

## Renminbi Rules: The Conditional Imminence of the Reserve Currency Transition

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### Abstract

Against the backdrop of the recent financial crisis and the ongoing rapid changes in the world economy, the fate of the dollar as the premier international reserve currency is under scrutiny. This paper attempts to answer whether the Chinese renminbi will eclipse the dollar, what will be the timing of, and the prerequisites for this transition, and which of the two countries controls the outcome. The key finding, based on analyzing the last 110 years, is that the size of an economy—measured not just in terms of GDP but also trade and the strength of the external financial position—is the key fundamental correlate of reserve currency status. Further, the conventional view that sterling persisted well beyond the strength of the UK economy is overstated. Although the United States overtook the United Kingdom in terms of GDP in the 1870s, it became dominant in a broader sense encompassing trade and finance only at the end of World War I. And since the dollar overtook sterling in the mid-1920s, the lag between currency dominance and economic dominance was about 10 years rather than the 60-plus years traditionally believed. Applying these findings to the current context suggests that the renminbi could become the premier reserve currency by the end of this decade, or early next decade. But China needs to fulfill a number of conditions—making the renminbi convertible and opening up its financial system to create deep and liquid markets—to realize renminbi preeminence. China seems to be moving steadily in that direction, and renminbi convertibility will proceed apace not least because it offers China's policymakers a political exit out of its mercantilist growth strategy. The United States cannot in any serious way prevent China from moving in that direction.

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*"... the currency of a country which is important in world markets will be a better candidate for an international money than that of a smaller country." —Paul Krugman (1984)*

*"The dollar will end up on history's ashheap, along with sterling, the guilder, florin, ducat, and if you chose to go way back, the Levantine bezant." —Charles Kindleberger (1985)*

## BACKGROUND

Currency is an iconic expression of a country's economic dominance. Even if the economic benefits of currency dominance are questionable, countries and their governments do seem to prize that status. Some of the benefits could be psychic, captured, for example, in the Archbishop of Canterbury's insistence that "I want the Queen's head on the banknotes..." (quoted in Goodhart 1995). Others could be political. Indeed, Britain tried to salvage some prestige for its postempire status via its currency. Harold Wilson, Britain's prime minister, said in 1964 that "To turn our backs on the sterling area would mean a body blow to the Commonwealth and all it stands for."<sup>1</sup>

Even if currency status is not prized for one's own currency, at the very least, countries seem to resent the currency dominance of others. This resentment could be based on the perception of economic gain for the other: Charles de Gaulle, for example, complained bitterly of America's privileged use of "dollars, which it alone can issue, instead of paying entirely with gold, which has a real value, which must be earned to be possessed, and which cannot be transferred to others without risks and sacrifices" (Frieden 2006, 345).

The fate of the dollar has once again become ragingly topical. Questions relating to reserve currencies have periodically obsessed the profession, typically under two conditions. First, when the policies of the principal reserve currency (the dollar) threaten to erode confidence in it (for example, in the 1960s and 1970s), captured in French President Georges Pompidou's famous metaphor: "We cannot keep forever as our basic monetary yardstick a national currency that constantly loses value.... The rest of the world cannot be expected to regulate its life by a clock which is always slow." Second, reserve currency issues become topical when potential rivals to the dollar emerge (as with the euro in the early 2000s).

With equal periodicity, though, the issue has been quietly consigned to forgetfulness. Now, the issue has resurfaced in the aftermath of the global financial crisis with somewhat greater intensity because of a combination of the two developments. First, there is the view that the crisis was occasioned in part by reckless US policies that were in turn aided and abetted by the dollar's reserve currency role, which allowed the recklessness to be financed by outsiders. Joseph Stiglitz made this case in his speech to the United

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1. There was another strand of opinion in Britain during the 1950s and 1960s that saw sterling's reserve currency status as a burden and wanted to see its gradual demise but in a manner that would not disrupt the UK economy or the international monetary system (Schenk 2010a).

Nations in 2009: “The system in which the dollar is the reserve currency is a system that has long been recognized to be unsustainable in the long run.” The second reason relates to the rise of China with the possible ascendancy of the renminbi to reserve currency status and the competition that it poses to the dollar.

Similar doubts about the dollar arose in the 1960s, which led to the creation of special drawing rights (SDRs), the international money created through the International Monetary Fund (IMF). But then there was no challenge to the dollar: Indeed, the SDR was created in anticipation of the fear (which never materialized) that there would be too few dollars to satisfy growing international demand for them. In the early 2000s, the euro represented a challenge to the dollar, but there was no systemic crisis that created theoretical angst about the status quo. Today, there is both the angst and the emergence of a potential rival, which makes discussions about reserve currency and the fate of the dollar much more salient.

The recent economic crisis has led some—including most famously the governor of the People’s Bank of China—to question the legitimacy and effectiveness of having the dollar as the international reserve currency. There are calls to strengthen the role of the real currencies such as the euro, artificial ones such as SDRs (Williamson 2009, and Ocampo 2010), or both as an alternative to the dominant status of the dollar.

The question that I will be addressing is not the normative one of the desirable composition and configuration of reserve currencies but a positive one: whether changes in the world economy will lead to or be accompanied by any changes in the status of different currencies as international reserve currencies. In particular, I will attempt to answer whether the dollar will be eclipsed by the renminbi, what will be the timing of this transition, and the pre-requisites that will have to be met for the transition to occur.

## DEFINITION

Before one answers these questions, one needs to define reserve currency and assess the benefits (and costs) of being an international reserve currency. Paul Krugman (1984) and Menzie Chinn and Jeffrey Frankel (2007) provide a very useful summary.

An international currency is simply one that is used outside one’s own country. The greater the use, the more it merits the description of a reserve currency. Foreign governments and/or foreign private agents seek to use the currency of another country because of the three functions that a foreign currency can perform. These are summarized in table 1, developed originally by Peter Kenen (1983).

Although much of the research on international reserve currencies has focused on reserve holdings by foreign governments, it must be emphasized that reserve currency status reflects use not just by governments but also by the private sector for trade and financial transactions. Hence, a meaningful distinction made by Edwin Truman (2007) is between a “reserve currency,” which relates to official transactions, and an “international currency,” which includes transactions involving foreign private agents.

The quantitative dimensions of the official holdings of reserve currencies are discussed below but it is worth recalling some of the basic numbers relating to international or private-sector dimensions of reserve currencies. Between 1860 and 1914, nearly 60 percent of world trade was denominated in sterling even though the United Kingdom accounted for about 30 percent of world trade (Schenk 2010a). More recently, when the dollar has ruled, 45 percent of international debt securities were denominated in dollars (end-2008); the dollar was used in 86 percent of all foreign exchange transactions (2007); 66 countries used the dollar as their exchange rate anchor (2008); for many countries, 70 to 80 percent of their trade is denominated in dollars; oil and most commodities are priced in dollars; and in the shadowy world of crime and illicit transactions, “the dollar still rules” (Eichengreen 2010). In some ways, one could argue that private-sector actions are indeed the deep determinants of reserve currency status.<sup>2</sup>

## **BENEFITS AND COSTS TO COUNTRY ISSUING RESERVE CURRENCY**

Countries exhibit a certain ambivalence about their reserve currencies because there are both benefits and costs associated with reserve currency status.

### **Benefits**

#### *Convenience for the Country's Residents*

A country's exporters, importers, borrowers, and lenders are able to deal in their own currency rather than foreign currencies. Thus, the transaction costs of obtaining another currency and the psychological costs of having to move or convert from domestic to foreign currencies are lowered or eliminated. When an American tourist goes abroad, he or she can often and in many places buy goods and services for dollars because the latter are widely accepted or easily exchanged for local currency. A Thai tourist, on the other hand, will have had to go to the bank to get the relevant local currency for his expenditures. For banks and other financial institutions, there may also be some cost advantage to dealing in one's own currency: When transactions are denominated in dollars, foreign economic agents have to convert it back to their local currency to understand the transaction; in contrast, US agents avoid the nuisance of having to do this conversion. This is all rather like the convenience of dealing in one's own language.

#### *Seigniorage or Exorbitant Privilege in Good Times*

The advantage that comes from having other governments' citizens hold—or willing to hold—one's currency is a narrow definition of seigniorage captured in this quote from columnist Thomas Friedman:

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2. As Eichengreen (2010) notes: “It still makes sense for countries to hold their reserves in the same currency that they use to denominate their foreign debt and conduct their foreign trade, since central banks use the funds to smooth debt and trade flows and intervene in foreign exchange markets.”

“The United States has an advantage few other countries enjoy: It prints green paper with George Washington’s and Ben Franklin’s and Thomas Jefferson’s pictures on it. These pieces of green paper are called ‘dollars.’ Americans give this green paper to people around the world, and they give Americans in return automobiles, pasta, stereos, taxi rides, hotel rooms and all sorts of other goods and services. As long as these foreigners can be induced to hold those dollars, either in their mattresses, their banks or in their own circulation, Americans have exchanged green paper for hard goods.”

But a broader definition of seigniorage—and indeed the heart of reserve currency status, also called “exorbitant privilege” (coined by Charles de Gaulle and his adviser Jacques Rueff)—is the ability to borrow abroad large amounts cheaply in one’s own currency, especially while simultaneously earning much higher returns on investments (including FDI) in other countries.

Although the empirical evidence is unclear, exorbitant privilege can be interpreted as the ability to run large current account deficits—and hence run up large debts denominated in one’s own currency at low interest rates—safe in the knowledge that others will be willing to finance it on account of the special status for the currency.<sup>3</sup>

#### *Seigniorage or Exorbitant Privilege in Bad Times*

Perhaps as important a benefit or even more so might be the attenuation of costs in times of financial crises. Having a reserve currency might imply lower interest costs and more enhanced capital-market access than would otherwise prevail during a crisis. This helps avoid currency meltdowns and the associated dislocations that usually accompany severe financial crises. In the recent crisis, the United States benefited from such a flight to quality, which meant that markets did not start pricing in default probabilities.

#### *Political Power and Prestige*

Having one’s currency as the reserve currency tends to confer power and prestige. In the most recent global financial crisis, for example, the United States, or rather the Federal Reserve, supplied countercyclical liquidity to the extent of \$600 billion to Europe and several emerging markets. Partly by virtue of its reserve currency status, the Federal Reserve could essentially use its balance sheet to help the world. This conferred prestige, and had the United States wanted to, it could have exploited this source of power.

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3. The United States has consistently earned more on its investments overseas than it has had to pay on its debts, a differential of about 1.2 per cent per annum (Cline 2005, 49). A few recent studies speak to the seigniorage gain. One study finds 10-year bond yields were 70 basis points lower as a result of foreign capital inflows (Bandholz, Clostermann, and Seitz 2009). Still another suggests that the increase in US treasuries held by foreigners depressed yields by 90 basis points (Warnock and Warnock 2009).

Britain's gradual loss of key currency status was simultaneous with its gradual loss of political and military preeminence as noted in the quote from Harold Wilson above.

History provides at least two other very interesting examples of the use of reserve currency status by the United States for achieving noneconomic and economic objectives.

The first relates to the Panamanian experience of the 1980s. Panama was effectively a completely dollarized economy, with the bulk of the money supply comprising dollars. In 1988, following accusations of corruption and drug dealing against General Manuel Noriega, the United States froze Panamanian assets in US banks and all payments and dollar transfers to Panama were prohibited. The economy was afflicted by a severe liquidity shortage and was effectively demonetized, and output shrank by nearly 20 percent. In the words of a former US ambassador to Panama, these actions had done the most damage to the economy "...since Henry Morgan, the pirate, sacked Panama City in 1671." These sanctions were not enough to overthrow Noriega but the power to inflict pain on others from possessing a reserve currency was clear (Cohen 1998, 44–46).

Another interesting, if less known example, illustrating the use of currency dominance to achieve other economic objectives—in this case promoting the interests of a country's financial sector—dates back to pre-Fidel Castro Cuba. Andrews (2006, 88) is worth quoting:

Like many other Caribbean-basin countries that fell under the direct and indirect influence of the United States during this period, Cuba's domestic monetary system became increasingly dollarized during the first two decades of the twentieth century. When a financial crisis struck in 1920–21, Cuban-owned banks collapsed because they had no access to the lender-of-last-resort facilities of the US central bank. US banks then quickly emerged in a dominant position in the Cuban financial system. In this way, the United States exerted a major influence over the Cuban financial system simply by what Strange calls a "nondecision," that is, by not providing lender-of-last resort support to Cuban banks. Interestingly, after this crisis, the US Federal Reserve Bank of Atlanta (as well as that of Boston, between 1923 and 1926) established an agency in Cuba to carry out lender-of-last-resort functions.

Through nonaction, the power from reserve currency was leveraged to promote American banks, and through subsequent conscious action the interests of these banks were consolidated.

## **Costs**

### *Exorbitant Curse Not Privilege*

Seigniorage has a flip side. The fact that a currency is considered special makes it attractive to hold, increasing the demand for it, and causing the currency to appreciate and render exporters less competitive

on world markets. Bergsten (1975, 2009) has a stronger version of this curse. In his view, the ability to finance current account deficits more easily can lead to irresponsible government and private-sector behavior, thereby contributing to financial instability. The US experience in the recent global financial crisis is a case in point, the argument being that the large current account deficits—stemming in part from reserve currency status—led to large capital inflows and cheap and easy money, which combined with lax regulations led to reckless behavior and sowed the seeds for the crisis. Reserve currency status, and the cheaper financing it afforded, may have been the rope that allowed the United States to hang itself.

### *Vulnerability from Exorbitant Privilege*

Exorbitant privilege also creates a vulnerability to external actions among those who have bought US assets. China arguably has some leverage over the United States because of its ability to sell its large stockpile of US treasuries. Many of the sterling bloc countries after World War II were in a position to sell their sterling holdings, creating instability and complicating UK macroeconomic management. In 1966, Malaysia held 14 percent of Great Britain's net liabilities to sterling area countries and was able to threaten to sell these holdings and destabilize sterling as a way of successfully staving off UK political pressure to force it to integrate monetarily with Singapore (Andrews 2006).

### *Burden of Responsibility*

This is the flip side of the power that can come from reserve currency status. The monetary authorities in the country of the leading international currency may have to take into account the effects of their actions on world markets, rather than being free to devote monetary policy solely to domestic objectives. Truman (2007) argues that the Federal Reserve probably cut interest rates more than it otherwise would have in the second half of 1982, and again in late 1998, in response to international debt problems in Latin America and elsewhere. The United States has also been reluctant to see other countries officially dollarizing (Argentina) for fear of having to accept any burden of responsibility, even if only implicit.

The best example of the costs of preserving reserve currency status comes from sterling. Strange (1987) argues that preserving sterling's international role required higher defense spending and higher interest rates to keep sterling strong, which also undermined export competitiveness. At several times between 1949 and 1967 the United Kingdom chose not to devalue sterling, partly because of the fear that such a move would destroy the sterling bloc and jeopardize the Commonwealth. In the Suez crisis, part of the United Kingdom's vulnerability stemmed from wanting to avoid the effects of devaluation on the sterling bloc and hence on the remains of empire.

### *The “Costly” Prerequisites*

One point that is not sufficiently emphasized and which lies at the heart of China’s dilemma in elevating its currency to reserve currency status—or rather, allowing its currency to be elevated—relates to the demanding prerequisites. Reserve currency status requires as a *sine qua non* an openness to capital flows and elimination of domestic financial repression. Put simply, for a currency to become a reserve currency it must be available for use by outsiders, especially for outsiders to buy assets in the country issuing the currency. But a domestic growth strategy that is predicated on maintaining an undervalued exchange rate and generating rapid export growth is difficult to sustain the more open a country is to capital flows: When foreigners buy a country’s assets, the purchase leads to greater capital inflows making the currency stronger, and exports less competitive. For China, therefore, there is a tension between the export-led growth strategy, which requires denying foreigners the ability to buy Chinese assets, and promoting reserve currency status, which requires allowing unrestricted access to foreigners to buy Chinese assets.

### **SHORT HISTORY**

One way of answering the question of changes in reserve currency status—especially in relation to the dollar and renminbi going forward—is to turn to history. Which countries have enjoyed reserve currency status historically and when and why have there been significant transitions?

Figure 1 plots the reserve holdings of the top three reserve currencies at selected points in time between 1899 and 2009. Until the postwar period, there was never just one reserve currency. Peter Lindert’s (1969) analysis showed that in the period before World War I, pound sterling was the dominant reserve currency but by no means the currency hegemon. According to Lindert’s calculations, in 1913 sterling accounted for 38 percent of all official currency holdings, while the comparable share of the French franc and German mark were 24 and 13 percent, respectively. In 1899, the figures for the three countries were respectively, 43, 11, and 10 percent. Holdings of nonsterling reserves were especially pronounced in regions commercially and financially linked to France (for example, Russia) and Germany.

The dollar made its first appearance as a reserve currency in the interwar years. In this period, the pound and the dollar accounted for roughly equal share of reserve holdings. Although the dollar surpassed sterling around the mid-1920s, according to Eichengreen and Flandreau (2008), they traded places for the top spot afterwards: In 1931, when sterling went off the gold standard in the wake of serious economic problems, sterling reserves fell. But when the dollar went off the gold standard some switching occurred back into sterling.

After the establishment of the Bretton Woods system in 1945, the dollar was the *de facto* reserve asset (even though all currencies were still denominated in terms of gold) and enjoyed a near monopoly status. The European currencies, including sterling, were not convertible into gold until 1958. But this

dominance of the dollar is not quite reflected in the data because of the persistence of sterling as a reserve currency. According to estimates in Robert Triffin (1961), the share of sterling in world foreign exchange reserves was higher than that of the dollar until 1954 (27 and 26 percent, respectively); thereafter the dollar's share rose steadily, reaching 65 percent in 1973. On other measures of reserves (for example, liquid foreign assets), the dollar had overtaken the pound by 1945.<sup>4</sup>

The high share of sterling post–World War II is misleading because many if not most of these reserves were held by countries (mainly UK colonies) in the sterling area. When World War II broke out, the sterling bloc countries within the British Empire agreed to protect the external value of sterling by essentially extending credit to Britain and accepting sterling-denominated IOUs. Legislation was therefore passed throughout the empire formalizing the British sterling bloc countries into a single exchange control area.

Thus sterling balances were blocked and could only be used to buy British goods. That sterling was in fact a diminished currency, with its elevated status propped up by the sterling area measures, is revealed by the events of 1947. As part of the Anglo-American agreement negotiated by John Maynard Keynes after World War II, restrictions on the use of sterling had to be removed in return for the United States being willing to extend financial assistance to the United Kingdom. When this agreement was implemented in 1946, residents in sterling area countries rushed to convert sterling into dollars to purchase American goods. The consequential loss of nearly 40 percent of UK reserves (1 billion out of 2.5 billion) led quickly to the restoration of restrictions on sterling convertibility (Eichengreen 2010).

Holding European currencies as reserves started becoming attractive in the 1960s as the European countries began to gradually relax exchange controls for capital account transactions, while the United States generated inflation, and imposed ad hoc restrictions on capital outflows as a way of protecting the balance of payments.<sup>5</sup> This led to the development of the eurodollar market. The German mark and Japanese yen featured more prominently in official reserve holdings from the mid-1970s onwards, with a corresponding decline in the dollar, according to IMF data.

Since the early 1990s, the dollar has made a comeback, and the euro—since its introduction in 1999—has increased its share of global reserve holdings (see figure 1). For much of the post-1973 period, though, the dollar has accounted for a vast bulk of the share of official foreign exchange reserves held by the world.

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4. Schenk (2010b) has a slightly different interpretation: “In the 1950s the sterling area (35 countries and colonies pegged to sterling and holding primarily sterling reserves) accounted for half of world trade, and sterling accounted for over half of world foreign exchange reserves. In the early post-war years, this share was even higher: the IMF estimated that official sterling reserves, excluding those held by colonies, were four times the value of official dollar reserves and that by 1947 sterling accounted for about 87 percent of global foreign exchange reserves. It took ten years after the end of the war (and a 30 percent devaluation of the pound) before the share of dollar reserves exceeded that of sterling.”

5. The interest equalization tax first imposed by the United States in 1963 is seen as a key trigger for the development of the Eurodollar market.

In 1970, a new reserve currency was issued by the IMF called the special drawing right. This action was in response to the belief, spawned by the analysis of Robert Triffin, that there would be an inherent shortage of international liquidity. The shortage would result because there were limits on the amount of dollars that the United States—or any reserve currency center—could supply to the rest of the world in response to the demand for them. If there was too great a supply (as occurred in the United States during the late 1960s and 1970s, leading to current account deficits) foreigners would lose confidence in the currency and in its ability to stabilize and hold value. And if the United States responded by reducing its deficits, there would not be enough dollars in the rest of the world to grease the wheels of trade and finance. The solution therefore was to create a synthetic reserve asset to supplement the supply of the reserve currency (and gold). This reserve asset—or international money—was the SDR (see Williamson 2009 for a lucid history of SDRs).

### **WHAT DETERMINES RESERVE CURRENCY STATUS? A SIMPLE ECONOMETRIC ANALYSIS**

Table 1 relates the desirable prerequisites of the country issuing the reserve currency to its three key functions. To be an attractive store of value, the issuing country should have low and stable inflation as well as a stable and relatively strong currency. To be a good medium of exchange and to serve as a unit of account, a reserve currency must be widely transacted and accepted. A country that is large in output, trade, and finance will naturally find its currency widely transacted and hence more likely to be widely accepted.

There is a certain circularity or self-reinforcing quality here: The more transacted a currency is, the more there will be an incentive to use this currency as a medium of exchange and as a unit of account, and hence the more it will be transacted and so on.<sup>6</sup> Also, the more deep and liquid the financial markets of a country, the easier it will be to raise money in that currency and hence easier to make payments and easier to store value.

Putting all these together suggests that any quantitative analysis of the determinants of a reserve currency must include the size of a country's economy, trade and external financing, the development of its financial markets, the confidence that investors have in the currency as a store of value, and how extensive its use already is.

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6. Chinn and Frankel (2007) draw an analogy with language: "One can make an analogy with language. If one sat down to design an ideal language, it would not be English. (Presumably it would be Esperanto.) Nobody would claim that the English language is particularly well-suited to be the world's lingua franca by virtue of its intrinsic beauty, simplicity, or utility. It is neither as elegant and euphonious as French, for example, nor as simple and logical in spelling and grammar as Spanish or Italian. Yet it is certainly the language in which citizens of different countries most often converse and do business, and increasingly so. One chooses to use a lingua franca, as one chooses a currency, in the belief that it is the one that others are most likely to use."

There is an extensive literature examining the determinants of reserve currency status.<sup>7</sup>

My analysis will depart from the existing literature in two ways motivated by a historical perspective on the issue. First, it will span a much longer time period, between 1900 and 2010, compared with existing contributions that focus on the period after 1973.

Second, I will wield Occam's razor to narrow the list of determinants to (1) relative size, albeit measured along three economic dimensions (income, trade, and external finance, which are also the determinants of economic dominance more broadly as discussed in my forthcoming book (Subramanian 2011)); and (2) persistence or the self-reinforcing characteristic of a reserve currency.

Krugman (1984) provides justification for such a simplification. In his view, the two key determinants of a reserve currency are: "First, the currency of a country which is important in world markets will be a better candidate for an international money than that of a smaller country. Second, the use of a currency as an international money itself reinforces that currency's usefulness, so that there is an element of circular causation." Jeffrey Frankel (1995) makes the same case in favor of size while also elaborating on the relevant dimensions of "world markets": "The currency of a country that has a large share of international output, trade, and finance has a natural advantage"

Simple regression analysis is used here to relate reserve currencies to the three key determinants to see if there is any strong association between the two variables. I have compiled data on the major reserve currencies going back to 1899. The analysis is restricted to the major reserve currencies in each period (sterling, franc, and marks, pre-1913; sterling and dollar for 1929 and 1958; dollar, franc, sterling, yen, and German mark between 1975 and 2000; and dollar, sterling, yen, and the euro since then).<sup>8</sup>

I chose selected years for the analysis, depending on data availability and also because I want to estimate long-run rather than high frequency relationships. Thus, I selected data for every ten years beginning with the most recent period (2009, 2000, 1990, and 1980) and then chose those years for which data were available (1900, 1919, 1929, 1958, and 1976). The longest gap is for the period between 1929 and 1958 because data are most shaky for this period according to Eichengreen and Flandreau (2008). Chinn and Frankel (2007), in contrast, estimate the relationship for annual data from 1973 onwards. They also have a more expanded set of explanatory variables, including inflation differentials, depreciation, foreign exchange market turnover ratio, etc. As discussed in the text, our specification is more parsimonious, restricted to GDP, trade, and net debtor/creditor status.<sup>9</sup>

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7. See among others, Aliber (1966), Alogoskoufis and Portes (1992), Bergsten (1975), Kenen (1983), Krugman (1984), Kindleberger (1981), Matsuyama, Kiyotaki, and Matsui (1993), McKinnon (1979), Portes and Rey (1998), Rey (2001).

8. One could add Switzerland to the sample.

9. The share of a country in world GDP and trade are simple to define and measure. That is less true in the case of the net creditor variable. I define it in the following manner: For any given time period, the cumulative current account balance of a country (over the preceding 10 years) is measured. The cumulative net flow of capital for the world as a whole

One important technical point that we draw from Chinn and Frankel (2007) is in specifying the left hand side variable. They suggest that the functional form relating reserves to the underlying determinants cannot be linear because the dependent variable (currency shares) is bounded between 0 and 1. They suggest using a logistic transformation to take account of this constraint, which I adopt. Thus the dependent variable is  $\log(\text{share}/(1-\text{share}))$ , where share refers to the share of a currency in total global holdings of reserves. This functional form also captures persistence in reserve holdings that Krugman (1984) and others have argued is a key determinant of reserve holdings.<sup>10</sup>

Thus, of the many determinants suggested by Chinn and Frankel (2007), I use only two—size and persistence. My neglect of the other variables is partly due to limited data availability because it is not easy to find data on the depth of financial or foreign exchange markets going back in time; and partly due to the fact that over long periods, differences between reserve currency countries in inflation, for example, (which affects the attractiveness of a currency as a store of value) is not that significant. And as the results clearly suggest, ignoring these other factors does not seem to be a major problem because the limited set of explanatory variables seems to account for a surprisingly large share of the variation in reserve currency holdings.

Table 2 reports results for two ways of calculating reserve holdings. In the first four columns of the table, the reserves of each currency are expressed as a share of total official reserves; in columns 5 to 8, reserves are expressed as a share of all reserves whose denomination is accounted for. Results do not change significantly across these two definitions, except that in the former specification, the net creditor status variable is statistically more significant. Columns 1 and 5 use all the observations. The specifications in all the other columns drop the observation for the United Kingdom in 1958, which, for reasons discussed in the text, was an outlier because sterling was artificially propped up by special policy measures. In columns 3 and 7, the observation for the United States in 2009 is also dropped.

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is calculated by adding up the current account surpluses for all countries running surpluses. The country's cumulative balance as a share of the world's cumulative balance is the measure that we then use in the regressions. Thus, the range of this variable is between plus 1 (when there is one country exporting all the world's capital to all the other countries) and minus 1 (when one country is receiving all the world's net capital from all other countries). For an explanation of why this is a reasonable measure of external financial strength, see chapter 2 in Subramanian (2011).

10. The basic equation is  $\text{Log}(\Phi/(1-\Phi)) = \alpha Y$ , where  $\Phi$  is the reserve share and  $\alpha$  is the coefficient on the explanatory variable estimated in tables 1 and 2, and  $Y$  is a vector capturing all the right-hand side variables. Taking logs yields:  $d\text{Log} \Phi + d\text{Log}(1-\Phi) = \alpha d\text{Log} Y$ . Using the fact that  $d\text{Log} \Phi = d\Phi/\Phi$  and rearranging terms yields an expression for the change in the share,  $d\Phi = (\alpha d\text{Log} Y) * (\Phi * (1-\Phi))$ . Now, ceteris paribus, this expression is highest for  $\Phi=.5$ , and declines monotonically for all values of  $\Phi$  below and above 0.5. That is, the closer the initial share of a reserve currency is to zero or one, the smaller will be its change in response to changes in underlying determinants such as trade and income (this is the sense in which this functional form captures persistence). Thus, for any given change in the right hand side variable ( $dY$ ), the impact on reserve changes is smaller when the initial share of reserves is very high or very low.

One caveat about the interpretation of the results: Our sample by construction includes only those currencies that already have reserve currency status, so there is selection bias. The results should be interpreted as suggesting something about the relative standing of currencies once they have reached reserve currency status, not necessarily their likelihood of attaining this status. The findings are described below.

First, there is a large and statistically strong relationship between a country's reserve currency status, and its share in GDP and trade. In columns 2 to 4, and 6 to 8, which are our preferred specifications, the coefficients of these two variables are significant at the 1 percent confidence level.

Second, there is a positive but less strong relationship between the country's net creditor status and reserve holdings. In the specification in column 2, the net creditor variable is significant at the 10 percent confidence level, and at the 5 percent level in the specifications (columns 3 and 7) excluding the dollar in 2009.

Third, the surprising finding is that these three variables together—which we argued were also the key determinants of economic dominance more generally—account for reserve currency status. Together, they explain nearly 70 percent of the variation in reserve currency holdings. In Chinn and Frankel (2007), the proportion of explained variation is high but that is because of the presence of the lagged dependent variable on the right-hand side of the regression.

Fourth, again a surprising finding—and one somewhat different from the results in Chinn and Frankel—is that trade appears to be a much more important determinant of reserve currency holdings.<sup>11</sup> The coefficient on trade is substantially larger (between 35 and 60 percent depending on the specification in table 2) than that for GDP. In Chinn and Frankel (2007), the coefficient on GDP is also significant but is about one-fourth the magnitude obtained here and they do not find trade to be a statistically significant determinant.

Figures 2 to 4 show the relationship between reserve currencies and their three main determinants, respectively. These figures plot the conditional relationship summarized in the regressions (in table 2) between the share of reserve holdings and the share of the country using that particular reserve currency in world GDP (figure 2), the share of the country in world trade (figure 3), and the share of a country in world net exports of capital (figure 4). These figures are not plots of the unconditional relationship. They correspond to the regressions in column 2 of table 2. Each observation denotes a currency and the year, so that it is easy to see where each currency-year observation is located relative to the relationship captured in the line in each of the figures.

The regressions also suggest that the dollar is currently punching above its weight. The regression in columns 4 and 8 introduce a dummy for the US dollar in 2010. This dummy is positive and significant

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11. Chinn and Frankel (2007) report that trade shares do not emerge as significant explanatory variables in their analysis.

at the 1 percent confidence level, which essentially means that given United States fundamentals on GDP, trade and net creditor status, its share in reserve holdings is substantially greater than it ought to be. In contrast, if a dummy for 2000 for the US dollar is added to the regression, that dummy is not significant, suggesting that the reserve holdings in dollars were roughly in line with fundamentals in 2000. It is only in the last decade that the United States has been punching above its weight.

This finding can give rise to complacency or alarm. Complacency because it suggests or reinforces the fact of persistence and first mover advantage: Once a currency is in, dislodging it from its lofty perch is difficult. But the finding could also be a source of concern because it shows that fundamentals are working against the currency, and once some tipping point is reached, the switch away from the dollar could be swift.

Will that happen? Empire was associated with sterling dominance, Pax Americana with dollar dominance. In the long march from the cowrie shell to the greenback (via silver, bimetallism, gold, and sterling), does renminbi dominance await the world?

## **YUAN OR WE WON? THE FUTURE OF THE DOLLAR AND RENMINBI**

### **Magnitude and Timing**

The preceding analysis suggested that economic dominance in a broad sense (comprising GDP, trade, and net creditor status) is the key determinant of reserve currency status but that there is persistence so that reserve currency shifts occur after those in broader economic dominance. But how long are these lags? History provides some clues. In what follows, we will use the estimates of economic dominance from Subramanian (2011), apply the lags between economic and currency dominance from history, and thereby project the timing of future currency dominance. But what does history suggest about these lags?

The history of reserve currencies shows that there are in fact two transitions: the rise of a currency from anonymity to dominant reserve currency status, and the demise of a once dominant reserve currency. Persistence tends to delay both transitions: A new currency becomes the reserve currency well after the rise to ascendancy of the economy of that currency and a currency remains a reserve currency even if not the dominant one, well after the economy of that country declines. As Krugman (1984) puts it: “The impressive fact here is surely the inertia; sterling remained the first-ranked currency for half a century after Britain had ceased to be the first-ranked economic power.”

But persistence in relation to the first transition seems to have been overstated. The conventional view on persistence is based on comparing the period when the United States became the largest economy (in the early 1870s) and the period when it became the premier reserve currency (around World War II). The rise of the dollar is supposed to have lagged the rise of the US economy by more than 60 years.

But both the dating points—for economic dominance and currency dominance, respectively—need to be altered. The econometric analysis suggests that reserve currencies are determined not just by income

but crucially by trade and by the strength of the external financial position. While the United States may have overtaken the United Kingdom in terms of GDP in 1870, the United States became economically dominant in the broader sense, surpassing the United Kingdom, only around the end of World War I. As late as 1929, the United Kingdom was a larger exporter (in absolute terms) than the United States, and until the mid-1920s, the United Kingdom was a larger net creditor to the world than the United States (Subramanian, 2011). So, for the purposes of currency dominance, the relevant economic dominance clock started ticking for the dollar not in 1870 but around the end of World War I, when the United States became in Barbara Tuchman's words, Europe's "larder, arsenal, and banker."

In fact, an index of economic dominance that combines GDP, trade, and external financial strength (using as weights the coefficients that emerge from the regression analysis in table 2) shows more precisely the timing of the shift from Great Britain to the United States. This index is shown for selected years from 1870 to 2010 in figure 5. In 1913, Great Britain was more economically dominant in the broad sense than the United States, while in 1929, the positions had been reversed suggesting that the transition occurred just after WWI.

Second, the dating of World War II as the salient moment of transition from sterling to the dollar is also problematic. Barry Eichengreen and Marc Flandreau (2008) have argued that the dollar first eclipsed sterling in the mid-1920s, and although sterling and the dollar share near equal status during the interwar years, the persistence of sterling during this period was driven to some considerable extent by politics—the politics of the United Kingdom as a colonial power. At the 1932 Ottawa Conference, preferential trading between Britain and its colonies and dominions received fresh impetus, and towards the end of the 1930s, the sterling area was created. Both these politically-driven developments played a role in prolonging sterling's international use.

In fact, if one looks at evidence for the demand for dollars from private international sources, it appears that the dollar not only started gaining in ascendancy in the early 1920s (as Eichengreen and Flandreau 2008 point out) but also retained that status in the interwar years. Figure 7, based on data from Reinhart (2010), plots the share of sterling relative to the share of dollars in cumulative issuance of international bonds by Argentina, Brazil, and Chile, three countries that were actively raising money internationally. The figure shows that prior to World War I, nearly all issuance was in sterling. But after World War I, an overwhelming share was in dollars.

Thus, correcting the relevant dates, the lag between the rise to economic dominance of the United States (just before World War I) and its establishment as the premier reserve currency was considerably less than the 60-plus years conventionally believed and closer to 5 to 10 years (from 1919 to the mid-to-late 1920s).

Let us apply this to the current situation. These facts and the implications for the possible timeline of a future handover based on the historical experience are depicted in figure 3 below. Figure 5 suggests that the index of economic dominance for China surpassed that of the United States in 2010. Figure 7 uses this as a theoretical timeline for the renminbi possibly overtaking the dollar. Unless some extraneous noneconomic factor intervenes (like it did for the sterling area), by the end of this decade or early in the next one, the renminbi could be in a position to rival the dollar. If this sounds implausible, it is worth adding that the differential between the index of dominance of China and the United States in 2020 will be similar to, or even slightly greater than, that between the United States and United Kingdom in the mid-1920s when the dollar eclipsed sterling. Of course, considerable uncertainty surrounds all these calculations. But what they hint at is the possibility of a more accelerated rise of the renminbi and a possible eclipsing of the dollar as the premier reserve currency.<sup>12</sup>

Now there are two key differences between the possible handover today and the handover of the past. Then the United States had an open capital account whereas China's is closed, its financial markets are still rudimentarily judged against the requirements of a reserve currency in today's world of ultrasophisticated financial markets, and the renminbi is less convertible. This would delay the transition beyond the 10 years suggested by history. There is also the bigger question of whether a nondemocratic country can inspire the basic trust in rule of law that might be necessary for spreading internationalization of a currency.

The key finding that trade is a significant determinant of reserve currency status combined with China's growing trade dominance portend strongly for the yuan. And it is likely that the route to renminbi internationalization will be via its increasing use as a currency within Asia because trade links between China and Asia are increasing especially rapidly. Rising trade will then increase the advantage of using the renminbi in Asia, which might engender policy changes such as Asian countries linking their exchange rates to the renminbi, which would further increase the use of the renminbi and so on. Thus, it looks likely that the road to renminbi internationalization is likely to occur via renminbi regionalization within Asia.

The historical experience of the other transition—from dominance to demise of sterling is also instructive. On the one hand, the handover was difficult for the United States for reasons of history,

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12. There is an alternative way for projecting future currency shares described in the appendix. This method suggests that the share of dollars and euros in overall currency holdings will each decline by about 20 to 25 percentage points in 2030. Since these declines will have to be mirrored in increases in the shares of other currencies and since the renminbi is likely to be the main candidate, one could indirectly project that the share of the renminbi will rise to about 45 to 50 percentage points (from virtually zero today). The share of the dollar will decline to about 40 percent, rendering the renminbi the world's premier reserve currency by 2030. This method yields projections that are not very different from the method described in the text.

namely the inheritance of the sterling area from the era of empire. This inheritance became difficult to eliminate because of the weakness of the UK economy. Any move on the part of holders to diversify out of sterling balances raised the prospect of devaluation (because the United Kingdom did not have enough dollars as reserves to meet the diversification demands), which caused problems for the British government (Schenk 2010a).

On the other hand, though, the United Kingdom and United States were allies, and there was a conscious and concerted effort by governments to minimize the costs of the transition to the United Kingdom and internationally (Schenk 2010a). These included lines of credit extended by other central banks to the United Kingdom to minimize the impact of any move away from sterling.

Today, the environment is quite different. There is likely to be less cooperation between the governments of the United States and China if there were a similar need to manage the transition. On the other hand, today the scale of private flows so overwhelm official flows that transitions are likely to be endogenous and market driven with governments, individually or collectively, less able to control or influence the transition.

Before the eyebrows go up at the magnitudes and timing implied by either of these scenarios, one must be careful about their interpretation. These numbers are suggestive about the long run and about the eventual impact of fundamentals, and they are conditional. Many policy changes will need to occur before these fundamentals can prevail.

## Conditions

A prominent role for the renminbi as a reserve currency may still be some ways off. The key point is that the renminbi still remains inconvertible for many international transactions, which means that foreigners can use it to purchase goods only within China, with a few exceptions.

There are restrictions on the use of renminbi for capital account transactions. Foreigners cannot easily buy Chinese assets and Chinese citizens' access to foreign assets is also limited. Foreign central banks cannot use the renminbi to intervene in foreign exchange markets.

The heart of the problem, of course, is that China's current growth strategy—heavily reliant on export growth, which in turn is fostered by a competitive, even undervalued, exchange rate—relies in part on a closed capital account—i.e., in limiting the use of renminbi by foreigners and for international transactions.

Eichengreen (2010) lists the prerequisites for the use of the renminbi as an international reserve currency: “Markets must first become more transparent. Banks must be commercialized. Supervision and regulation must be strengthened. Monetary and fiscal policies must be sound and stable, and the exchange rate must be made more flexible to accommodate a larger volume of capital flows. China, in other words,

must first move away from a growth model of which bank lending and a pegged exchange rate have been central pillars.” Put differently, internationalization of the renminbi necessarily requires meeting the demands of foreigners for renminbi: There must be a net flow of renminbi from China to the rest of the world via the current account (running deficits and hence reversing currency undervaluation) or the capital account (through convertibility). In short, there are many reasons to believe that China is far from attaining reserve currency status.

On the other hand, there is no mistaking China’s plan, reflected above all in its actions.<sup>13</sup> China is seeking a dominant role for its currency and working gradually but consistently toward it (Governor Zhou Xiaochuan’s demarche in late 2009 in favor of the SDR is now widely interpreted as an aberration and not as a signal of China’s true intentions.) The strategy toward renminbi internationalization might be described as typically Chinese in two respects. First, highly interventionist means are being used. The opening is controlled, discretionary, and micromanaged—even if the ends are liberalizing. One might describe this aspect of Chinese strategy of currency internationalization as interventionist opening, targeting transactions, countries, and companies rather than liberalizing across the board as some European countries did in the 1960s.

Second, there is an uncanny resemblance to the strategy adopted in trade, where islands of openness to trade and foreign direct investment were created in the form of special economic zones (SEZs). Once the SEZ experiment was seen as successful, it was gradually extended to the rest of the economy. Similarly, China intends to use Hong Kong and Shanghai (and perhaps even Singapore) as islands where the capital account opening/renminbi internationalizing experiment will be attempted. For example, Shanghai is slated to become an international financial center by 2020 and Hong Kong has always been more open to the use of renminbi. It is envisaged that these experiments will be gradually extended to the rest of the mainland.

Consider the various actions taken in this direction. The actions to internationalize China’s renminbi are coming so fast and so furious that it is becoming difficult to keep up with them. In 2009, in what was hailed as a significant departure from the status quo and a signal of future intentions, China issued renminbi-denominated sovereign bonds amounting to RMB6 billion to offshore retail investors in Hong Kong in a move to provide foreign investors with an attractive means by which to hold renminbi and to create an offshore market to set the benchmark “risk-free” interest rate for renminbi debt instruments, thereby paving the way for further issuance by mainland borrowers in the offshore bond market. And in April 2011, Singapore announced that transactions could be settled in renminbi, paving the way for further

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13. China’s latest five-year plan states the goal of expanding the international use of the renminbi and gradually realizing its convertibility. It also states the goal of supporting Hong Kong in becoming an offshore renminbi business center.

internationalization of the Chinese currency. As of this writing, gross bond issuance in renminbi is expected to reach between \$180 billion and \$230 billion in 2011, from virtually nothing just a few years ago.

There have been other actions as well. China has entered into a host of swap agreements with Argentina, Belarus, Iceland, Indonesia, Malaysia, Singapore, and South Korea (and Hong Kong). China is also reported to be considering a similar currency swap arrangement with Pakistan and Thailand, which would make the total currency swap amount more than RMB800 billion. The currency swaps allow China to receive renminbi instead of dollars for its exports to those economies, thereby expanding the use of the renminbi as a settlement currency in its trade with the seven countries.

Recently, seeking to further liberalize the use of the renminbi by foreign entities for settlement of transactions in China, the People's Bank of China has enacted rules allowing foreign entities to open bank accounts that can be used to accept and make payments in renminbi. The Administrative Measures on Renminbi Bank Settlement Accounts Opened by Overseas Entities (Measures on Renminbi Accounts of Overseas Entities), which were enacted on September 29, 2010, establish rules nationwide for the administration and oversight of renminbi bank settlement accounts owned by overseas entities. By enabling foreign entities to accept and make payments in renminbi—rather than having to convert to a foreign currency—the new measures should make it somewhat easier and more efficient for foreign entities to do business in China.<sup>14</sup>

China has also explored with Brazil ways of using the renminbi in bilateral trade. The renminbi can already be used in selected cross-border trade (such as with its neighbors, like Mongolia, Vietnam, Cambodia, Nepal, North Korea, and the special administrative zones of Hong Kong and Macau) even if only for selected companies.

In sum, the United States may be overly sanguine and too insular in overlooking the big shifts that are likely to occur in the fundamental determinants of reserve currency status. Applying the historical experience of broader economic dominance to today's situation, it appears that the renminbi could actually surpass the dollar towards the middle or early part of the next decade. The historical experience, properly analyzed and quantified, suggests that persistence in matters of reserve currency status is somewhat overstated. The rise of the dollar and its eclipsing of sterling as the *primary* reserve currency was quicker than recognized and would have been even quicker (relative to fundamentals) had politics and history not intervened. The empire-instigated sterling currency bloc created in the 1930s led to some considerable “involuntary” holding of sterling reserves by the British colonies.

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14. According to a *Financial Times* article (Kevin Brown, Robert Cookson, and Geoff Dyer, “Malaysian bond boost for renminbi,” September 19, 2010 should this be moved to the references—leave it as is I think?), Malaysia decided to hold renminbi bonds as part of its reserves. The news story also speculates that the transaction had accompanied or been followed by purchases by other Asian central banks. Until now, all foreign investment into China has been made in foreign currency, which must then be converted into renminbi for use onshore in China.

## CURRENCY DOMINANCE: WHOSE TO CHOOSE?

In his excellent recent book, *Exorbitant Privilege*, Eichengreen argues that renminbi dominance is still some time away and in any case it is an outcome that the United States can head off through strong actions of its own. But this is far from obvious.

The analysis above suggests that reserve currency status requires two key prerequisites: size and an appropriate policy and financial infrastructure. Now, whether China satisfies the second is entirely up to China. It has to overcome the internal political constraints and implement the policy changes that will create this infrastructure. The United States cannot in any serious way prevent China from moving in that direction.

The more interesting question relates to economic size and in particular the relative sizes of the United States and China in relation to GDP, trade, and the external financial position. To a large extent, economic growth in the two countries will determine their relative size, and so both countries will influence that outcome. So, size too will not be determined by US actions. But in a subtler sense relative size will be more in the hands of China than the United States.

In a world where relative performance matters for dominance, whether the differential in growth between the United States and China will be 2 percent (if China's growth collapses) or 5.5 percent (in a resurgent China scenario) will be largely China's to determine. China can mess up to help realize the former or it could act decisively to achieve the latter. In contrast, the range of possibilities for the United States is much narrower. It is unlikely to grow significantly slower than 2 to 2.5 percent (crises may lower those numbers for shorter periods). And it is extremely unlikely to grow faster than 3.5 percent. This narrower range of possibilities is in some ways the "curse" of being at the economic frontier—both the downside and certainly the upside potential are limited. China's range of possibilities—which is up to China to exploit or forgo—is much greater. And it is this contrast which implies that China's future dominance is more China's to realize than America's to lose.

## THE RENMINBI WHEN THE CHIPS ARE DOWN

Skeptics of these projections will concede that size and policies are important determinants of reserve currency status but would argue that the deepest determinant is confidence and trust, especially in hard times. Their telling question will be: In a crisis, when the chips are down, will investors feel that their money is safer in China than in the United States or at least safe enough against expropriation or nationalization?

Of course, broader political developments—especially Chinese political stability accompanied by transition toward greater democracy and freedoms—will be important in providing reassurance to investors.

But there are grounds for believing that China, regardless of the political transition, is unlikely to act in a manner that should worry investors. China, by virtue of being an unusually large trader, will have a big stake in maintaining an open trading and financial system. China is unlikely to act systematically in a protectionist and destabilizing manner. It knows that such actions would undermine the reserve currency status of the renminbi, a status that it is aspiring to and working toward. Understanding why renminbi internationalization is important for China provides clues as to why it is unlikely to act to jeopardize reserve currency status in the future.

The political economy of Chinese exchange rate policy pits the export interests, who have become used to the de facto subsidy from an undervalued exchange rate, against two other constituencies: the central bank and the fiscal conservatives who worry about the large quasi-fiscal losses that will accrue from the eventual and inevitable rise of the yuan (Yu Yongding 2010). The more the reserves are accumulated, the greater the eventual losses that could reach about 20 to 25 percent of GDP.

Elite policymakers in China—or at least some of them—have taken away from the global financial crisis of 2008–10 the lesson that export dependence came at the high cost of exposing a large part of the economy to external events: One estimate suggests that about 20 million people were under risk of dislocation from the downturn in the world economy. Severe dislocation was avoided because China's healthy public-sector balance sheet allowed the government to step in and make up for the collapse of external demand. But this may not be easy or possible in the future. So, China might sooner rather than later embrace a rebalancing strategy (advocated by Lardy 2007), relying less on foreign demand and mercantilism and more on the domestic market to sustain long-run growth. Rising Chinese inflation will also add to the domestic pressures for renminbi appreciation.

In this political economy struggle, export interests have been winning for standard reasons: They are more concentrated and the benefits they derive are clearly attributable to an undervalued exchange rate and are real. In contrast, the opponents of current policy are few (central bank and some policymakers) and the costs somewhat counterfactual (they would have been felt more acutely had the government not stepped in with the fiscal stimulus).

The way policymakers are tilting this calculus is through internationalization of the renminbi. As described earlier, internationalization is proceeding in typically Chinese fashion—micromanaged, discretionary, selective, gradual, and enclave-based (as China did for its opening to trade and foreign direct investment via the SEZs). One might call it interventionist liberalization. Not a day passes without some company, some country, some transaction having greater access to the renminbi.

But renminbi internationalization cannot succeed without chipping away fundamentally at China's domestic financial repression and the undervalued exchange rate, which underpin Chinese mercantilism.

Renminbi internationalization will entail and require the Chinese financial system to compete globally and offer attractive returns including on banking-system assets.

Control of domestic interest rates and other restrictions on domestic banks cannot easily survive renminbi internationalization. For example, internationalization means that foreigners can hold domestic assets (and domestic residents, surely, can hold foreign assets). In that case, it will be impossible to subsidize domestic interest rates—because then foreigners will want to take advantage and borrow low-cost Chinese capital while domestic residents will want to invest abroad in high-return currencies. Internationalization will be the death knell for financial repression.

Similarly, as financial transactions increase, then speculative pressures will mount, and the costs of maintaining an undervalued currency will rise to the point where China will have to adjust the rate. In other words, foreigners seeking to invest in China and Chinese assets will put upward pressure on the currency, undercutting the ability to maintain undervalued exchange rates.

When the currency consequences of internationalization start taking effect, and eliciting opposition from the export interests, the Chinese authorities will seek to overcome that by playing up the benefits of international reserve status of the renminbi. The calculus then will be that the economic losses (reduced exports and valuation losses) are matched by the gains to national prestige from encouraging the rise to reserve currency status of the renminbi. The trumpeting of symbolic and nationalist gains could serve to drown out the protests of those who might suffer substantive losses.<sup>15</sup>

To be sure, internationalization will proceed much more slowly and messily than desired by outsiders and much faster than can be countenanced by some domestic interests in China. But the process has been set in motion and might prove difficult to reverse. And above all, renminbi internationalization and achievement of reserve currency status appear to be the political strategy for tackling the difficult political economy of the currency impasse that China has created for itself this last decade.<sup>16</sup> The “Renminbi Rules” (and not the dollar) could be the slogan of, even lifeline for, China’s policymakers as they seek their difficult but desired exit from mercantilism.

## CONCLUSION

One might say that Chinese currency dominance is *conditionally imminent*. Imminent because the fundamentals are moving, almost inexorably, in China’s favor. Recall that these fundamentals include not just a large economy but levels of trade and an external financial position that resemble the United Kingdom

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15. Some might add the seigniorage gains from reserve currency status to the calculation and also the gains of running current account deficits and borrowing more cheaply, although China as a net borrower is not a near-term prospect.

16. Note that even if Chinese policymakers have embraced rebalancing as the right economic strategy going forward, they still need to overcome the political opposition to this strategy.

at the peak of the British Empire; and these levels of trade were never matched by the United States at the peak of its economic dominance. This imminence has not been sufficiently appreciated because of a misreading of the history of the transition from sterling to dollar: Sterling was less persistent as a reserve currency than is conventionally believed.

But currency dominance is conditional: on China's policy regime moving in the direction of liberalizing the use of its currency, and opening and deepening its financial markets. And China seems to be gradually, but steadily, making the policy changes that will require that the Chinese currency become internationally convertible.

Both the economic fundamentals and the policy changes are more China's to realize than they are America's to prevent. Indeed, faltering US performance could hasten the transition away from the dollar. But strong US performance may be able to do little to arrest the move in favor of the renminbi. The fate of the dollar is thus more likely to be in the hands of the Chinese rather than those of the United States.

Above all, it seems increasingly clear that China seeks reserve currency status for the renminbi not least because it offers China the political exit from its current mercantilist strategy.

The funny thing about currency dominance, of course, is that it is not an unalloyed blessing. It might even be a poisoned chalice. Public professions of ambivalence about currency dominance notwithstanding, American policy makers during Pax Americana have not resisted drinking from this chalice. China is unlikely to do, or want to do, otherwise. So China too will drink, and sooner than most think.

## APPENDIX

### ALTERNATIVE METHODS FOR PROJECTING FUTURE RESERVE CURRENCY SHARES

In the main text, future currency shares were projected based on comparing the *level* of overall economic dominance between the United States and China today and applying the lag between economic and currency dominance based on the historical experience of the sterling-dollar transition.

There is an alternative way for projecting future currency shares that is based on a strict application of the econometric results presented in table 2 (and that relates changes in reserve currency shares to changes in the underlying determinants). In Subramanian (2011), I project for the United States and EU for each of the three determinants of reserve currency status. We plug in the changes in GDP, trade, and capital export shares between 2010 and 2030, and see what they imply for changes in the currency holdings of dollars and euros.

The shares of the United States and EU are projected to decline by about 5.5 percentage points for GDP and between 2 and 3 percentage points for trade. The relevant equation is described in footnote 10 above.<sup>17</sup> To compute the changes we use the coefficients from the regression expressed in column 2 of table 2. This exercise suggests that the share of dollars and euros in overall currency holdings will each decline by about 20 to 25 percentage points in 2030.<sup>18</sup> Since, these declines will have to be mirrored in increases in the shares of other currencies, and since the renminbi is likely to be the main candidate, one could indirectly project that the share of the renminbi will rise by between 45 and 50 percentage points (from virtually zero today). The implication is that by 2030, the share of the dollar would be about 40 percent.

This method yields projections that are not very different from the method described in the text. All roads thus seem to point to renminbi dominance.

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17. For projections involving the euro, the relevant trade measure to use is trade of the euro area with the rest of the world.

18. The projected changes to the euro would need to be qualified if, for example, large countries such as the United Kingdom or Turkey were to join the euro area, or conversely, if the euro area were to partially disintegrate into a core and periphery. Also, projections for the evolution of future capital shares are the most shaky (because they are based on the evolution of future current account deficits) and so one must be cautious in making and assessing these projections.

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**Table 1 Roles of an international currency**

<b>Function</b>	<b>Use by governments</b>	<b>Use by private agents</b>	<b>Desirable prerequisites of/in country issuing reserve currency</b>
Store of value (allows transactions to be conducted over long periods and geographical distances)	International reserves	Foreign currencies become substitutes for a domestic currency because the latter is prone to inflation and volatility. In the extreme, foreign currencies can even become legal tender	Low and stable inflation; relatively strong and stable currency; financial markets that are deep, liquid, and open to foreigners
Medium of exchange (avoids inefficiencies of barter)	Vehicle for foreign exchange intervention	Means of payment. Invoicing trade and financial transactions	Large global share of output, trade, and finance; financial markets that are deep, liquid, and open to foreigners
Unit of account (facilitates valuation and calculation)	Anchor for pegging local currency	Denominating trade and financial transactions	Large global share of output, trade, and finance

Sources: Adapted from Kenen (1983) and Ferguson (2008).

**Table 2 Determinants of reserves, 1899–2009**

Variable <sup>a</sup>	Reserve shares based on all reserves <sup>b</sup>				Reserve shares based on allocated reserves <sup>c</sup>			
	1	2	3	4	5	6	7	8
Constant	-6.03 <i>-9.14</i>	-6.18 <i>-9.46</i>	-6.19 <i>-9.46</i>	-6.19 <i>-9.31</i>	-5.75 <i>-8.36</i>	-5.89 <i>-8.54</i>	-5.90 <i>-8.57</i>	-5.90 <i>-8.43</i>
Share in world GDP	11.37 <i>3.58</i>	12.87 <i>4.52</i>	12.67 <i>4.42</i>	12.67 <i>4.35</i>	13.85 <i>3.61</i>	15.24 <i>4.24</i>	14.99 <i>4.09</i>	14.99 <i>4.02</i>
Share in world trade	22.13 <i>4.32</i>	20.84 <i>4.18</i>	20.56 <i>4.08</i>	20.56 <i>4.01</i>	21.95 <i>4.14</i>	20.76 <i>3.92</i>	20.39 <i>3.83</i>	20.39 <i>3.77</i>
Share in world's net capital surplus	1.18 <i>1.37</i>	1.38 <i>1.77</i>	1.74 <i>2.10</i>	1.74 <i>2.07</i>	1.08 <i>1.09</i>	1.26 <i>1.31</i>	1.73 <i>1.77</i>	1.73 <i>1.74</i>
Dummy for US in 2009				1.19 <i>3.23</i>				1.57 <i>3.79</i>
R <sup>2</sup>	0.62	0.67	0.66	0.67	0.63	0.67	0.67	0.68
Number of observations	33	32	31	32	33	32	31	32
Description of sample	All countries	Excludes UK in 1958	Excludes UK in 1958 and US in 2009	Excludes UK in 1958	All countries	Excludes UK in 1958	Excludes UK in 1958 and US in 2009	Excludes UK in 1958

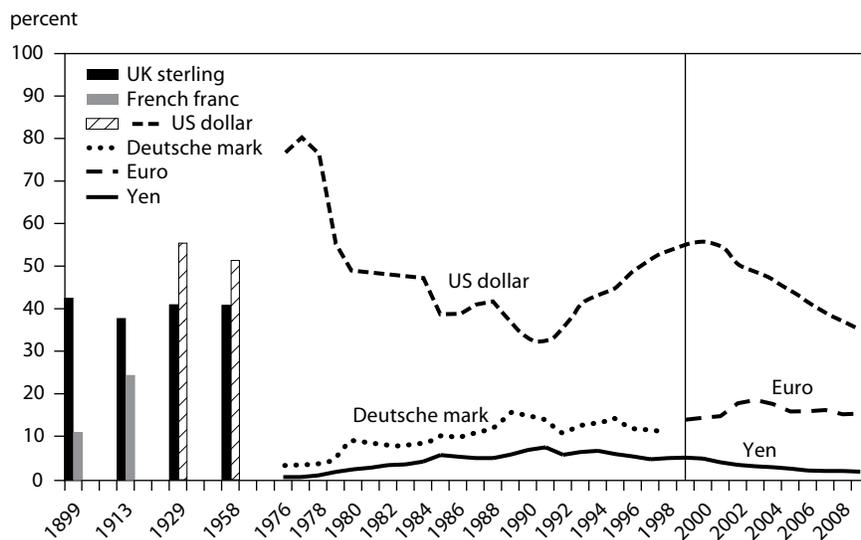
a. The dependent variable is logistic of the share of a currency in world reserves. The dependent variable relates to currencies, while the right-hand-side variables relate to countries issuing the currencies. The *t*-statistics are reported in italics below the coefficients.

b. The denominator in this calculation is the total of reserve holdings even if the currencies are not of accountable denomination.

c. The denominator in this calculation is the total of those reserves whose currency denomination can be identified.

Source: Author's calculations.

**Figure 1 Holdings of reserve currencies, 1899–2009**

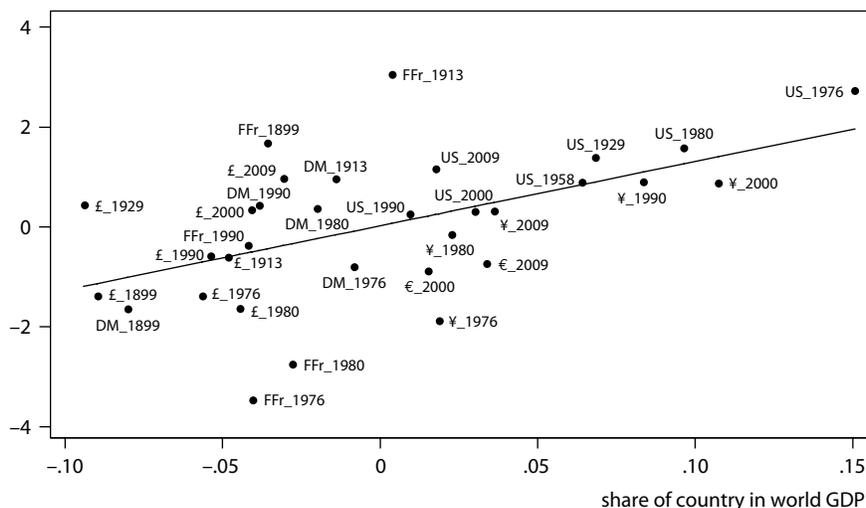


Notes: Holdings are expressed as share of a currency in global holdings of foreign exchange reserves. Part of the foreign exchange reserves cannot be assigned to particular currencies, so the share is expressed in terms of total holdings that can be so assigned.

Sources: Eichengreen and Flandreau (2008); Lindert (1969); Kennedy (1989); Triffin (1961); and International Monetary Fund, Currency Composition of Official Foreign Exchange Reserves (IMF COFER) database.

**Figure 2 Association between reserve currency and GDP, 1899–2009**

logistic of share of currency in world reserve holdings



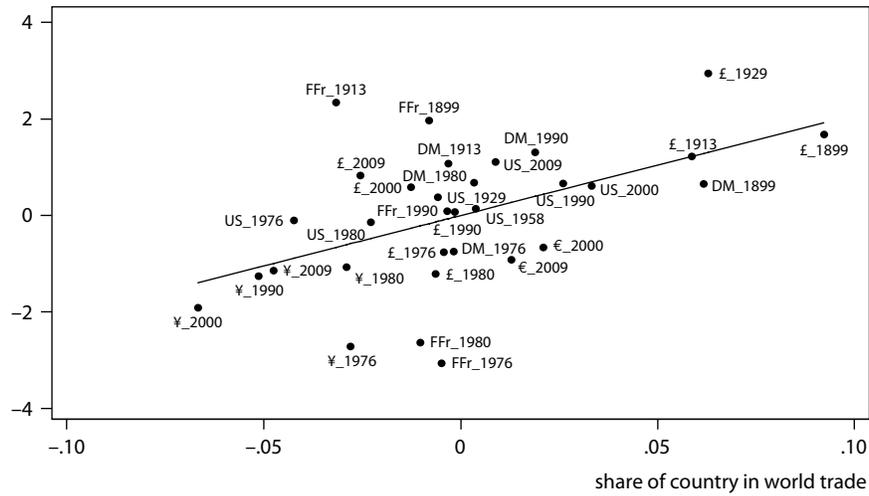
FFr = French franc; DM = Deutsche mark; US = US dollar; ¥ = Japanese yen; £ = UK sterling

Notes: The logistic of a variable is defined as  $\log(\text{share} / (1 - \text{share}))$ , where share is the share of a currency in world official reserves of foreign exchange. Data points in this figure capture the conditional relationship between the share of reserve holdings and the share of a currency's country in world GDP. Each data point also shows the relevant year. The data correspond to the specification in column 2 of table 3A.1.

Sources: Data are from Eichengreen and Flandreau (2008); Lindert (1969); Triffin (1961); and International Monetary Fund, Currency Composition of Official Foreign Exchange Reserves (IMF COFER) database.

**Figure 3 Association between reserve currency and trade, 1899–2009**

logistic of share of currency in world reserve holdings



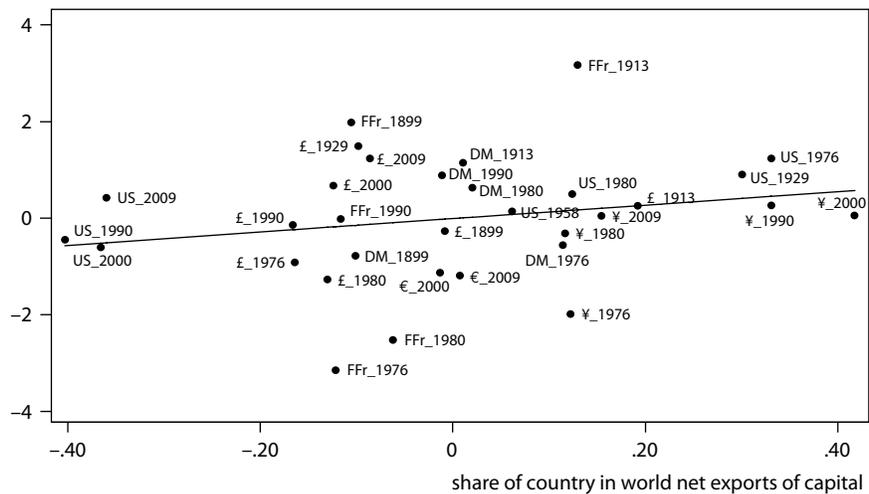
FFr = French franc; DM = Deutsche mark; US = US dollar; ¥ = Japanese yen; £ = UK sterling

Notes: Data points in this figure capture the conditional relationship between the share of reserve holdings of a currency and the share of the country issuing the currency in world trade. Each data point also shows the relevant year. The data correspond to the specification in column 2 of table 3A.1.

Sources: Data are from Eichengreen and Flandreau (2008); Lindert (1969); Triffin (1961); and International Monetary Fund, Currency Composition of Official Foreign Exchange Reserves (IMF COFER) database.

**Figure 4 Association between reserve currency and net creditor status, 1899–2009**

logistic of share of currency in world reserve holdings

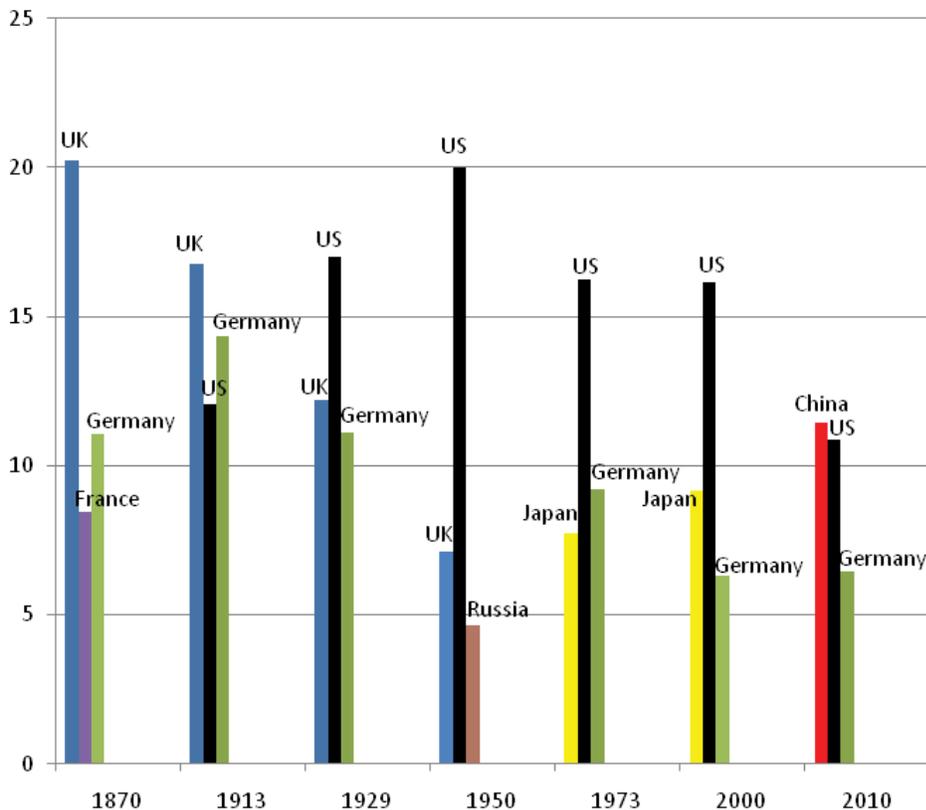


FFr = French franc; DM = Deutsche mark; US = US dollar; ¥ = Japanese yen; £ = UK sterling

Notes: Data points in this figure capture the conditional relationship between the share of reserve holdings and world's net exports of capital. Each data point also shows the relevant year. The data correspond to the specification in column 2 of table 3A.1.

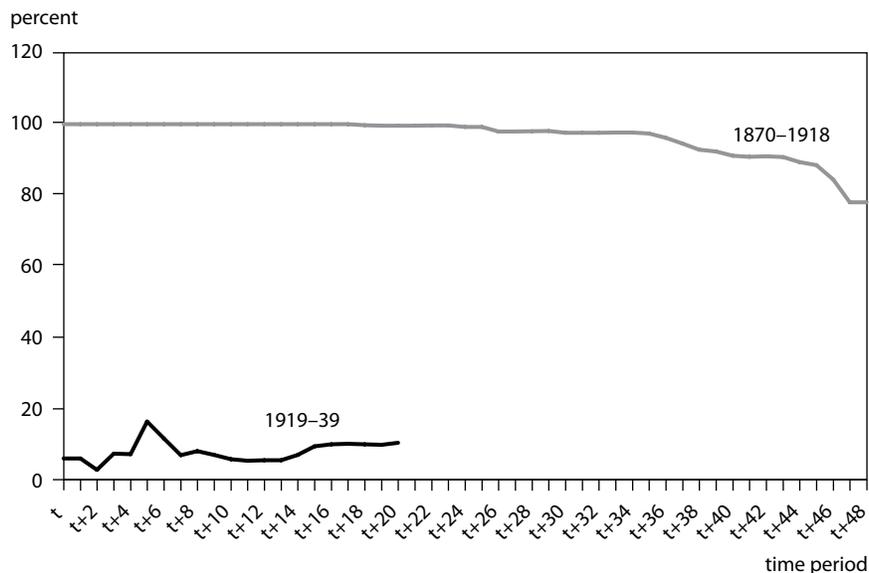
Sources: Data are from Eichengreen and Flandreau (2008); Lindert (1969); Triffin (1961); and International Monetary Fund, Currency Composition of Official Foreign Exchange Reserves (IMF COFER) database.

**Figure 5 Economic dominance index from 1870-2010 for the top three countries under the convergence scenario using reserve currency weights**



Notes: This index is a weighted average of the share of a country in world GDP, trade, and world net exports of capital. The index ranges from 0 to 100 percent (for creditors) but could assume negative values for net debtors. The weights for this figure are 0.6 for trade; 0.35 for GDP (split equally between GDP measured at market and purchasing power parity exchange rates, respectively) and 0.05 for net exports of capital. These weights are based on the coefficients in table 2 (for details see Subramanian, 2011).

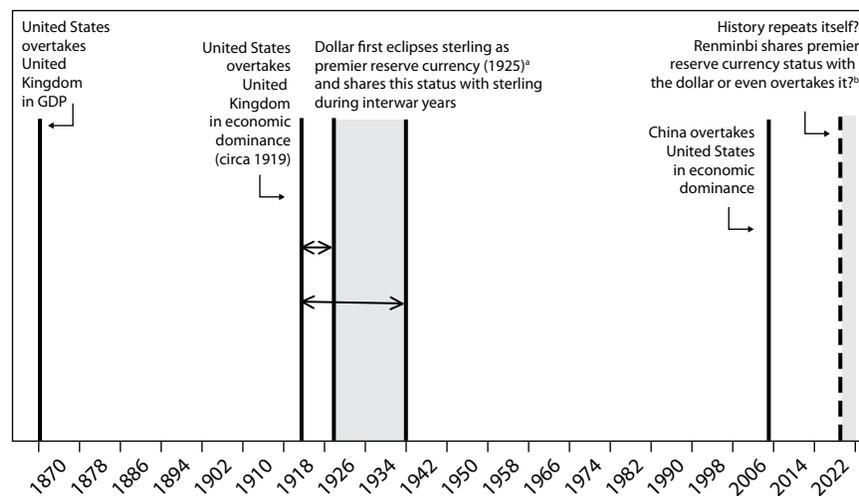
**Figure 6 Share of sterling relative to dollars in bond issuance by Argentina, Brazil, and Chile, 1870–1939**



Note: Annual bonds issued are converted to dollars and deflated by the US consumer price index. These annual values are added for all three countries. For the top line, bond issuance is cumulated beginning in 1870. For the bottom line, cumulation begins in 1919. The plot shows that share of sterling-denominated bonds in total (sterling- and dollar-denominated) bonds, where for each year both the numerator and denominator are cumulative amounts.

Source: Reinhart (2010).

**Figure 7 History and possible timeline of future reserve currency transition, 1870–2022**



a. The difference in the economic index between the United States and the United Kingdom is approximately 5 to 8 percentage points in 1929.

b. The difference in economic dominance index between China and the United States is approximately 5 to 7 percentage points in 2020.

Sources: Eichengreen and Flandereau (2008); Lindert (1969); Kennedy (1989); Triffin (1961); and International Monetary Fund, Currency Composition of Official Foreign Exchange Reserves (IMF COFER) database.