THE POSSIBILITY OF CREATING A GLOBAL CURRENCY, AND THE PATH TO ITS REALIZATION

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Abstract: The more that economic globalization develops, the greater the need for unity of world currency. At present, people have come to realize the dangers of US hegemony so they strengthen national and regional monetary cooperation. The birth of the euro proved the possibility of the removal of sovereign national currency within a region. Therefore, the idea of achieving broader monetary cooperation and establishing a single world currency and world central bank should be put on the agenda for the elimination of the international financial crisis and global economic governance. This article first analyzes the existing contradictions in the world economy, and then discusses the necessity and possibility of creating a global currency and the path to its realization.

Key words: international monetary system; world currency; US dollar; euro; Asian dollar; global currency; renminbi

The Basic Issues of Global Currency

Keynes designed the reform program for the reconstruction of the international monetary system in 1940s. He devised an early form of world currency beyond the sovereign state—bancor. The paths to realize a world currency in recent decades can be broken down into two categories: top-down and bottom-up (Moore 2004).

The top-down way

The top-down way is to establish a supranational reserve currency through reform of the operation of international monetary organizations, especially change in the international reserve currency system. The currency would be accepted gradually by most countries and become a unified world currency.

(1) Triffin dilemma. Robert Triffin, Professor of political science at Yale University, pointed out in his famous "Triffin dilemma" the instability of the US dollar as the international reserve currency under the Bretton Woods system, and therefore denied the viability of gold and or the currency of a single country to serve as an international reserve currency. He advocated diversification of reserve assets and the establishment of a world central bank to implement unified world monetary policies.

Triffin did not refer to establishing a unified world currency but his analysis of the form of international reserve assets and the establishment of a global central bank laid a theoretical foundation for the further reforms of reserve assets and the establishment of a world currency. It was right for him to oppose the idea that a national currency can serve as an international currency.

(2) The appearance of SDR (Special Drawing Rights). SDR was created by the will of the people in the reform process of the international monetary system. It is an artificial currency unit based upon several national currencies which can serve as the official monetary unit of several international organizations including the International Monetary Fund, and acts as a supplemental reserve for national banking systems. For members of the IMF, the Special Drawing Rights can be used to settle trade balances between countries and to repay the IMF. SDR has certain characteristics of a world currency in that it is a form of supranational currency reserve assets and can make international payment and settlement. However, there is not much prospect for SDR to develop into a unified international currency since it cannot be privately held and its proportion in international reserves is limited.

(3) The rise of international commodity reserve currency. In recent years, the international balance of payments of some countries has deteriorated due to volatility of prices of primary products and raw materials in the world market. Economists such as Jan Tinbergen, Nicholas Kaldor and Albert Hart proposed a commodity-based international reserve currency which could address the volatility of prices of primary products and the instability of the current reserve system. Their suggestions to create such a system include: (a) to build a global central bank and issue an international currency whose value is determined by a selected basket of goods; (b) SDR is integrated into the new international reserve system; (c) with exchange of the primary products in the selected basket of goods through international currency, it is hoped that the world central bank will stabilize commodity prices and therefore international commodity reserve currency.

International commodity reserve currency is actually a discussion of the theory of the value basis of world currency. Since its establishment will replace strong international currencies such as the US dollar, yen and so on, developed countries will block the program and the initiative has not yet been materialized in practice.

(4) Richard N. Cooper's conception of a common currency. Nearly 30 years ago, Cooper raised the idea of establishing a common currency in his paper "A Monetary System for the Future" (1984). He analyzed in detail the reasons for creating a common currency and its issuance. He thought that the international monetary system needs a fixed exchange rate system which is possible only after the abolition of the currency exchange. Therefore, international settlement can only use one common currency. Though each country has to temporarily give up certain national interests to implement a unified monetary policy the institutional arrangements meet its long-term national interests. His conception mainly includes: (a) the currency issued by the World Bank of Issue; (b) the decision-makers of the World Bank of Issue are comprised of the Treasury Secretaries of major developed countries; (c) all countries implement unified monetary policy; (d) international reserve assets are formed by the new international currency instead of that of a single country; (e) international seigniorage and other benefits of the Bank of Issue are allocated to every country according to its voting rights.

The world currency conceptions in the reform of the international monetary system discussed above are innovative research in the value basis of a unified currency and the specific mode of operation. But quantitative analysis is lacking. The theory of optimal currency has made up for this deficiency.

The bottom-up way

In contrast to the top-down way, the bottom-up way is not to build the world central bank but to realize dollarization or euroization first within a relatively narrow region and then establish a unified world currency. The Optimal Currency Areas theory is the most systematic among the bottom-up research. Although it was a theory to discuss regional monetary cooperation, it analyzed quantitatively the conditions for countries to participate in a currency area. In essence, it represented a substitute when a world unified currency is not viable, which laid the foundation for broader monetary cooperation. The pioneer of this theory was Robert Mundell (1961), and the theory was developed with different aspects by R. I. McKinnon (1963), P. B. Kenen (1969), J. C. Ingram (1962), G. Harberler (1970) and so on.

The most differentiated feature of the theory of optimal currency area is its use of cost-benefit analysis. In the cost-benefit analysis, whether a country or a region would join the currency area depends on the costs and benefits from the monetary institutional arrangements of the currency area. A country will join the currency area when the benefits outweigh the costs of joining the system.

Mundell's optimum currency area theory has provided a theoretical basis for the establishment of regional currencies such as the euro. At the same time, he proposed an international currency called INTOR and designed the general transition programs:

Step 1: transit to a stable exchange rate. Step 2: the establishment of a US dollar-, euro- and yen-based tripartite monetary union. He foresaw the possibility of the pound and renminbi (RMB) to become the fourth and fifth largest currencies, and therefore their integration into the monetary union at some point in time. Step 3: the establishment of INTOR.

Comment on the two paths

The two paths are, in essence, an international monetary system based on the currency of developed countries with developed countries as the core. The common money raised by Cooper is supranational but the members of the World Bank of Issue are developed countries. Since change in the process of the international monetary system is an adjustment process of national interests, the two paths to achieve monetary unification will meet with resistance due to improper adjustment of national interests. Some scholars regard the currency of sovereign nation(s)—the US dollar and the regional currency, the euro—as world currency. Such world currency is essentially different from a global currency discussed here.

The global currency advocated in this article is not a currency dominated by a developed country or developed countries. For developing countries to give up their currencies and domestic monetary policies to join the monetary system led by developed countries is equivalent to monetary colonialism. The early form of a global currency system should be led by developing countries and with developing countries as the monetary union members. It will be much easier to implement a global currency system first on a regional basis and then to gradually expand it. Different from dollarization or euroization, such regional global currency is supposed to be promoted based on the balanced development of Asia, Europe and America, and ultimately becomes the world unified currency beyond the differentiation among developing and developed countries.

The Historical Logic and Factual Base of a Global Currency

Firstly, the evolution of the international monetary system is the history of the competitions and compromises of developed countries' national interests.

In the Gold Standard period, gold, as the substantive world currency, was the embodiment of British hegemony. The arrangements of the international monetary system basically reflected British economic and political interests. In the Bretton Woods period, the US dollar, as the substantive world currency, was the embodiment of US hegemony. The international monetary system reflected American economic and political interests. Although during each period in the history of the international monetary system there has been a hegemonic power to provide world currency, these powers fail to achieve the long-term stability of the international monetary system due to capital's unlimited drive to expand and the sovereign country's narrow focus on national interests. Therefore it is impossible for a certain developed capitalist country to establish a global currency.

Secondly, the establishment of a global currency is required to remove the inherent conflict in the international monetary system.

In the Gold Standard period where gold served as the international reserve, the international monetary system was riddled with irreconcilable contradictions. Similarly, in the Bretton Woods period where the US dollar served as the international currency reserve, the system was faced by the "Triffin dilemma." Triffin thought that there were fundamental contradictions between the liquidity creation mechanism and the confidence in the dollar exchange standard system among the international community. With the development of the world economy the contradiction became acute and the Bretton Woods system collapsed.

After Bretton Woods, the international monetary system was replaced by the so-called Jamaica system. What differentiates the Jamaica system the most from the Gold Standard and Bretton Woods, is that there was no substantive world currency. Many scholars criticized the drawbacks of the system. For example, Graham Bird from the UK thought that the international monetary system was an artificial one that is deliberately supplemented and modified. John Williamson from the United States defined it as a "vacant international monetary system." The lack of order in the current international monetary system causes countries all over the globe, both developed and developing ones, to face currency volatility, large international payments imbalances and frequent financial crises in an unprecedented way. Only the establishment of a global currency can remove the inherent conflict in the international monetary system.

Thirdly, creation of a global currency can eliminate US hegemony.

The euro became a power against the US dollar only in a certain sense. Compared to the US dollar, the euro, as a regional currency, is far from mature and influential. In terms of international trade, the dollar is the dominant currency of settlement and at least 60 percent of global trade is settled with dollars. The US dollar is also the most important international reserve currency. The United States has been reaping the most from its vested interests in the current international monetary system. The US hegemonic interests are chiefly manifested in:

(1) International seigniorage revenue. In a sovereign country, the state has the privilege to issue currency. The value of paper currency is much higher than its real value. The difference is seigniorage revenue. A country's seigniorage revenue

is the real value equal to the increment of base money minus costs of issuing money. As the cost is negligible, a country's seigniorage revenue each year is approximately equal to the amount of the base money the central bank issues. When the currency of a country passes across the border, people in foreign countries may hold the currency, but whether or not the country can obtain seigniorage revenue depends on whether the country's currency is the international reserve currency. The international seigniorage revenue can be defined as "the net income a country gets from the currency issued by the country but held by foreigners when the currency is circulated beyond national borders" (Cheng and Wang 2007). As the most widely used currency in international trade, the US dollar has an absolute advantage in the international reserve currency. The United States has received a lot of international seigniorage revenue relying on the foreign holdings of dollars.

(2) International inflation tax revenue. If a currency is not standard currency, the depreciation of the currency may promote exports, but the country needs to export more goods to obtain foreign exchange to repay external debt needs. It is equivalent to imposing inflation tax on non-standard currency countries. If a country's currency is the standard currency, such as the US dollar, the United States can, with its strong economic strength and core position in international monetary cooperation, easily manipulate the exchange rate to reduce the external debt burden through depreciation of the dollar while the claims of the creditor nation has shrunk.

Thus, with the dollar hegemony, not only can the US government harvest large seigniorage revenues, but the risk of exchange rate fluctuations is also smaller for US enterprises, which makes it easier for them to operate capital internationally. Meanwhile, in the event of serious deficit of payments and budget deficit, the US can inhale large amounts of foreign capital to support its domestic economy. Therefore, it is irresistible for the US to deliberately use its monopoly status in the international monetary system.

However, the current dollar-based international monetary system is not sustainable due to insurmountable internal contradictions in its operational mechanism. On the one hand, the US meets domestic material needs through trade deficit, which will inevitably lead to large US dollar outflows and depreciation of the dollar. On the other hand, the US also needs to keep the strong status and appreciation of the dollar to ensure the inflow of dollars to maintain the balance of payments. The current financial and economic crisis of the western countries shows once again that the US dollar-dominated international monetary system faces a "Triffin dilemma" and it is not sustainable for Americans' consumption to rely on grabbing other countries' wealth. More importantly, if the world currency adopts the form of the dollar, the power of the US would be greatly increased and the US unilateral economic and political policies could devastate the world. The most important part of the international monetary system reform is to eliminate dollar hegemony. Only the creation of a global currency can solve the internal contradictions of the current operating mechanism.

Fourthly, the creation of a global currency is indispensable for developing countries' participation in economic globalization.

Monetary union is needed for developing countries to enhance their status in the international monetary system. The IMF is the typical form of monetary cooperation among developed countries in the contemporary world. The share distribution and hence the assignment of voting rights between developing countries and developed countries is not equal due to the disparity of economic strength between the two. Developed countries control the majority of voting rights and hence the actual operation of the IMF. With this leadership and decision-making power in the IMF, developed countries directly or indirectly affect developing countries' domestic economic structure. For example, financial assistance to developing countries is usually the prelude to investment by multinational corporations.

Monetary union is needed for the opening up of developing countries' financial markets. The financial crises that have broken out in developing countries since the 1990s show that there are many problems with the reserve assets institution, exchange rate system and other aspects in developing countries under the current international monetary system.

(1) The international reserve assets are single. The country offering foreign exchange reserves can levy inflation tax on other countries in the world. The US makes use of its monopolistic hegemony and prints a large quantity of money to extend its unlimited credit. When the dollar depreciates against other major currencies, all the countries adopting the dollar-pegged exchange rate regime will suffer a severe blow. In recent years, the US monetary quantitative easing policy is one such example. In addition, changes in demand for foreign exchange reserve also affect the level of inflation a country could accept. Mundell's research shows that, as the main beneficiary of foreign exchange reserves, the United States can accept a relatively higher inflation rate. Without the increase of the demand for foreign exchange reserves under floating exchange rates, the inflation rate of the US would have been much lower (Mundell 1961). The constraint on the US optimal inflation rate is the emergence of other international currencies. Therefore, in order to keep the economic stability, security and the purchasing power of money of developing countries, they should form a monetary union and establish a single currency.

(2) The pegged exchange rate system is unstable. "The second amendment to the Agreement on the International Monetary Fund" in 1976 formally established a managed floating exchange rate system. Since then, all major developed countries have adopted the floating exchange rate system. The basis of the financial and foreign exchange market of developing countries is weak. They lack a relatively mature market operation and oversight mechanisms. The prospect of their balance

of payments improving is not upbeat. Out of fear of the above factors and the aggravation of domestic inflation with the abnormal fluctuations of exchange rates, most developing countries remain wary of the floating exchange rate system, so they chose the "peg" exchange rate system with fixed exchange rate characteristics.

The "peg" exchange rate system cannot guarantee the stability of an exchange rate since the "peg" here is not strict, which means that the country has no obligation to maintain a fixed exchange rate in a turbulent economic situation. When there is conflict between foreign and domestic economic goals, domestic goals are usually priorities. The sterilized intervention aimed at stabilizing the exchange rate when there is a massive inflow and/or outflow of hot money would lead to a huge loss of a country's foreign exchange reserve. In the end a financial crisis occurs. The peso crisis that broke out in Mexico in 1994 is one such example. In addition, the pegged exchange rate system requires a stable fiscal state. If the fiscal deficit is high or rising rapidly, it will trigger people's expectations that the central bank will issue money to finance. Such an expectation will lead to the collapse of regulatory mechanisms and a currency crisis. The currency crisis of Argentina in 2001 was triggered by the fiscal deficit.

The adoption of a unified currency can overcome the instability of the pegged exchange rate system and thus helps to control global financial crisis caused by currency speculation. There is an incentive for every country adopting the pegged exchange rate system to have to balance fluctuations of the domestic economy through leverage of the exchange rate and violate the previous pegging agreement as a result. The incredibility of the pegged exchange rate system is the main reason for hot money being involved in arbitrage. Since the monetary union of countries adopting a unified currency is closer and the cost of violating the agreement increases significantly, the single currency system is a more credible monetary institutional arrangement than the pegged exchange rate system the governments committed to (Grubel 2000).

Possibility Analysis of Creating a Global Currency

A global currency has two important features: first, its members should include developing countries and it should finally function on a broader basis including both developing and developed countries. Second, a global currency is a supranational unified currency instead of the currency of a single developed country. Therefore, the possibility analysis of creating a global currency dwells on whether developed and developing countries can achieve economic integration. There are some differences in the political systems of developed and developing countries so some scholars proposed a "bottom-up" way to a world currency, namely, the "dollarization" or "euro" path. In our opinion, political integration is not necessarily the precondition for creating a global currency. Unified money is possible not through political integration but is mainly driven by economic factors. As for the economic factor, economic differences do exist between developed and developing countries so some scholars proposed the "top-down" realization path where a world central bank dominated by several developed countries is supposed to be established. However, in the long run, the profit is greater than the cost only when developed and developing countries achieve monetary union. The brief analysis above shows the upbeat prospects for creating a global currency. The following will analyze this possibility in detail.

Analysis of the Economic Basis for Creating a Global Currency

We are critical of using political integration to evaluate the possibility of creating a global currency. Some scholars stress the political integration and in their view the establishment of a supranational unified currency cannot be achieved and only a strong currency can act as a world currency. For example, Norman N. Mintz (1970) thought that the most important or even the only condition of monetary integration was the will of political integration among nations. The "bottom-up" "dollarization" or "euro" realization path holds such a view that the conditions to establish a supranational single currency have not yet materialized since supranational political integration is needed to establish a single currency. Saul B. Cohen (2003) showed that the conditions to form a monetary union are the willingness to cooperate on common interests, a stable dialogue and a compromise mechanism, and so on, while political integration is not a necessary condition for monetary union. In addition, the history of international monetary system reform and successful experience of the establishment of the euro also verify that political integration is not a necessary condition for monetary union.

Increased openness to international trade provides an economic condition to create a global currency

A country joins the monetary union in order to balance both domestic and international payments better. The monetary union makes sense only when countries reach a certain level of trade openness. The higher a country's openness to trade, the more limited the role exchange rate policy plays in regulating the domestic economy. The lower the cost of abandoning the exchange rate policy and joining the monetary union, the higher the willingness to join the monetary union. Therefore, increased trade openness can promote the establishment of monetary union. The impact of trade openness on the effectiveness of exchange rate policy will be illustrated in the following two aspects.

Firstly, in order to facilitate large-scale foreign trade, private sectors in countries with high trade openness tend to hold more foreign currency. When a country tries to improve the international balance of payments through devaluation, the value of foreign currency assets will rise. Due to the positive wealth effect, there won't be much reduction in the country's imports. Therefore, the effects of exchange rate regulation policy are decreased.

Secondly, for a country with high trade openness, the price elasticity of domestic demand for its imports and price elasticity of foreign demand for its exports are likely to be smaller, which will decrease the effect of exchange rate policies in balancing international payment.

Hence, as trade openness increases, the effects of exchange rate policy will decrease. For these countries adopting a unified currency at this stage, what they have to do is just to give up the exchange rate policies with little effects, so the cost to join the single currency union significantly reduces. At present, international trade has been expanding in general. Though trade openness in Asia is not as high as that in Europe right now, it has been growing steadily. The increasing openness of national economy shows that the economic strength of developing countries has been enhanced, which lays the material foundation for creating global currency.

Currency regionalization provides an institutional model for global currency. Experience of the euro

The euro is a successful example of world currency union. The successful establishment of the euro resulted from a gradual process of development comprised of several stages: European Economic Community (1958), European Currency Unit (1979), European Monetary Union (1990), single currency euro (1999). It took about 40 years from the establishment of the European Economic Community to the birth of the euro while it only took nine years from European Monetary Union to the single currency euro. Thanks to a strong political will and active dialogue, implementation of the euro was accelerated, but the development of the European Economic Community before also played a pivotal role. This demonstrates that economic factors such as openness to international trade were dominant in the process of the birth of the euro.

At present, the enhanced economic strength of developing countries and increasing economic openness provide an important driving force to create a global currency. It is an unrealistic fantasy to expect the US to reform the international monetary system and create a single currency international monetary system.

Cost-benefit analysis of creating a global currency from the perspective of national interests

From the perspective of national interests, whether a country participates in monetary cooperation or not depends on the cost-benefit comparison of joining the monetary cooperation. When benefits outweigh costs, a country will have an incentive for monetary cooperation. Some works analyzed the short-term national costs and benefits of joining the monetary area. Based on the difficulties in reconciling the interests of many different countries, these works argued that the single currency is not feasible. In our view, the cost-benefit analysis should focus on long-term interests and it is possible and necessary to create a global currency.

The benefits of creating a global currency

(1) The savings of international reserves. There is a cost for developing countries to hold large international reserves denominated in dollars or euros. Firstly, holding of international reserves is not the efficient utilization of financial assets. If these funds were not held as international reserves, they can incur a higher rate of return on investment while they can only obtain deposit interest income in the first case. Joseph E. Stiglitz (2002) believes that the opportunity cost of holding large quantities of foreign exchange is high. The current yield of US Treasury bills is 1.75 percent and if an Asian country put the money into the domestic economy the rate of return would be 10–20 percent. Secondly, the holding of international reserves also suffers from exchange rate risk. The loss from adverse changes in exchange rate is also a cost. If countries other than the US and EU could form monetary cooperation, they would save a lot of their financial assets from investing in international reserves and thus reduce the opportunity cost of holding international reserves. These are short-term benefits of monetary cooperation.

(2) The savings of transaction cost. Marx's analysis of the development of monetary value form shows that the ongoing reduction of the transaction costs is the driving force throughout the history of monetary evolution. In the era of credit currency, trade between countries is becoming larger and more frequent. The existence of multiple currencies increases the transaction costs. Monetary cooperation will reduce the cost and make trade more efficient. Firstly, when a single currency serves as the medium of exchange, the swap cost of exchange will reduce. According to European Commission statistics published in 1995, the swap cost saved as much as 0.4 percent of the EU's GDP in 1990 due to the introduction of the single currency. Secondly, when the single currency serves as the measure of values, the numbers of relative prices will be simplified. In an economy with k commodities, the number of relative prices is $k(k–1)/2$. With the emergence of single money, the number will decline to k. In the monetary cooperation region with n countries, before the cooperation, there would be n measures of values for a commodity. After implementation of the single currency, the number would decline to 1. As a result, the total number of measures of values for all commodities in the region would decline from nk to k. It would not only reduce the information processing costs

(such as accounting costs) but would also facilitate price comparison for the same commodity in different countries and promote price transparency.

(3) Improved economic stability and enhanced anti-risk capability. Firstly, as the monetary policy unifies, inflation caused by competitive devaluations would disappear in the monetary union and thus prices would be more stable, which is more favorable to smaller countries with an open economy. Since most of the products in these countries are produced for trade, frequent fluctuations in the exchange rate will cause fluctuations in the price of these tradable products and domestic policy can only affect a small portion of non-tradable goods. Therefore, for small countries, a floating exchange rates policy would result in frequent fluctuations in the general price level. Secondly, the arbitrage space for speculative capital would diminish if the floating exchange rate system were removed. In the floating exchange rate system, capital flows and foreign exchange market trading are often speculative and unstable. Some other scholars, such as Frankel (1996), suggested that the vast majority of foreign exchange trading has nothing to do with economic fundamentals but only to increase instability and reduce social welfare. Following disintegration of the Bretton Woods system, the sharp volatility of exchange rates under the floating exchange rate set-up demonstrates the shortcomings of this system. If the monetary cooperation and the single currency could be implemented, the speculative flows of capital would disappear. The investment returns of financial institutions may decrease in the short run, but in the long run anti-risk ability and liquidity of financial markets would be enhanced and financial markets in different countries would be integrated in an orderly way.

(4) The effects of investment and economic growth. There are many variables in enterprises' investment decisions. One of the most important variables is the expected change in exchange rate. If the exchange rate changes in an unexpected direction, the enterprises may become unprofitable. In this case, companies may have to close overseas agencies and undertake the adjustment costs, which will incur a huge loss. In contrast, there is no foreign exchange risk in the case of monetary cooperation and the single currency, which is conducive to the growth of transnational investment. Since Europe became a monetary union, the reduction in foreign exchange risk has greatly accelerated the pace of investment among EU members. In the EU, cross-border mergers and acquisitions have been more common and transnational investment has been effectively allocated. Since multinational companies in developed countries are more mature than those in developing ones, the growth of investment will bring more benefits to developed countries than to developing countries. In addition, the reduction in transaction costs brought about by single currency will strengthen the integration of world trade and investments and improve the marginal product of capital, all of which are conductive to long-term economic growth.

A country's cost of joining a global currency system

(1) The cost of loss of policy autonomy and macroeconomic adjustment. Joining in the monetary cooperation, the state will lose autonomy in monetary policy and exchange rate policy. McKinnon (1994) thought that joining monetary union would significantly restrict a country's fiscal policy autonomy in that deficit financing would be blocked, bonds issuance would be subject to the constraints of international capital markets, and over-expanding fiscal policies may bring negative effects to other countries. Therefore, in a single currency system, the constraints on fiscal, monetary and exchange rate policies will bring macro-control difficulties to the member states in the form of asymmetric shocks, which will increase the macro-adjustment costs. The current European debt crisis partly revealed the problem. However, the macro-control costs should not be exaggerated. Besides, the methods are not limited to monetary and fiscal policies.

(2) The transition cost. The transition from a variety of currencies to a single currency will incur costs, but it is once and for all. Such costs mainly include: First, technical conversion costs with the introduction of the single currency. For example, various self-service terminals of financial institutions, payment systems and the company accounts all have to replace the old unit of account with the new one. It is estimated that such transition costs about $800 for each computerized parking meter in the Euro Zone. Second, the cost of printing and issuing new currency and of recycling and treating old ones. In 2002, the then twelve member countries of the Euro Zone used 90 billion euro banknotes and 51 billion euro coins to replace the original 13 billion national banknotes and 80 billion national coins. Third, since the unified currency is provided as public goods, there would be corresponding costs in setting up institutions to study the mechanism to coordinate national macroeconomy among member countries. In short, the transition cost is relatively large but it is once and for all. In order to obtain more benefits of monetary cooperation, this cost is worth bearing.

(3) The cost of abolishing the function of national currency as the state and national symbol. A country has to give up its national symbol embodied in its currency after adopting the unified currency. There will be a cost in persuading people to accept the new currency. The design of euro coins retains the characters of the national culture of each member country and different countries may have a different design of coins.

(4) The loss of seigniorage revenue. For countries whose currency is not the international reserve currency at present, adopting the unified currency will deprive their central banks' right to issue currency. The government loses the seigniorage revenue when it cannot finance through budget deficit. But the loss can be compensated from the following two sources: on the one hand, the world central bank issues a global currency. It can determine the share of seigniorage of a member

country according to its share of national economic output in world total output. On the other hand, thanks to the removal of exchange rate risk, the state can issue bonds at lower interest rates so the government's interest payments will decrease, which is the indirect compensation for domestic seigniorage loss.

For the country whose currency serves as the international reserve currency right now, adopting the unified currency means that it will lose international seigniorage. As the largest international seigniorage beneficiary, the United States will lose a large sum of seigniorage revenue. It should be noted, however, since the emergence of the euro ushers in diversification of international reserve currency, the international seigniorage revenue of the United States has reduced, which also means a reduction in the cost for the United States to join the single currency.

Game analysis of joining a global currency

The final objective of the development of a global currency is to achieve monetary union between developed and developing countries. This objective can be achieved only if the global currency initiative conforms to the common interests of national states and human progress in general. Cost-benefit analysis provides a quantifiable basis upon which states can decide whether to join monetary union. In fact, the benefits and costs are different for different countries. From the time point of view, benefits that cannot be gained in the short run may materialize in the long run, while the short-term cost may not exist in the long run. Game theory suggests that an uncooperative "Prisoner's Dilemma" will appear if the game is performed only once. To move towards cooperation we need a binding treaty. The treaty will help maintain cooperation through increasing the cost of non-cooperative behavior and the benefits of cooperative behavior. An environment of repeated games is required so that the participating states can recognize the indefinite rounds of negotiations in the future and the common long-term interests. In this way, the net benefit of the game model will be directed toward cooperation favoring monetary union.

Steps and Policy Recommendations for Progressive Implementation of a Global Currency

In order to eventually achieve a global currency, considering the characteristics of the current international monetary system and the position of developing countries, it is suggested that a global currency be implemented through three phases: the preparation phase, the initial stage, and the continuous improvement phase.

The preparation phase

As the developed countries dominate the current international monetary system, they are the biggest beneficiaries. We cannot expect developed countries to take positive action to change the current monetary system and establish broader monetary cooperation, so the developing countries should be the main driving force in the process of promoting a global currency so as to gradually modify the international monetary system into the co-existence of the dollar, euro, Asian currency and African currency. At the same time, the developing countries should accelerate the bilateral or multilateral free trade negotiations to speed up the process of economic integration. Learning from the experience of the European Economic Community we can form the alliance through some resource or product at first and then expand cooperation to more commodities and financial areas. Developing countries also need to strengthen cooperation in the exchange rate field to consolidate the fixed exchange rate among them and then establish the prototype of an international risk-sharing mechanism. To be more specific, the following concrete tasks need to be undertaken by developing countries.

Firstly, developing countries need to gradually reduce the proportion of dollars in their international reserves. This would form part of the process of monetary cooperation in developing countries. With the integration of trade and investment among developing countries, foreign currency exchange between enterprises in different countries becomes more frequent, which will generate the need for a unified currency. A single unit of account will greatly reduce the transaction costs between countries, which will in turn accelerate the process of monetary cooperation. The strengthening of currency swap between developing countries will help establish the monetary mutual trust mechanism. In this way, the requirement for transactions to be settled in US dollars is reduced, as is the proportion of dollars in international reserves of developing countries. As a result, it will promote diversification of the international reserve currency and weaken the dollar hegemony. The monetary cooperation mechanism should be strengthened as soon as possible under the existing developing countries cooperation frameworks, such as the “Shanghai Cooperative Organization,” BRICs, ASEAN and the African Union.

Secondly, strengthen the role of the SDR as an international reserve currency. SDR is the second best option before the advent of a unified currency. It can simplify the exchange process and overcome the drawbacks and inherent contradictions in the current international monetary system where the currency of a sovereign state serves as major international reserve currency. The relative stability of its currency value is conducive to the development of the world economy. At present, SDR should be circulated more widely so as to strengthen its function as the medium of exchange. For example, by allowing the private sector to hold SDR, the regulations that limit circulation and transaction of SDR should be gradually abolished to enhance its liquidity. Once SDR becomes a means of transaction in the private sector, it would serve as a prototype for the establishment of a world single currency, just as the European Currency Unit was the predecessor of the euro.

Thirdly, accelerate RMB regionalization and internationalization. China should also play an important role in the process of monetary cooperation among developing countries. China is the largest developing country, with rapid economic growth. Its economic aggregates rank second and foreign exchange reserves rank first in the world. The RMB exchange rate has been stable and has withstood the test of the Asian financial crisis in 1997 and the financial crisis in recent years. As China increases trade with neighboring countries, the RMB has become the major denominated currency and swap currency in regions around China. RMB flows into neighboring countries and regions, and people there are full of confidence in it thanks to its good international reputation. In the preparation phase of creating a global currency, China could use the advantageous status of the RMB to increase currency swaps and speed up monetary integration within the region. In the coming decades, the regional monetary unification—"Asian currency"—could be periodically implemented based on equal negotiations among China, Japan, South Korea, ASEAN countries and so on, to strike a balance among the US dollar, euro and the "Asian currency." In this way, the process of creating a global currency will be shortened.

Fourthly, establish supranational research institutions of "Asian currency" and then global currency. There are many constraints on monetary cooperation, such as the enormous differences in economic development between countries, the non-institutionalized and non-collaborative phenomenon in economic cooperation. Research institutions are needed to provide professional support to policy coordination and the regional currency operating mechanism. The research institutions can be composed of officials and scholars from relevant countries.

The initial stage

Firstly, to achieve union among the three major monetary powers—the US dollar, euro and "Asian currency," assuming there is no African currency. First fix the exchange rate of two currencies and then fix the exchange rates of all three currencies. The final result of fixing the exchange rates of the three major currencies is the establishment of a unified currency in the world, a global currency. The joining of the exchange rates of the three major currencies is to gradually narrow the space of exchange rate fluctuations, like the development of the euro. We can first fix a relatively wide range for exchange rate fluctuations. If this mechanism is feasible, we then gradually reduce this range. If fixed exchange rates of two major currencies were to be achieved, there would be a strong incentive for the other major currency to join the above two to achieve fixed exchange rates among the three.

The advance of this stage is based on the preparation phase. Since the emergence of the third-largest currency would balance the power of the dollar and euro and allocate the benefits of currency internationalization worldwide, the profits of the US dollar and euro would get smaller, which would decrease the cost for unification of the three forces. In other words, the benefits for the country holding the other major currency to transfer part of its national interests and join the broader monetary union would be greater than if it stuck to the previous regional currency.

Secondly, a world central bank should be established. As the issuer of global currency, the world central bank would develop a unified monetary policy around the world and design the allocation mechanism of the seigniorage. In the allocation of decision-making rights, the decision-makers of the central bank can be composed of finance ministers from all the member countries. The voting would adopt the one-country-one-vote system, so that every country has an equal say in the process of the development of the world monetary system regardless of its size. When performing the economic functions, the world central bank can act as a lender of last resort to maintain the stability of the national macro-economy and to avoid financial crisis. Just as the central bank in a sovereign state, the world central bank can adjust the amount of money in the overall world economy through opening market operations, rediscounting operations, and so on.

The continuous improvement phase

First, to continuously improve and adjust the relevant laws, institutions and organizations so as to standardize and check the financial discipline of the member states. This would be the most difficult long-term work. After the establishment of a global currency, all the countries will lose their autonomy in making monetary and exchange rate policy. At the same time the autonomy of a country's fiscal policy would also be largely restricted, which would make the member states face challenges of macroeconomic adjustments in times of economic shocks. To perfect the system of a global currency, we should, on the one hand, set scientific and quantifiable indicators, such as inflation, price, etc. to regulate member countries. To overcome the difficulties in collective action, each member country is supposed to bear its monetary and fiscal obligations from the perspective of a supra-nation. On the other hand, we should reduce the economic impact of the financial area to member countries as much as possible through the advantages of the world central bank in terms of coordinating the international financial order.

Second, to improve and strengthen the role of the world central bank in stabilizing the financial system and prices. A world central bank has a natural advantage in stabilizing the world financial system. We should further strengthen the ability of the world central bank to guard against and defuse financial risks so as to create a favorable external environment for the economic development of the world. At the same time we should stabilize prices in each country to enhance the confidence in a global currency and hence to consolidate the global currency's status as the world currency.

Third, to strengthen the ordering flow of transnational capital. The operation of the world system needs a high degree of economic integration while the free movement of capital is an important manifestation of economic integration. Free movement of capital will enable more effective allocation of international capital and encourage enterprises to carry out cross-border investment, thus contributing to world economic growth. After the establishment of a global currency, it takes time for the financial institutions to adapt and perfect the technical and operational aspects of the settlement and clearing systems, which, to some extent, will restrict the financing capacity of the capital markets. With the establishment of a global currency, the risk of exchange rate fluctuations is eliminated and the market risk of the investment is reduced, which will create good conditions for cross-border flows of capital and international financial integration.

Finally, it should be pointed out that whether and when a global currency is established depends on the following factors. First, it depends on whether the US, EU, Japan and other developed capitalist countries can abandon the narrow interests of national monopoly capital and take as principles the sound development of the global economy and the continuous progress of humanity. Second, it depends on whether developing countries can unite to fight for the sound development of their long-term interests and the global economy regardless of the threats and lures from power politics. Therefore, genuine democratization of international relations and the concept of civilization and progress of the world, are the keys to the development of a global currency in particular, and the continuous sound and rapid development of the global economy and the welfare of the people in general.

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