisis Possible?

- We note that China, South Korea, and Taiwan, China have ample foreign exchange reserves according to our adequacy index.
- However, Both Japan and Hong Kong have relatively low adequacy indexes of 32% and 28% respectively. Does this mean that they are at risk?
- Our interpretation is that for Japan, a great deal of foreign exchange is held by banks and firms outside of the Bank of Japan (the central bank of Japan) and in any real emergency, the foreign exchange can be tapped by the central bank. For Hong Kong, a great deal of the imports are destined to be re-exported to other countries and therefore are not the obligations of Hong Kong firms and households. If imports are replaced by domestic imports in the adequacy index formula for Hong Kong, its level will be much higher.

The Adequacy of Foreign Exchange Reserves: ASEAN Countries



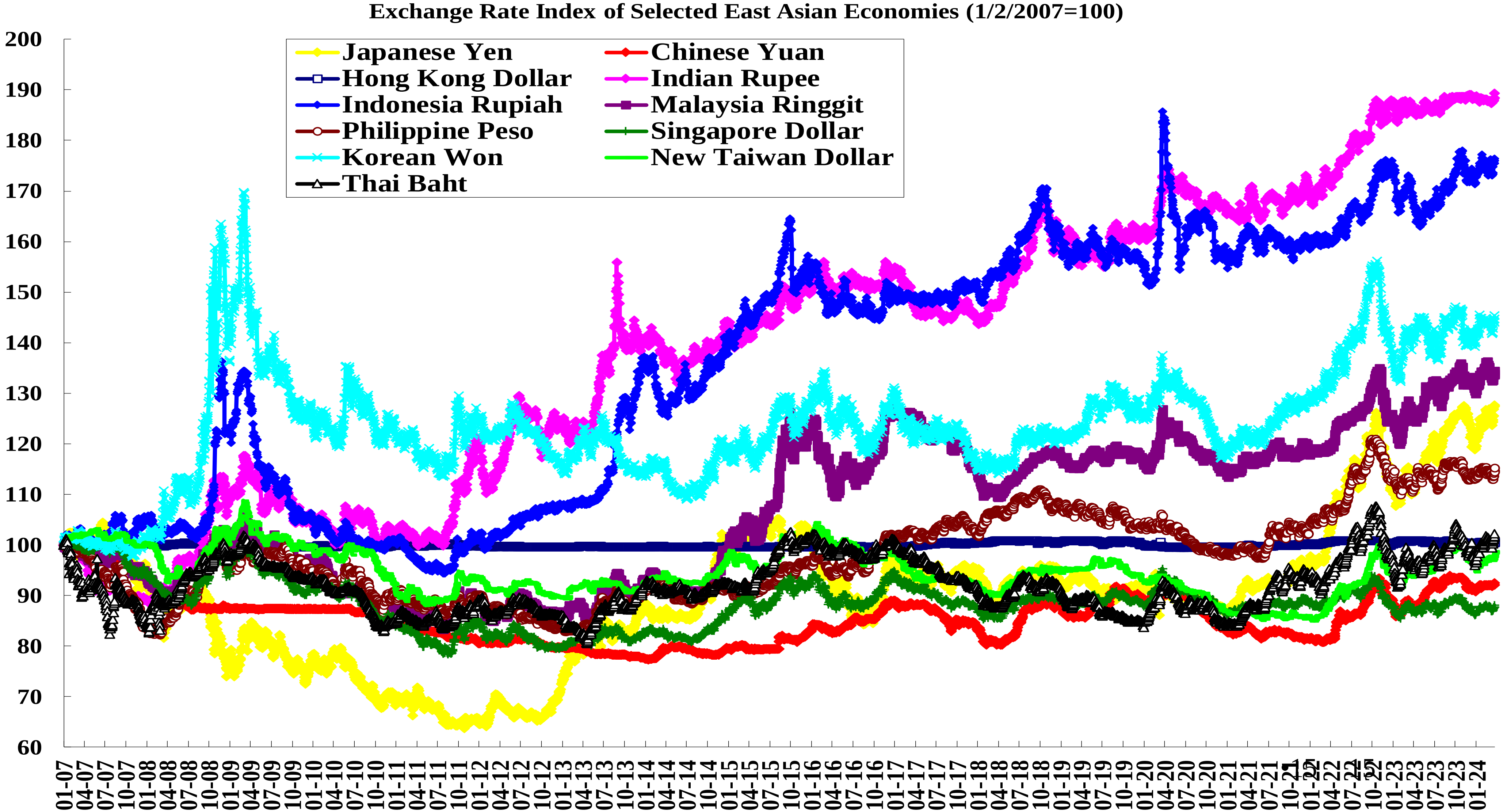
Is Another East Asian Currency Crisis Possible?

- For the ASEAN countries (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam), we note that Singapore has an exceptional low adequacy index of 18%. We believe this is once again due to Singapore's position as a major trans-shipment point. We should focus on the net domestic imports for Singapore, just as Hong Kong. (Unfortunately, we do not have data on Brunei.)
- Laos is not really at risk despite its low adequacy index of 24% because its most important trading partner is China and settlement can be done in Renminbi instead of the U.S. dollar or the Euro.
- Malaysia and Vietnam, both at 44%, are actually quite safe because of the CMIM Agreement. All the other countries have reasonably comfortable adequacy indexes in recent years.

Is Another East Asian Currency Crisis Possible?

- Relative to 2007, the Japanese Yen, the Korean Won and the currencies of Indonesia, Malaysia, and the Philippines have devalued to varying degrees.
- The Chinese Renminbi, the Singapore Dollar, the New Taiwan Dollar, the Thai Baht, and the Vietnamese Dong have either been stable or appreciated.

Exchange Rates of Selected Asian Economies (1/2/2007=100)



Own-Currency Settlement of International Transactions

- Before 1971, world settlement of international transactions were done under the Bretton-Woods system, that is, in the own national currencies of the trading economies according to pre-agreed fixed parities (which are occasionally adjusted).
- The International Monetary Fund (IMF) acted as the monitor of the system and an economy with a chronic balance of payments surplus vis-à-vis the rest of the world would be asked to revalue its currency upwards and an economy with a chronic balance of payments deficit will be asked to devalue its currency.
- However, since 1971, the invoicing, clearing and settlement of bilateral trade among countries has mostly been done in U.S. Dollars as the U.S. unilaterally abrogated its obligation to exchange gold for US$ under the Bretton-Woods system.
- In addition, the world has also essentially adopted a system of freely fluctuating exchange rates determined in the foreign exchange markets. Actually, exporters, importers and foreign direct investors all prefer a stable exchange rate to a daily fluctuating exchange rate. The only group that prefers a daily fluctuating exchange rate is the large multinational banks that operate the foreign exchange markets.

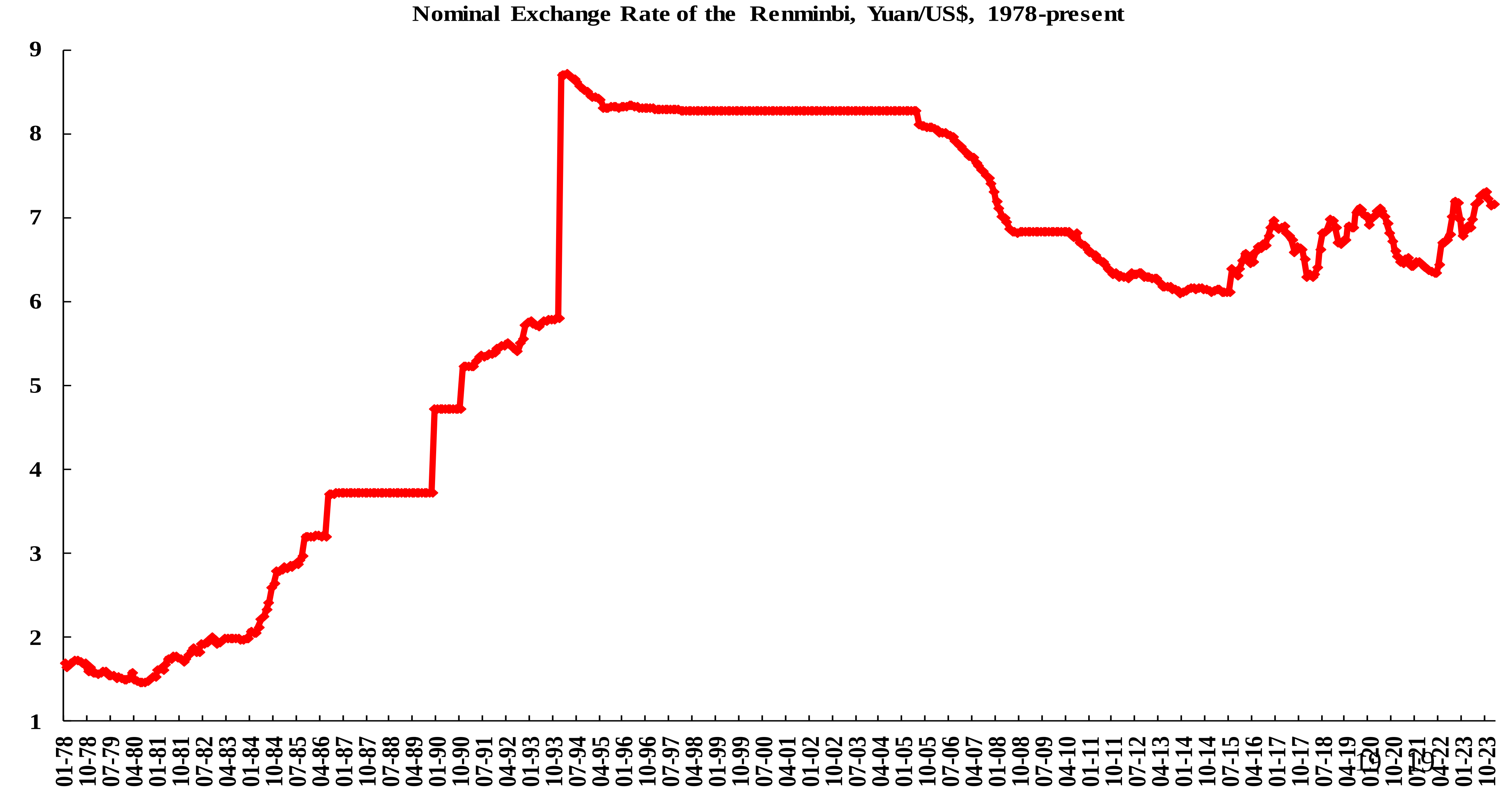
Own-Currency Settlement of International Transactions

- In 2000, after the establishment of the Euro Area, the invoicing, clearing and settlement of bilateral trade between any two countries in the Euro Area is done exclusively in the Euro.
- As will be demonstrated below, clearing and settlement of bilateral trade in own currencies reduces transaction costs and exchange rate risks to both the exporting and the importing countries. The practice is gaining popularity.
- One principal use of the foreign exchange reserves of a country is to pay for imports. If imports can be paid in a country's own currency, the level of foreign exchange reserves that has to be maintained can be significantly reduced. Consider the U.S. example. The U.S. has maintained an extremely low level of foreign exchange reserves.

Own-Currency Settlement of International Transactions

- If bilateral cross-border transactions between two countries can be settled in their own national currencies rather than in a third-country currency like the U.S. Dollar, the transaction costs and the exchange rate risks are both reduced, because only one currency exchange is required and hence there is only one exchange rate risk. If the settlement is made in a third-country currency, two currency conversions are required, doubling the transaction costs, and exchange rate risks are incurred by both the exporting and the importing countries. Thus, own-currency settlement benefits both the exporting and the importing country.
- Clearing and settlement of international transactions in own currencies actually constitutes a return to the Bretton-Woods system.
- One notable development is the gradual internationalisation of the Renminbi. The Renminbi has been a current-account convertible currency since 1994. Its value comes from the Renminbi's purchasing power over Chinese goods, services and assets. In fact, offshore Renminbi is fully convertible in Hong Kong. China's capital controls only apply to certain capital flows into and out of Mainland China.

The Nominal Exchange Rate of the Renminbi, Yuan/US$, 1978-present



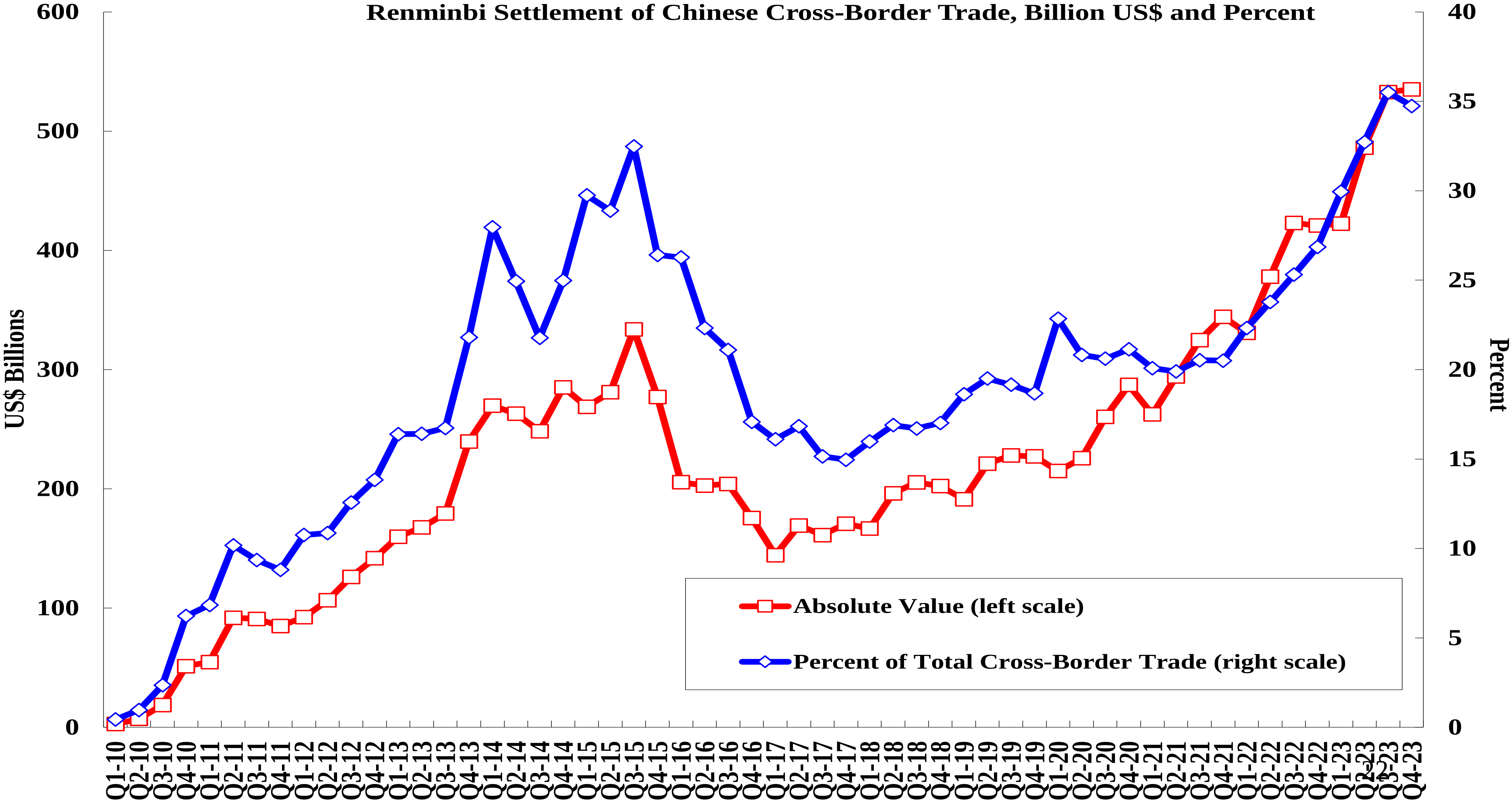
The Internationalisation of the Renminbi (RMB)

- More and more countries have signed own-currency settlement agreements with China. For example, in trade with China, both Indonesia and Russia use their own respective national currencies, the rupiah or the ruble, together with the Chinese yuan, to settle. More recently, countries such as Argentina, Brazil and Saudi Arabia have also agreed with China to settle their bilateral trade with China in their own respective currencies and the Yuan.
- With more and more settlement done in own currencies, the need for the maintenance of a large foreign exchange reserves, especially U.S. Dollar-denominated assets, is reduced.
- The Society for Worldwide Interbank Financial Telecommunication (SWIFT) international payment system for the U.S. Dollar is increasingly weaponised under U.S. pressure, forcing many countries, such as Iran and Russia, to look for alternatives. The use of the United States dollar as an international medium of exchange or store of value by third countries is likely to decline gradually over time.

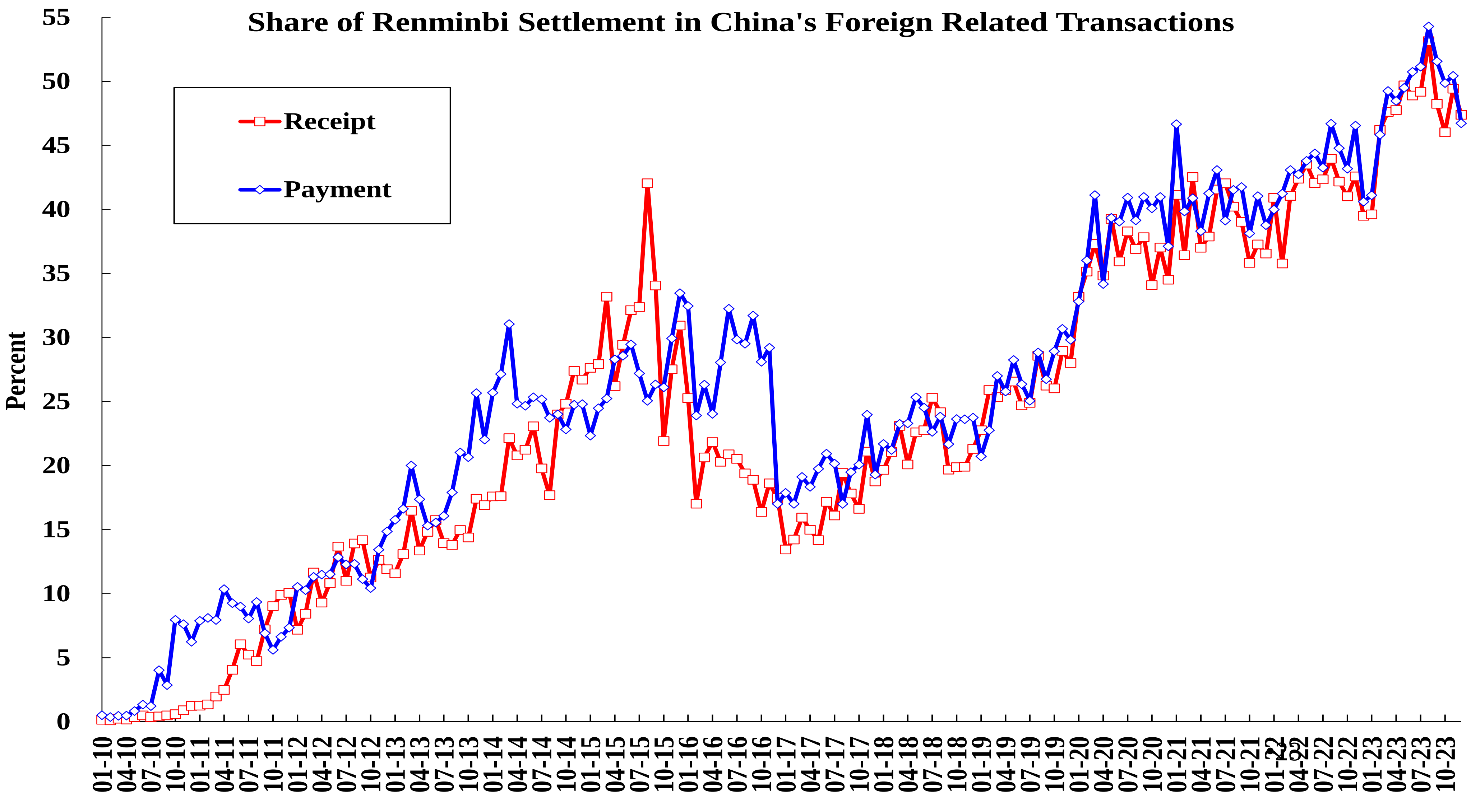
The Internationalisation of the Renminbi: The Settlement of Chinese Cross-Border Trade

- Before 2010, almost all Chinese cross-border trade was settled in U.S. Dollar. The percentage of Chinese cross-border trade settled in Renminbi was zero in 2010. It rose to over 30% in mid-2015, only to fall because of a sudden and unexpected devaluation of the Renminbi, to below 20% in 2017. It has since recovered gradually to reach 35% again in 2023.
- In terms of foreign-related transactions, which include foreign direct investment and portfolio investment flows, the percentage of settlement in Renminbi also started at zero in 2010. It followed the same temporal pattern as Chinese cross-border trade, with a substantial drop between 2015 and 2017. It has recently risen to approximately 50%.
- The main impetus for the wider use of the Renminbi in world settlement comes from the fact that international trade between China and many of its trading partner countries is increasingly settled in each other's own national currencies.

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



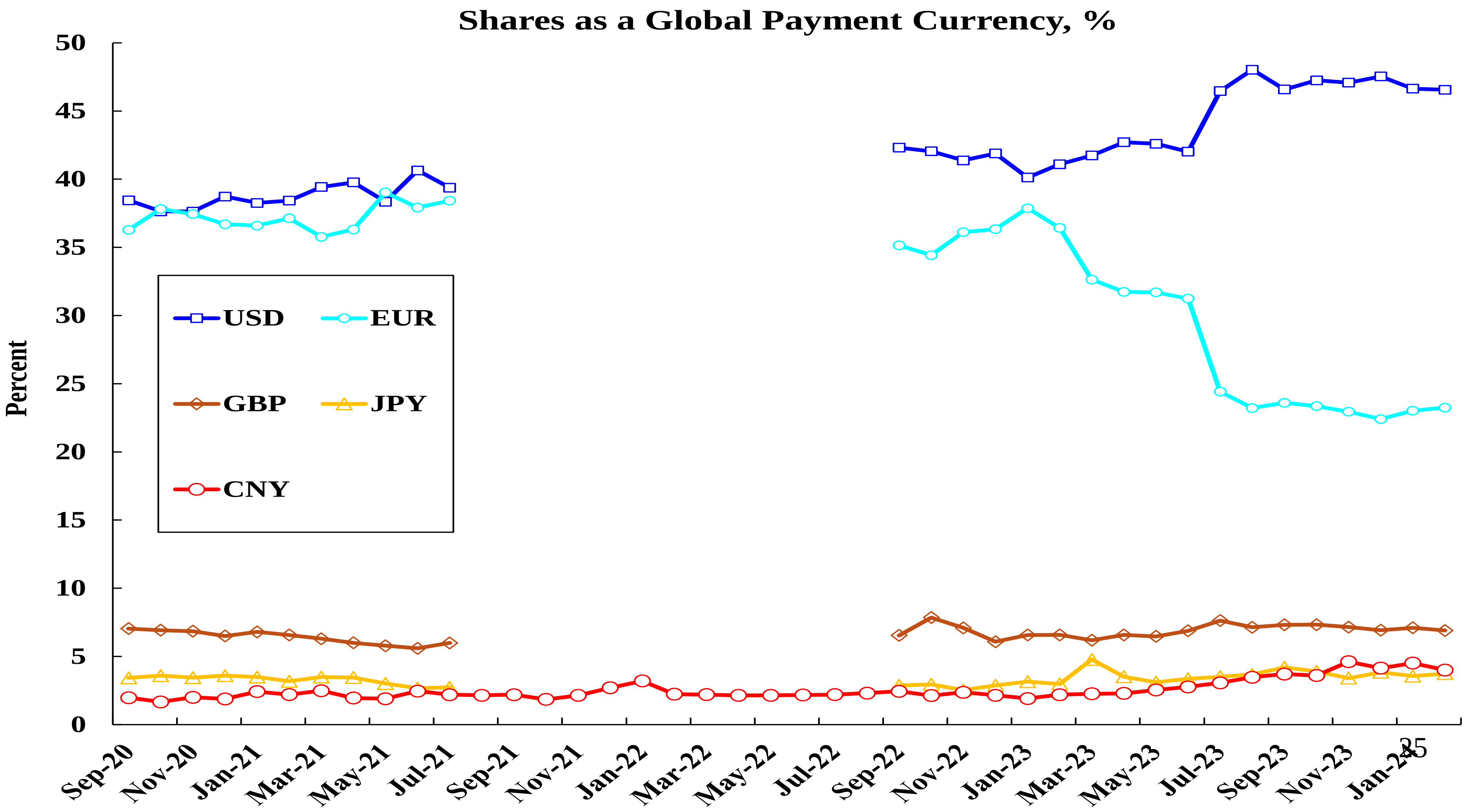
The Share of Renminbi Settlement in Mainland China's Foreign-Related Transactions



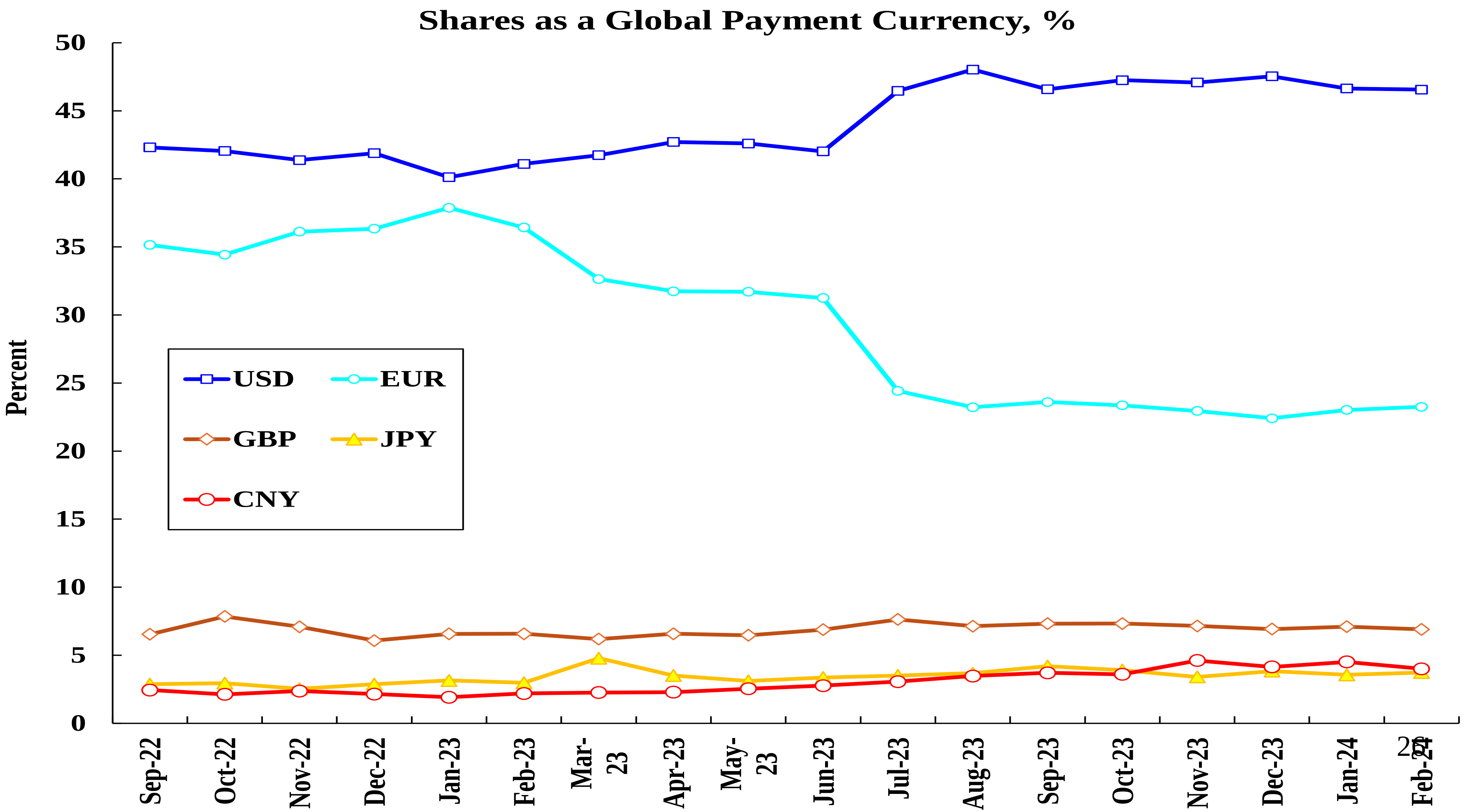
World Settlement of International Transactions

- The U.S. Dollar was the predominant settlement currency since 1971, until the introduction of the Euro in 1999. The share of the world settlement of the Euro was for a while neck and neck with the U.S. Dollar. In fact, in May 2021, the Euro briefly overtook the U,S, Dollar to become the most widely used world settlement currency.
- However, since January 2023, the share of the Euro in world settlement has been declining.
- In a distant third is the British pound, fluctuating within a range of between 6% and 8%.
- The Japanese Yen was for quite a few years the fourth most used settlement currency, but has since November 2023 been overtaken by the Chinese Renminbi (RMB).
- The Renminbi's share of world settlement has grown rapidly since March 2023 from 2.26% to 4% in February 2024 but is still at a relatively low level.

Shares of World Settlement of Selected National Currencies (Sep. 2020-Feb. 2024)



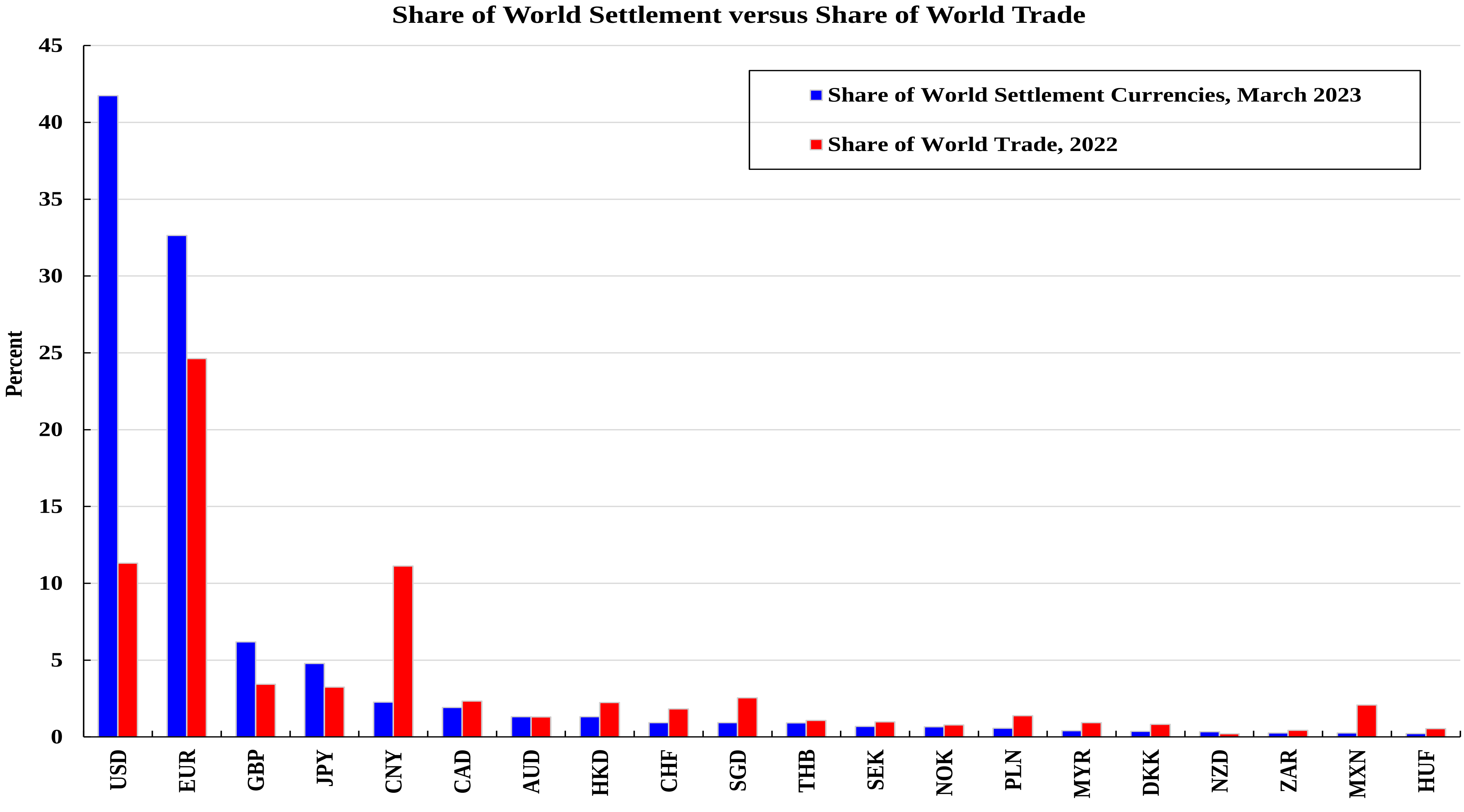
Shares of World Settlement of Selected National Currencies (Sep. 2022-Feb. 2024)



The Share of World Settlement versus the Share of World Trade

- It is instructive to compare the share of world settlement of a national currency with the share of world trade of that country. Intuitively, we may expect that the higher the share of world trade, the higher the share of world settlement.
- In the following charts, we compare the share of world settlement of the currency of a country or region (blue column) in March, July, December 2023 and January 2024, with the share of world trade in goods and services of that country or region (red column) in 2022 (we use 2022 because the 2023 world trade data are not yet complete).

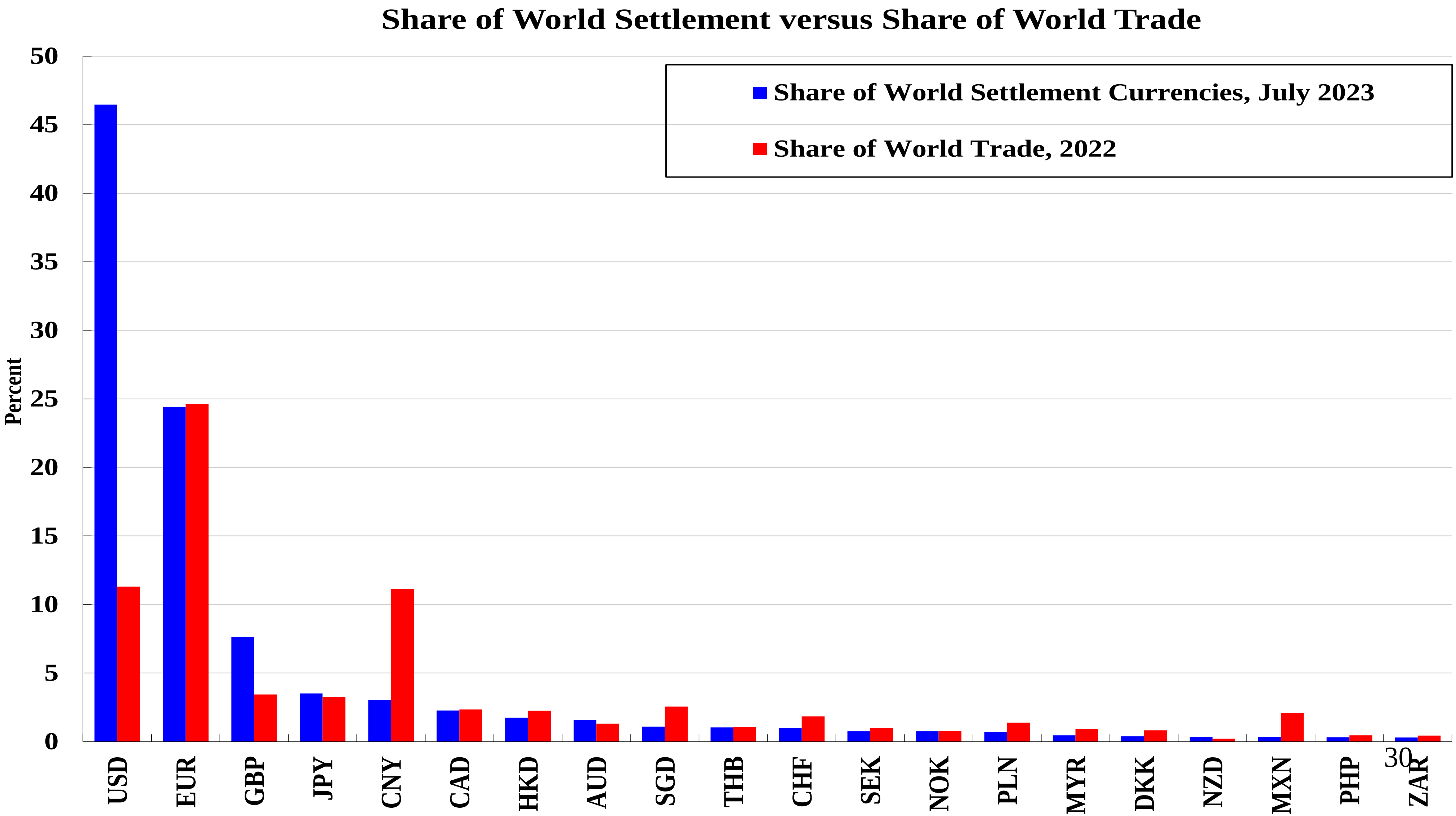
Share of World Settlement versus 2022 Share of World Trade, March 2023



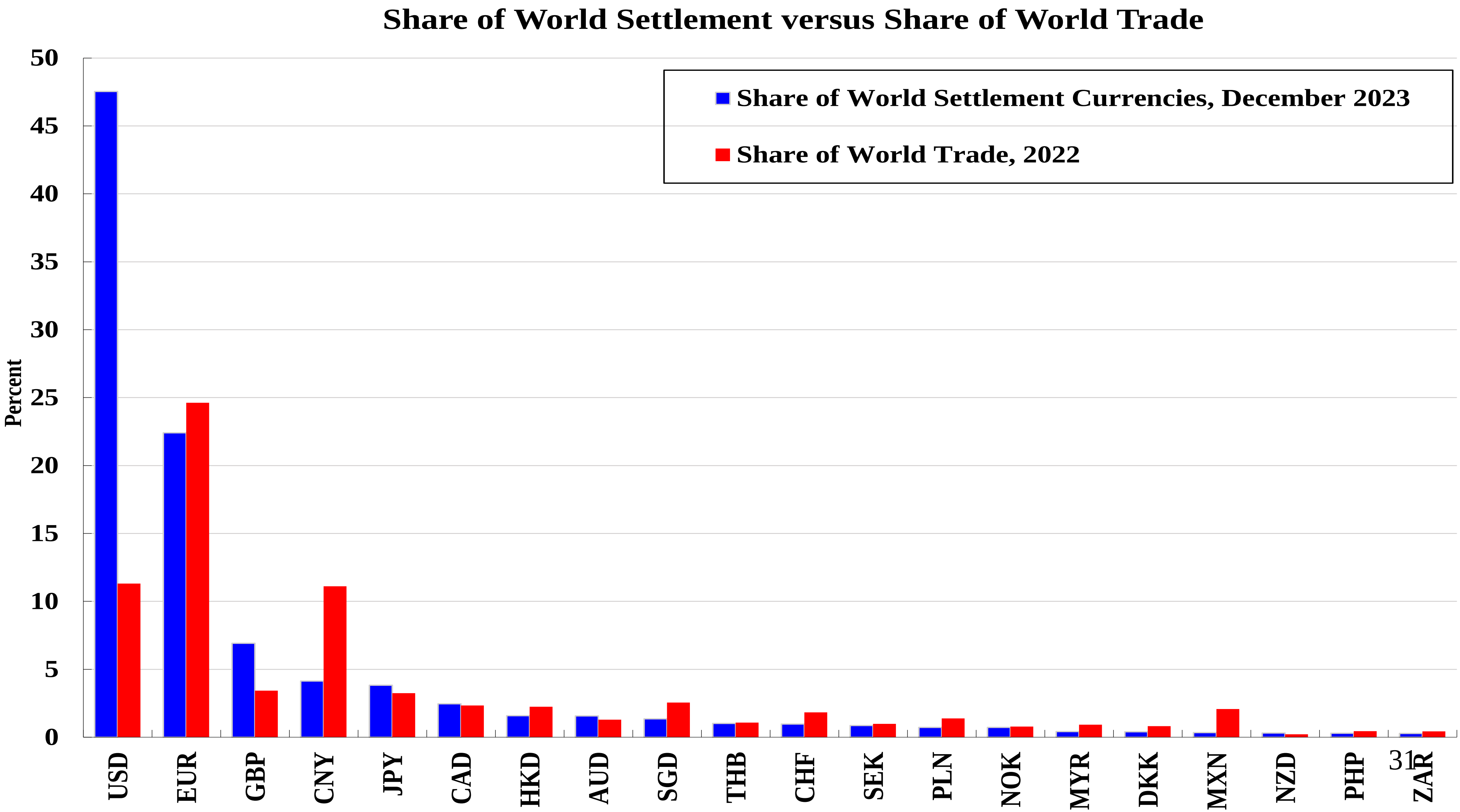
The Share of World Settlement versus the Share of World Trade

- In 2022, the Euro Area accounted for the largest share of world trade, 24.6%, followed by the U.S, with 11.3%, and the Mainland China, with 11.1%. (We note that these shares are sensitive to changes in exchange rates.)
- In January 2024, the U.S. Dollar accounted for the largest share of world settlement, at 46.6%, the Euro accounted for 23.0%, and the British Pound accounted for 7.1%.
- The Renminbi share in world settlement had been increasing rapidly, from 2.3% in March 2023, to 3.1% in July 2023, 4.1% in December 2023, 4.5% in January 2024 and 4% in February 2024 to become the fourth most frequently used settlement currency, but its share was much lower than China’s share of 11.1% in world trade.
- The Japanese Yen was in fifth place in February 2024, accounting for 3.6%, which was higher than Japan’s share in world trade of 3.3%. We note that similarly, for the U.S. Dollar and the British Pound, their shares of settlement were all higher than their respective shares in world trade.

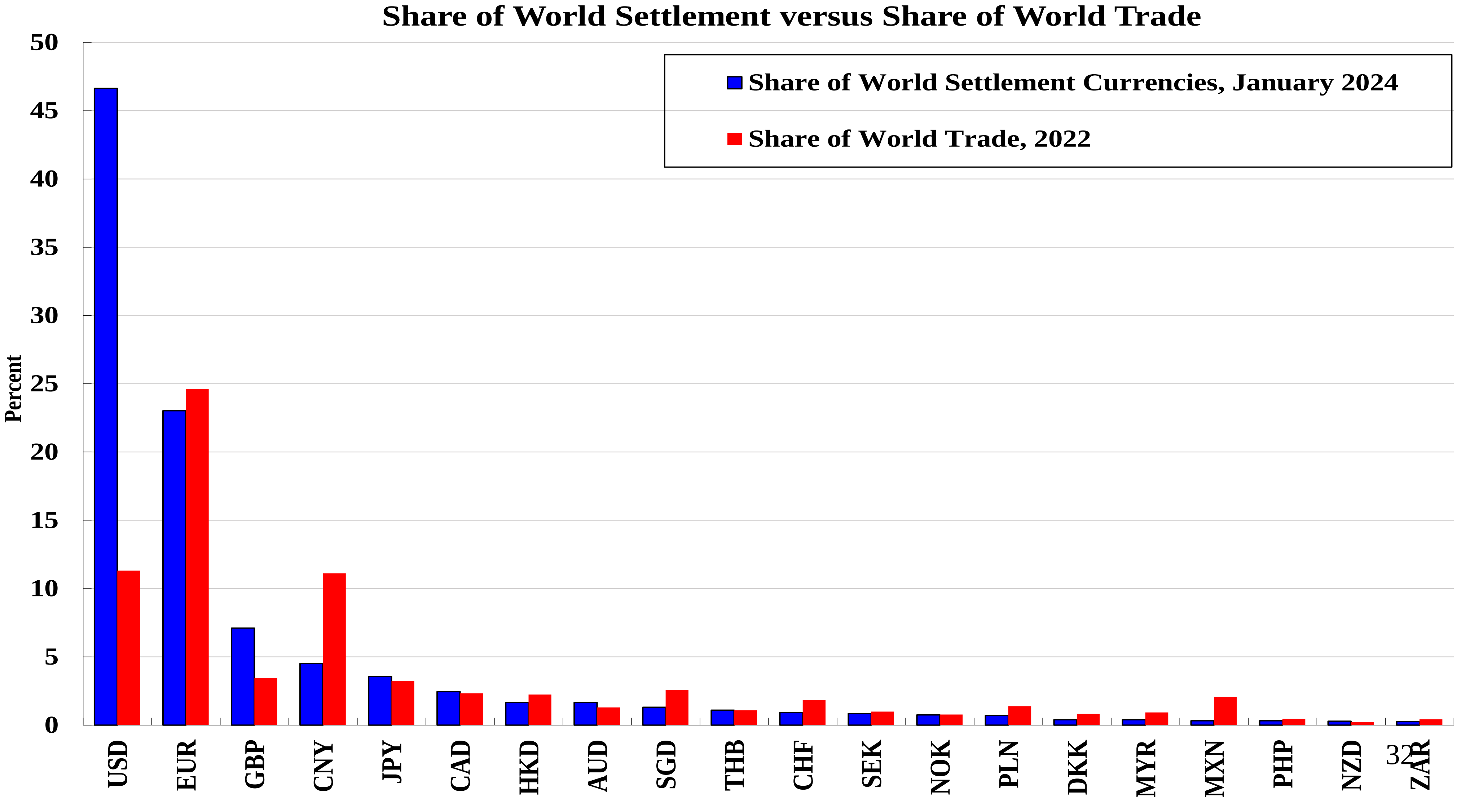
Share of World Settlement versus 2022 Share of World Trade, July 2023



Share of World Settlement versus 2022 Share of World Trade, December 2023



Share of World Settlement versus 2022 Share of World Trade, Jan. 2024



Share of World Settlement versus Share of World Trade

- If the share of Renminbi settlement could eventually reach China's share of world trade, it would become 11.1%, surpassing the share of the British pound to become the third most widely used settlement currency. There is a great deal of room for the Renminbi share of world settlement to continue to grow, but the Renminbi is not expected to catch up to the U.S. Dollar any time soon. .
- However, replacing the US dollar with the Renminbi as a medium of international exchange between other countries may not be in China's own best national interests. Instead, China should promote the own-currency settlement between bilateral trading-partner countries, as they did under the Bretton Woods system before 1971.

The Bank for International Settlements (BIS) Model during the West European Recovery

- In the early 1950s, there was no unified European currency. The French and the Germans did not trust the currencies of each other—the German Mark and the French Franc, and they both distrusted the Italian Lira. And there was a shortage of US$, which everyone trusted, in Europe. So how could the Western European countries trade with one another?
- The Bank for International Settlements (BIS), based in Basel, introduced a clearing and settlement mechanism among the participating Western European countries, acting as an agent for the European Payments Union (EPU, 1950-1958), which facilitated trade amongst the Western European countries and helped their currencies restore convertibility.
- The basic idea of the BIS plan is that if one can clear and settle transaction balances within a group of countries with their own national currencies first, the net outstanding balance at the end of the process will be smaller, and therefore more manageable, and the need for a third-country currency like the U.S. dollar or gold for settlement will be reduced. In this case, the net remaining balance was settled with U.S. Dollars made available under the Marshall Plan of the U.S.

The Bank for International Settlements (BIS) Model during the West European Recovery

- To understand how the BIS model works, consider a group of three economies, A, B and C, that trade with one another. Let SAB, SAC, and SBC be the net trade surpluses between economies A and B, A and C, and B and C respectively (a deficit is a negative surplus). In the absence of clearing and settlement within the group of three countries, the surpluses will have to be settled in U.S. Dollars or gold, with a total balance equal to the sum of the absolute values of the bilateral surpluses, |SAB| + |SAC| +|SBC|.
- Under the BIS scheme, if, for example, SAB is positive, SAC is negative and SBC is positive, which means B owes A, A owes C, and C owes B. A does not need B's currency, since A has a surplus with respect to B, but if B can pay A with C's currency, which C owes to B, A can then use C's currency received from B to pay C, which C will readily accept. This reduces the amount of a third-country currency needed in the settlement among the three countries.
- A's net surplus with B is therefore reduced to SAB-SBC. And A's net surplus with C becomes SAC+SBC, by paying for part of the deficit with C's currency received from B. The total net surplus of the group is therefore (SAB-SBC) + (SAC+SBC) + SBC = SAB-SBC + SAC+SBC + SBC = SAB + SAC + SBC.

The Bank for International Settlements (BIS) Model during the West European Recovery

- The absolute value of (SAB + SAC + SBC) is always less than | |SAB| + |SAC| +|SBC| unless SAB, SAC and SBC are of the same sign. But by assumption, SAB and SBC are positive and SAC is negative. Thus, the net balance that needs to be settled is reduced.
- Continuing with our above example of three countries. Suppose both SAB and SAC are positive, then it does not matter the value of SBC, there is no way to reduce the net balance within the group. Note that neither B nor C have a surplus with A that can be potentially used to offset their deficits with A. Thus, the net remaining balance cannot be reduced to below |SAB| + |SAC| +|SBC|.
- More generally, if |SAB + SAC| is less than |SAB| + |SAC|, then there will be a reduction in the net balance. |SAB + SAC| = |SAB| + |SAC| if and only if SAB and SAC are of the same sign,
- We have therefore shown that a necessary and sufficient condition for an intra-group clearing and settlement among three countries to result in a reduction of the net group balance is that there does not exist a country which runs a net trade surplus with the other two countries within the group.

The Bank for International Settlements (BIS) Model during the West European Recovery

- Next suppose there are four countries, A, B, C and D. If SAB, SAC and SAD are all positive, then no matter what happens among B, C and D, there is no surplus that can be potentially used to offset the deficits with A. However, it is possible that within the group B, C and D, there can be some offset. This requires that within the group B, C and D, there is no country that runs a net surplus with the other two countries.
- If there is no country among A, B, C and D that runs a surplus with every other country within the group, then there are possibilities of offset from the BIS scheme. Suppose SAD is negative, consider SBD and SCD, they cannot be both negative, because otherwise D runs a surplus with all the other countries. If SBD (or SCD) is positive, then D can use its surplus with A to offset its deficit with B (or D), which D (or B) can use to offset in part its deficit with A.

The Usefulness of Intra-Group Clearing and Settlement

- The above argument can be generalised to a group of any number of countries and the basic argument is the same. As long as there is no single country within a group of countries that runs a non-negative trade surplus (with at least one strictly positive surplus) with every other country, and no such single country within any sub-group of three or more countries thereof, the intra-group clearing and settlement mechanism will result in a reduction of the net balance within the group that needs to be settled.
- If we construct a matrix of net trade flows (surpluses) among a group of countries, this means that there is at least one row with all non-negative and at least one strictly positive elements. (This implies that there is at least one column with all non-positive elements). Note that the diagonal elements of this trade surplus matrix are all zeroes.
- After eliminating this column and row, if the remaining sub-matrix has no row with all non-negative (but at least one strictly positive) elements, then intra-group clearing and settlement will result in a reduction of the intra-group net balance.
- In the following chart is an example of a trade surplus matrix for which the intra-group clearing and settlement cannot reduce the net balance of the group.

A Four-Country Trade Surplus Matrix

	Trade Surplus Matrix			
Country	**A**	**B**	**C**	**D**
A	0	+	+	+
B	-	0	+	+
C	-	-	0	+
D	-	-	-	0

The Usefulness of Intra-Group Clearing and Settlement

- We note further that any trade surplus matrix of the following form can be transformed into a trade surplus matrix of the form in the previous chart by simply exchanging countries C and D.

	Trade Surplus Matrix			
Country	**A**	**B**	**D**	**C**
A	**0**	**+**	**+**	**+**
B	**-**	**0**	**+**	**+**
D	**-**	**-**	**0**	**-**
C	**-**	**-**	**+**	**0**

The Usefulness of Intra-Group Clearing and Settlement

- Thus, we have proved the following result:
- Theorem 1: Let S be a matrix of inter-country net trade surpluses (with negative numbers denoting deficits) of a group of countries. Then intra-group clearing and settlement of trade balances reduces the overall net group balance if and only if S does not have the form that its upper-triangular elements are all non-negative (but with at least one strictly positive element in each row) after a suitable simultaneous rearrangement of rows and columns.
- Intuitively, if all the individual elements of the upper-triangular sub-matrix of the Trade Surplus Matrix are non-negative, their sum cannot be less than the sum of the absolute values of the individual elements. Thus, there is no reduction of the net group balance resulting from the intra-group clearing and settlement mechanism. Except for this one class of cases, the intra-group clearing and settlement mechanism will always result in a reduction of the net group balance.

The Usefulness of Intra-Group Clearing and Settlement

- What are the benefits of intra-group clearing and settlement? For the group as a whole, the benefits are the foreign exchange saved in clearing and settlement. If the same balances were to be cleared and settled in, say, the U.S. Dollar or gold, the total required will be the sum of the absolute values of all the individual elements of the upper-triangular sub-matrix of the Trade Surplus Matrix.
- If intra-group clearing and settlement were used first, then the foreign exchange or gold required will be the absolute value of the arithmetic sum of all the individual elements of the upper-triangular sub-matrix. We can see that the presence of negative elements plays an important role in the savings of foreign exchange through intra-group clearing and settlement.

The Operationalisation of the Chiang Mai Initiative Multilateralisation (CMIM)

- The Chiang Mai Initiative (CMI) started out is a bilateral currency swap arrangement among the ten members of the Association of Southeast Asian Nations (ASEAN), the People's Republic of China (including Hong Kong), Japan, and South Korea.
- It has since evolved into the Chiang Mai Initiative Multilateralisation (CMIM) Agreement. Members are able to draw from a foreign exchange reserves pool worth US$240 billion if and when necessary.
- However, the real operationalization of CMIM is when the members will be able to clear and settle the international transactions among them in their respective national currencies. Then the members will only need to settle the net residual within the CMIM group of countries.

Issuance of Own-Currency Bonds with and without Inflation Indexing

- A country should always borrow in its own national currency if possible, because then it can repay with its own currency, which it can issue at will and its tax revenue is in its national currency. Examples are Japan and the U.S., both of which borrow in their own respective currencies. If a country borrows in a foreign currency, it should make sure that it has the necessary revenue in the foreign currency, for example, a long-term supply contract.
- However, it also makes a difference whether a country's debt is owed to its own nationals, or to foreigners. The debtor country can always repay its own-currency denominated debt with its own currencies. And its domestic lenders will be satisfied. It is like debt within a family. The funds stay within the family (country). A foreign lender will need to convert the local currency into foreign exchange eventually.
- Japan has a public debt to GDP ratio of 260%, the highest in the world, but almost all of its public debt is owed to Japanese nationals (corporations and households). Similarly, the U.S. has a federal government public debt to GDP ratio of approximately 120%, The majority, approximately 90% of its public debt, is owed to U.S. nationals.

Issuance of Own-Currency Bonds with and without Inflation Indexing

- However, for some countries, issuance of debt, especially long-term debt, in its own currencies, may have a credibility problem because of expected inflation.
- It is important to remember that a country's own citizens are the best customers for that country's own-currency debt.
- If its own citizens do not wish to buy its own-currency debt, it will be very difficult to convince foreign investors to buy the debt. One possible sweetener for own-currency debt is to index it to domestic inflation. Many countries in the world, including the U.S., issue inflation-indexed bonds with the interest paid tied to the rate of inflation. Domestic owners of inflation-indexed bonds provide the political pressure on the domestic government to honour the debt. Hence, inflation-indexed bonds in a country's own currency can be more attractive to foreign investors.

Concluding Remarks

- The probability of another East Asian currency crisis, like the one in 1997-1998, appears unlikely. All the central banks now have adequate foreign exchange reserves. In addition, there is the Chiang Mai Initiative Multilateralisation Agreement.
- China, Japan and South Korea all have very strong foreign exchange reserves positions. In addition, neither China nor Japan have significant foreign-currency-denominated debt. Their government debt is mostly in their own national currencies. They are therefore in a strong position to provide assistance to any of the Chiang Mai Initiative Multilateralisation members who may be caught short in terms of foreign exchange reserves.
- Moreover, predatory speculation can be curbed by reducing the possible leverage of the currency speculators in a timely manner. Shifting to own-currency settlement will further reduce the risks of a currency crisis for every country.
- However, crypto-currencies may be the next real threat, especially if they threaten to replace the domestic currency.